

Salesian College Sonada

(Autonomous) Assistant Beauty Therapist

Semester-I

Hours-30

Sessions-15

Credits-1

Objectives: Beauty Therapy is a field dedicated to enhancing a person's physical appearance and well-being too. This course pertaining to involve a wider range of treatments and techniques designed to improve skin, hair, nails and overall relaxation.

Detailed Module

Session 1- Introduction to Beauty Sector and Services.

Session 2- Maintenance of work area.

Session 3- Preparing Client for Treatment. **Session 4-**

Sterilization and disinfection process **Session 5-**

Disposal of waste.

Session 6- Basic Skincare Services.

Session 7- Anatomy, Function and Types of Skin. **Session 8-**

Action of Facial, Neck and Shoulder Massage.

Session 9- Position of Face, Neck and Shoulder.

Session 10- Face Cleansing Method.

Session 11- Knowing correct beauty product.

Session 12- Safety Precautions (various skin conditions).

Session 13- Contraaction and client aftercare.

Session 14- Time Intervals for Facial or any Skin Application.

Session 15- Evaluation (Viva-Voce)

Mode of Evaluation: Project Submission & Viva-Voce.

Salesian College Sonada

(Autonomous) Assistant Beauty Therapist

Semester- II

Hour-30

Session-15

Credit-1

Objectives: This course intends to familiarize students with different types of equipments, materials, products and techniques.

Detailed Module

Session1-Introduction to Basic Waxing and Threading services.

Session2-Method of Waxing Treatment.

Session3-Method of Application and Removal of Waxing Products.

Session4-Direction of Hair Growth.

Session5-Precautionary measures during the waxing process.

Session6-Threading Services.

Session7-Determination of tools and materials during threading.

Session 8- Importance of using a Thread Design for Threading. **Session9**-Importance of services and record keeping.

Session10-Pedicures services.

Session11-Manicures services.

Session12-Anatomy, Function and Characteristics of Nail Growth.

Session13-Simple Makeup Services.

Session14-Identifying basic skin types and tones.

Session15-Evaluation (Viva-Voce)

Mode of Evaluation: Project submission & Viva-Voce.

Assessment

Formative Assessment: 50 marks (50% Weightage) as per Assessment & Evaluation Framework Document of Salesian College

Salesian College Sonada
(Autonomous)
Assistant Beauty Therapist

Semester- III
Hour-30
Session-15
Credit-1

Objectives

This course intends to familiarize students with different types of situation and build communication with the clients.

Detailed Module

Session 1- Maintenance of Health and safety in the workplace

Session 2- Health and Safety Measures in the Workplace

Session 3- Use of work equipments, control of substance hazardous to health

Session 4- Create positive impression in workplace

Session 5- Client's care and communication

Session 6- Providing clear recommendation to the client, maintain clients confidentiality

Session 7- Planning and organizing service feedback files documents

Session 8- Maintenance of accurate records of client's treatment and product stock levels

Session 9- Simple hair dressing Services

Session 10- Hair Structure and hair shaft structure

Session 11- Various hair accessories

Session 12- Handling customers privacy and modesty

Session 13- Simple Mehendi Services

Session 14- Factors impacting customers comfort and satisfaction

Session 15- Evaluation (Viva-Voce)

Salesian College Sonada
(Autonomous)
Assistant Beauty Therapist

Semester- IV
Hour-30
Session-15
Credit-1

Objectives:

This course empowers students to develop effective communication skills tailored for the workplace, while also familiarizing them with a range of tasks and services essential to professional success.

Detailed Module

- Session1.** Hair anatomy.
- Session2.** Structure of Hair; Hair growth cycle, different types of hair and hair conditions.
- Session3.** Hair care services.
- Session4.** Hair cutting methods and sectioning hair.
- Session5.** Tools and equipment's, maintenance and sanitation of cutting for hygiene and client safety.
- Session6.** Eyelash extension and Nail extension method (steps and equipment's)
- Session7.** Face bleach methods.
- Session8.** Time interval for face bleach, hair and skin application.
- Session9.** Hair prebleach Method.
- Session10.** Hair highlight: steps and equipment's.
- Session11.** Process of temporary and permanent Hair straightening.
- Session12.** Process of temporary and permanent Hair curl.
- Session13.** Styling after hair cutting: Blow drying and styling hair to enhance the finished look.
- Session14.** Utilize work equipment effectively to manage and control hazardous substances.
- Session15.** Evaluation (Viva-Voce)

Assessment

*Formative Assessment: 50 marks (50% Weightage) as per Assessment & Evaluation Framework
Document of Salesian College*

*Summative Assessment: 50 marks (50% Weightage) as per Assessment & Evaluation Framework
Document of Salesian College*

Course Faculty (Prepared By)	Dean (Approved By)
Name -	Name - <i>Terence Mucha</i>
Signature -	Signature -  DEAN Arts, Humanities & Social Sciences Salesian College Sonada (Autonomous) Darjeeling, WB - 734 209


CO-ORDINATOR
Internal Quality Assurance Cell
Salesian College Sonada (Autonomous)
Darjeeling, WB - 734 209

Concurrent Wellness Internship Allotment

2024 - Even Semester

Sl No	Students Name	Batch	School Name
1.	Kritika Pradhan (L)	1 st MSc	Auxilium, New Chamta
2.	Aakansha Singh	4 th BA	Auxilium
3.	Sanjana Rashaily	4 th BA	Auxilium
4.	Samikcha Pandey	4 th BA	Auxilium
5.	Tanisha Agarwal(L)	1 st M Sc	St Mary's School, Pradhan Nagar
6.	Pragya Rai	4 th BA	St Mary's School
7.	Dipashna Rai	4 th BA	St Mary's School
8.	Annaneha Rai	4 th BA	St Mary's School
9.	Supriya Sah(L)	1 st M Sc	Nishkalanga Mata School
10.	Rishabh Ghosh	1 st M Sc	Nishkalanga Mata School
11.	Lobsang Droma Lama	4 th BA	Nishkalanga Mata School
12.	Sriya Mukhia	4 th BA	Nishkalanga Mata School
13.	Bhawana Jain	4 th BA	Nishkalanga Mata School
14.	Sarwada Thapa	4 th BA	Nishkalanga Mata School
15.	Nimsang Lama (L)	1 st MSc	St Mary's School, Gaya Ganga
16.	Ishika Saha	4 th BA	St Mary's School
17.	Koyena Paul	4 th BA	St Mary's School
18.	Ani Thapa	4 th BA	St Mary's School
19.	Tanisha Sarkar	4 th BA	St Mary's School
20.	Khushi Das	4 th BA	St Mary's School
21.	Na-Atcha Sammuk Limboo (L)	1 st M Sc	St Peter's School Gaya Ganga
22.	Sasank bhujel	4 th BA	St Peter's School
23.	Sumit Kumar Sarki	4 th BA	St Peter's School
24.	Samtenla Lepcha	4 th BA	St Peter's School
25.	Santabir Tamang	4 th BA	St Peter's School
26.	Rajashree Kargupta (L)	1 st M Sc	St Vincent's School, Hatighisa
27.	Tarun Saha	4 th BA	St Vincent's School
28.	Elizabeth Lalngaihawmi	4 th BA	St Vincent's School
29.	Faustina R. Lepcha	4 th BA	St Vincent's School
30.	Suhani rai	4 th BA	St Vincent's School
31.	Shreya Pradhan	4 th BA	St Vincent's School
32.	Anuradha Sharma (L)	1 st M Sc	Nirmala School, Siliguri
33.	Sushmita Chowhan	4 th BA	Nirmala School
34.	Astha Bhujel	4 th BA	Nirmala School
35.	Sanskriti Rai	4 th BA	Nirmala School
36.	Deepisha Roy (L)	1 st MSc	Amarpati Lions School
37.	Pratistha Acharya	4 th BA	Amarpati Lions School
38.	Karma Namgyal Bhutia	4 th BA	Amarpati Lions School

39.	Preetika Agarwal	1 st M Sc	Amarpati Lions School
40.	Bhaskar Roy	4 th BA	Amarpati
41.	Mohammed Asif	4 th BA	Amarpati
42.	Gitanjali Das	4 th BA	Amarpati
43.	Nivedita Pradhan (L)	1 st MSc	St Joseph's School Matigara
44.	Shiksha Biswakarma	4 th BA	St Joseph's School Matigara
45.	Suchana Neogi	4 th BA	St Joseph's School Matigara
46.	Bipashna Lohar	4 th BA	St Joseph's School Matigara
47.	Swekcha Gurung	4 th BA	St Joseph's School Matigara
48.	Sanskriti Gurung (L)	1 st MSc	St Joseph's School Bhakti Nagar
49.	Qventon Warwick Roberts	4 th BA	St Joseph's School Bhakti Nagar
50.	Kuenzang Selden Bhutia	4 th BA	St Joseph's School Bhakti Nagar
51.	Nirjara Singh	4 th BA	St Joseph's School Bhakti Nagar
52.	Sruti Roy	4 th BA	St Joseph's School Bhakti Nagar
53.	Mahima Thami (L)	1 st M Sc	Himalayan School
54.	Ayush Rai	4 th BA	Himalayan School
55.	Ushasi Mukherjee	4 th BA	Himalayan School
56.	Tenzin Choyang	4 th BA	Himalayan School
57.	Nim Dolma Gurung (L)	1 st MSc	Lincon School
58.	Swarnavo Gune	4 th BA	Lincon School
59.	Nazia Noor	4 th BA	Lincon School
60.	Dipanjali Pandey	4 th BA	Lincon School

Number of students in each school

1. Auxilium School New Champta- 4
2. St Mary's School Pradhan Nagar-4
3. Nishkalanga Mata School, Bagdogra-5
4. St Mary's School, Gaya Ganga-6
5. St Peter's School Gaya Ganga-6
6. St Vincent's School, Hatighisa-6
7. Nirmala School- 4
8. Amarpati Lions School-7
9. St Joseph's School Matigara-5
10. St Joseph's School Bhakti Nagar-5
11. Himalayan School-4
12. Lincon School-4

Internship reports should be submitted **on every Saturday** following **the Friday of internship Groups-** the leader should post it in the Google Drive provided.

Individual internship should be emailed to the respective faculty incharge of internship in word format with your name and date of internship as file name.

Eg: Ayush 12-04-24. If email is found without proper file it will not be evaluated.

Those who fail to submit internship report on time may be denied of internship certificate.

Individual Internship Report submission and supervising faculty details:

All 2nd semester M Sc Psychology interns **submit reports to assigned faculties and they will be the supervisors**

Ms Agnimita Mitra, agni.psy2@ salesiancollege.net,

Ms Sagarika Roy, sagarikaroy343@salesiancollege.net

Dr Prince C P, cfrancisam@gmail.com

4th semester BA Psychology interns should submit to Ms Rubina, Ms Samanta and Dr Prince based on the schools and number of interns as follows;

School and number of interns	Faculty name and email ID
Nirmala School- 3 Amarpati Lions School-5 St Joseph's School Matigara-4 Himalayan School-3	Ms. Rubina Chettri chhetrirubina65@gmail.com
St Joseph's School Bhakti Nagar-4 Lincon School-3 Auxilium School New Champta- 3 St Mary's School Pradhan Nagar-3	Ms. Samanta Gurung samantagurung.sg@gmail.com
Nishkalanga Mata School, Bagdogra-4 St Mary's School, Gaya Ganga-5 St Peter's School Gaya Ganga-4 St Vincent's School, Hatighisa-5	Dr Prince C P cfrancisam@gmail.com

Very Important Notice

All individual cases taken should be discussed with the respective faculty supervisor prior to intervention, failing which such intern's internship will be summarily cancelled.

(Further revisions will be made if any major logistics issues are identified).

S/d

Head, Department of Psychology

Revised on 13th April 2024

Course Description:

Course Code	23EDUSEC101	
Course Title	SKILLS OF TEACHING	
Credits	03	
Total Hours	60	
Hours per Week	04	
Course Type	Skill Enhancement Course (SEC)	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed	Professional Ethics	
Course Offered to	Education	
Regulation	2023	
Course Overview	This course: • Covers the basic concepts of Micro teaching. • Explains the different steps involved in Micro teaching. • Discuss different micro teaching skills, simulated teaching and learning design. • Develop lesson plan for the micro teaching, preparation of learning design.	
Prerequisite	Basic knowledge on Skills of teaching, Micro teaching, simulated and learning design	
Course Objectives	A student will be able to: • Understand the concept of Micro teaching • Discuss the different steps involved in Micro teaching. • Explain the different Micro teaching skills. • Analyze the importance of simulated teaching. • Develop the micro lesson plan and learning design.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Define the concept of Micro teaching.	R
CO2	Discuss the steps involved in micro teaching.	U

CO3	Explain different Micro teaching cycles.	A1	
CO4	Analyze the simulated teaching and learning design.	A2	
CO5	Evaluate the learning design.	E	
CO6	Develop a micro lesson plan and develop a learning design on a topic suitable for Grade 6.	C	
Course Content			
Units	Content	Lecture Hours	COs
Unit I	Concept of Micro teaching - Meaning, definition and characteristics of Microteaching. - Phases and steps involved in Micro teaching. - Micro teaching cycle. - Micro teaching skills with emphasis on - - Set induction - Probing questions - Stimulus variation - Explaining - Examples with illustrations - Reinforcements.	15	CO1 CO 2 CO 3 CO 4 CO 5 CO 6
Unit II	Simulated teaching and learning design - Meaning, characteristics and importance of simulated teaching. - Meaning nature and types of learning design. - Preparation of learning design.	15	CO1 CO2 CO3 CO4 CO5 CO6

Practical (any two)	a) Preparation and execution of Micro-lesson plan: (one) Micro Lesson plan for the micro teaching skills taught b) Teaching simulation of (two lessons) secondary level curriculum in any school subject of your choice c) Preparation of (five learning designs) in any school subject of your choice.	30	CO6

Learning Resources:

Text Books -

1. Banerjee, K. & Deb, N.C. (2020). Pedagogy of Social Science. Rita Publications., Kolkata.
2. Rambabu, A. & Dandapani, S. (2013), Essentials of Micro teaching. Neelkamal Publications Pvt.Ltd., New Delhi.

Suggested readings -

1. Mangal, S.K. & Uma. (2009) Essentials of Educational Technology. PHI Learning Private Publication House Pvt. Ltd., New Delhi.
2. Rao, Usha. (2008) Educational Technology. Himalaya Publishing House Pvt Ltd., Mumbai.
3. Aggarwal, J.C. (1995). Essentials of Educational Technology: Teaching Learning Innovations in Education. Vikash Publication House Pvt. Ltd., New Delhi.
4. Mohanty, J. (1992) Educational Technology. Deep & Deep Publication Pvt. Ltd., New Delhi.
5. Bala, R. (2009) Educational Planning and Development. Bhat Alpha Publications Pvt. Ltd., New Delhi.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Criteria for Evaluation

Sl	Criteria	Full Marks	Marks obtained
1	Choice of location/Field	5	
2	Relevance of the visit	5	
3	Duration	5	
4	Report	25	
5	Findings/Learnings/Observations	5	
6	Methodology & Analysis	5	
	TOTAL	50	

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Moushumi Bhattacharjee Signature:	Name: Vivechana Dewan Signature:	Name: Ranita Chakrabortt y Signature:

Course Description:

Course Code	23EDUSEC102	
Course Title	PEDAGOGY OF SOCIAL SCIENCE	
Credits	03	
Total Hours	60	
Hours per Week	04	
Course Type	Skill Enhancement Course (SEC)	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed	Professional Ethics	
Course Offered to	Education	
Regulation	2023	
Course Overview	This course: ● Explain the foundations of teaching Social Science (Education, History, Sociology, Political Science, Psychology). ● Aids in planning for teaching and learning of Social Science (Education, History, Sociology, Political Science, Psychology). ● Elaborates on constructing appropriate learning designs in Social Science. ● Engages the student in actively participating in various activities pertaining to the pedagogy of social science.	
Prerequisite	Basic knowledge of: ● instructional psychology. ● social science content suitable for the age group of 11 to 18 years old.	
Course Objectives	A student will be able to: ● Describe the aims and objectives of Social Science Teaching. ● Present the interrelationship between various branches of Social Science Teaching. ● List the various Teaching Aids used in Social Science. ● Understand Anderson and Krathwohl’s Taxonomy for teaching and assessing. ● Analyze and evaluate the importance of Learning Design in Social Science. ● Develop a report based on a field trip to a place of significance with regard to any subject in social science.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Write the aims and objectives of Social Science Teaching.	R
CO3	Recall the various Teaching Aids used in Social Science.	

CO4	Illustrate using suitable examples Anderson and Krathwohl’s Taxonomy for teaching and assessing.	U		
CO2	Predict the interrelationship between various branches of Social Science Teaching.	A1		
CO5	Analyze the importance of Learning Design in Social Science. Evaluate learning designs in Social Science	A2 E		
CO6	Construct Learning Design in any Social Science subject. Prepare improvised Teaching Aids in any Social Science subject. Develop a report based on a field trip to a place of significance with regard to any subject in social science.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Foundations of Social Science Teaching (Education, History, Sociology, Political Science, Psychology) a) Aims and objectives of Social Science Teaching. b) Social Science Curriculum, Values of Social Science Teaching. c) Interrelationship between various branches of Social Science d) Importance of Social Science as a school discipline	15	CO1 CO2	R U A1 A2 E C
Unit II	Planning for Teaching & Learning Social Science (Education, History, Sociology, Political Science, Psychology) a) Teaching Aids in Social Science b) Anderson and Krathwohl’s Taxonomy for Teaching and Assessing c) Criteria for Writing Instructional Objectives d) Learning Design in Social Science	15	CO3 CO4 CO5 CO6	R U A1 A2 E C
Engagement with Field / Practicum (ANY TWO)	a. Preparation and demonstration of Learning Design (any 2) in any social science subject. b. Organization of field trip to a place	30	CO6	R U A1 A2 E

	of importance according to the relevant subject under social science, collection of data and report writing and presentation of the report. c. Development of Improvised Teaching Aids to teach a topic on a relevant subject area with principles of construction, use and studying its effectiveness.			C

Learning Resources:

Text Books -

1. Aggarwal, J.C. (2006). Teaching of Social Studies: A Practical Approach. Vikas Publishing House Pvt Ltd, New Delhi.
2. Kochar, S.K. (1998). The Teaching of Social Studies. Sterling Publishers, New Delhi.
3. Mangal, S.K. & Mangal, Uma (2018). Teaching of Social Studies. PHI Private Limited, New Delhi.

Suggested readings -

1. Dash, B.N. (2002). Content cum Methods of Teaching Social Studies. Kalyani Publishers, New Delhi.
2. Kohli, A.S. (2004). Teaching of Social Studies. Anmol Publications, New Delhi.
3. Paul, S. (2004). Effective Methods of Teaching Social Studies. ABD Publishers, Jaipur.
4. Saxena, N.R. and et. al. (2003). Teaching of Social Science. R. Lall Book Depot, Meerut.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

SI	Criteria	Full Marks	Marks obtained
1	Choice of location/Field	5	
2	Relevance of the visit	5	
3	Duration	5	
4	Report	25	
5	Findings/Learnings/Observations	5	
6	Methodology & Analysis	5	
	TOTAL	50	

Criteria for Evaluation

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Ranita Chakrabortty Signature:	Name: Vivechana Dewan Signature:	Name: Ranita Chakrabortty Signature:



Salesian College(Autonomous)
Sonada - Siliguri

Bachelor of Arts in History and Tourism

As per National Education Policy – 2020 guidelines

Salesian College(Autonomous)
Siliguri, West Bengal

U.G PROGRAMME

1st and 2nd Semester

COURSE INTRODUCTION

History is the study of change over time. It covers all aspects of human society. History deals with all aspects of the human past e.g., political, social, economic, scientific, technological, medical cultural, intellectual, religious, military etc. History involves the analysis and interpretation of the human past thereby enabling us to study continuity and changes that are taking place over a time. It is an act of both investigation and imagination that seeks to explain how people changed over time. Historians use all forms of evidence to examine, interpret, revisit, and reinterpret the past. These include not just written documents, but also oral communication and objects such as buildings, artifacts, photographs, and paintings. Historians are trained in the method of discovering and evaluating these sources and the challenging task of making historical sense out of them. Historical discourse gives an understanding of the past which enables us to appreciate our present and shape our future. Besides, history provides background information for other disciplines of social science and humanities.

MISSION AND VISION

MISSION

To prepare students for a range of career paths, including academia, education, public service, law, journalism, cultural heritage as well as in Research.

To strive for quality education in keeping with the motto of the college, “Excellence in Education” and prepare young minds for imbibing knowledge, skills, and sensitivity.

To educate and enable the students for both livelihood and for whole life in the near future.

To provide the students ample opportunities for them to unlock their fullest potential and caliber in all realms

VISION

To help students understand and appreciate the significance of history in shaping our lives and society, making history accessible and interesting to everyone

To provide affordable quality education, while equipping students with knowledge and skills in their chosen stream, inculcate values, identify hidden talents, provide opportunities for students to realize their full potential, and thus shape them into future leaders, entrepreneurs, and above all good human beings.

To intellectually instill in the students the immense importance of history and also to invoke their critical thinking, public speaking, and all-round holistic skills. So that they go out to carry their social responsibilities as the college's Latin motto enshrines, as 'a bright and shining flame' (Flamma Ardens Et Lucens).

PROGRAMME MATRIX

SEMESTER 1 (HISTORY)

	COURSE CODE	COURSE TITLE
1	24HISMAJ101	ANCIENT INDIA I (EARLIEST TIMES TO 6TH CENTURY BCE)
2	24TRMMAJ101	INTRODUCTION TO TRAVEL AND TOURISM
3	24HISSEC101	INDIAN PAINTINGS
4	24HISMDC101	FREEDOM STRUGGLE IN NORTH BENGAL
5	24HISVAC101	MUSEUM STUDIES
6	24AECENG101	
7	24AECEVS101	

SEMESTER II

	COURSE CODE	COURSE TITLE
1	24HISMAJ102	ANCIENT INDIA II (6TH CENTURY BCE TO 7TH CENTURY CE)
2	24HISMAJ103	SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE ANCIENT AND MEDIEVAL WORLD
3	24TRMMAJ102	TOURISM RESOURCES & PRODUCTS
4	24TRMMAJ103	TRAVEL AGENCY MANAGEMENT AND TOUR OPERATIONS
5	24TRMMDC101	CONCEPT AND IMPACTS OF TOURISM
6	24TRMSEC101	INFORMATION TECHNOLOGY FOR TOURISM
7	24SCSVED101	VALUE EDUCATION

Assessment

- i. *Formative Assessment*: 50 marks as per the Assessment & Evaluation Framework Document of Salesian College
- ii. *Summative Assessment*: 50 marks
 - a) Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks, 2 marks each)
 - b) Four Questions to be answered out of six given from the lower order of RBT
 - a) Two Long Questions to be answered out of Four set from higher order of RBT – (30 Marks).
 - b) Summative Assessment Time: 2 Hours for pen and paper test

Course Title	FA1	FA2	FA3	SUMMATIVE ASSESSMENT	RESULT
	10 MARKS	60 MARKS(DIVIDED BY 2 IN MARKSHEET)	10 MARKS	50 MARKS	
	Objective type	Pen and Paper	Assignment/Projects/Paper Presentation	Pen and Paper	

Course Content Template

Course Code	24HISMAJ101
Course Title	ANCIENT INDIA I (EARLIEST TIMES TO 6TH CENTURY BCE)
Credits	04
Lecture Hours	60
Hours/Week	4
Category	Major Core
Semester	I
Regulation	2024
Course Overview This course covers the history of the Indian subcontinent from the earliest times to 6 th Century BCE. It will focus on the development of civilizations, major historical events, cultural transformations, and socio-economic structures. Therefore, the syllabus:- ● Covers the basic concept of "Ancient Indian Civilization: Origins and Historical Sources" ● Explain a comprehensive exploration of the early roots and development of Indian Civilization, spanning from prehistoric times to 6TH Century BC	

- Discuss a deep understanding of the diverse aspects of ancient Indian society, including its political structures, cultural traditions, religious practices, economic systems, and technological advancements, and focuses on the examination and analysis of various historical sources and methodologies employed in studying this period.
- Enables students to critically evaluate and interpret the historical narrative of ancient India

Course Objectives:

The students will be able to –

- Understand and develop a comprehensive of the origins and evolution and the chronological development of ancient Indian civilization. Familiarizing with diverse historical sources, including archaeological findings, inscriptions, literary texts, and accounts by foreign travellers and historians. Introduce various methodologies used in the study of ancient Indian history, including textual analysis, archaeological research, and interdisciplinary approaches.
 - Discuss the concept of geographical, environmental, and cultural factors that shaped ancient Indian societies.
 - Explain the political systems and governance structures of ancient India, from early tribal communities to complex kingdoms and empires. Investigate the economic activities, trade networks, agrarian practices, and technological advancements that contributed to the growth of ancient Indian civilization.
 - Analyse the religious and philosophical traditions of ancient India, including the major schools of thought such as Hinduism, Buddhism, Jainism, and other indigenous belief systems.
 - Develop critical thinking and analytical skills through the examination and interpretation of primary and secondary sources.
- Encourage students to engage in discussions, debates, and independent research on significant historical issues and interpretations related to ancient Indian civilization.
- Evaluate the contributions of ancient India to world civilization.
- Develop critical thinking and analytical skills through historical inquiry.

Prerequisites:

The course is divided into weekly modules, each covering different periods and aspects of early Indian history. Each module includes lectures, readings, discussions, and assessments aligned with the RBT model.

Syllabus

UNITS	CONTENT	Cos	REVISED BLOOM's TAXONOMY
UNIT -1	Introduction to Ancient Indian Civilization	CO 1 CO2	R U
UNIT-2	Historical Sources and Methodologies: Debates	CO 2 CO8	A2 E
UNIT-3	Prehistoric cultures and early settlements in the Indian subcontinent and Interpretations.	CO3 CO8	R E
UNIT-4	Indus Valley Civilization	CO4 CO8	A2 E
UNIT -5	The Vedic Age	CO5 CO8	U A1
UNIT-6	The Rise of Kingdoms and Mahajanapadas	CO6 CO8	A2 C

UNIT-7	Jainism and Buddhism	CO7 CO8	E A2

Course Outcomes (Cos) and Cognitive Level Mapping		
At the end of this course, the students will be able to		
Cos	STATEMENTS	REVISED BLOOM's LEVELS
CO 1 CO2	Remember the key concepts and terminology. Understand the significance of studying ancient Indian civilization	R U
CO2 CO8	Analyze the different historical sources and their methodologies. Evaluate the Debates and interpretations in historical methodologies.	A2 E
CO3 CO8	Remember the characteristics of prehistoric cultures. Evaluate the Interpretations of early settlements.	R E
CO4 CO8	Analyze the Urban planning, socio-economic structures, and key features. Evaluate the significance and decline of the Indus Valley Civilization.	A2 E
CO5 CO8	Understand: The development and characteristics of the Vedic society. Apply the Social, political, and religious aspects of the Vedic Age.	U A1
CO6 CO8	Analyze the political and economic transformations during this period. Compare: Different kingdoms and Mahajanapadas.	A2 C
CO7 CO8	Evaluate the principles and spread of Jainism and Buddhism. Examine the impact on ancient Indian society.	E A2

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Suggested Books

- Agrawal, D.P., The Archaeology of India.
- Basham, A.L., The Wonder That Was India.
- Chakrabarti, D.K., Archaeology of Ancient Indian Cities.
- Jaiswal, Suvira Caste: Origin, Function and Dimensions.
- Subramanian, N. Sangam Polity.
- Allchin, F.R. and B., Origins of a Civilization: The Prehistory and Early Archaeology of South Asia.
- Jha, D.N., Ancient India in Historical Outline (1998 ed
- Kosambi, D.D., Culture and Civilization of Ancient India.
- Romila Thapar. "Early India: From the Origins to AD 1300".
- Sharma, R.S., Aspects of Political Ideas and Institutions in Ancient India (1991 ed.).
- Sharma, R.S., India's Ancient Past
- Upinder Singh., A History of Ancient and Early Medieval India: From the Stone Age to the 12th

Assessment

- iii. *Formative Assessment:* 50 marks as per the Assessment & Evaluation Framework Document of Salesian College
- iv. *Summative Assessment:* 50 marks
 - c) Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks, 2 marks each)
 - d) Four Questions to be answered out of six given from the lower order of RBT
 - e) Two Long Questions to be answered out of Four set from higher order of RBT – (30 Marks).
 - f) Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (prepared by)	Head of the Department (Checked and verified)	Dean (Approved by)	Subject Expert (Approved by)
Name- Manisha Pradhan Signature	Name- Dr. Gouri Dey Signature	Name- Mr. Ravi Bhushan Singh Signature-	Name- 1. Prof Madhab Chandra Adhikary- 2. Dr. Sudash Lama-

			3. Dr. Binayak Sundas 4. Mr. Soumendra Prosad Saha 5. Dr. Malay Saha

1. Course Description

Course Code	24TRMMAJ101	
Course Title	INTRODUCTION TO TRAVEL AND TOURISM	
Credits	04	
Total Hours	60	
Hours per Week	4-5	
Course Type	Major	
Semester	I	
Intended Level	DEGREE	
Issue(s) Addressed	Understanding Tourism Concept	
Course Offered to	BA History and Tourism	
Regulation	2024	
Course Overview	This course: a) Covers concept of tourism b) Explains the need of tourism promotion in present era c) Explains the roles of various bodies supporting tourism	
Prerequisite	Basic knowledge of tourism	
Course Objectives	A student will be able to: a) understand the significance of tourism b) appreciate the need for tourism promotion. c) learn about the diversified resources of India.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Define tourism and its types.	R
CO2	Discuss the significance of tourism.	U
CO3	Classify the various sources affecting tourism.	A1
CO4	Analyse the need of Information Technology in tourism.	A2
CO5	Defend the need of various bodies supporting the growth of tourism.	E

Course Content				
Units	Content	Lecture Hours	Cos	RBT
Unit I	Introduction to Tourism a) Definitions – Tourism, Tourist/Traveller. b) Basic Components of Tourism, Elements of Tourism. c) Types of Tourism – Business tourism, Mass Tourism, Cultural Tourism and Heritage, Environmental Tourism, Medical tourism.	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit II	Significance of Tourism a) Cultural Tourism in India – Heritage Sites in India – World UNESCO Sites. b) Types of Cultural Tourism - Travel Circuits : Golden Triangle, Desert Circuit, Buddhist Circuits, Backwaters, Sun and Sand - Indian Railways and Special c) Tourism Sustainability – Basic Strategies – Environment Impact Assessment (EIA) – Geographic Information System (GIS) and its Application in Tourism.	15	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit III	Impacts of Tourism a) Socio – Cultural, b) Economic, c) Environmental and Physical aspects. d) Role of International and Domestic tourism organization (UNWTO, UFTAA, IATA, ICAO, PATA, ASTA, DoT, TAAI, HAI, FHRAI, Travel Clubs, etc.).	15	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit IV	Tourism and Contemporary Issues a) Role of Information Technology in Tourism Development. b) Future Trends in Tourism. c) Human Rights and Tourism	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit V	Tourism Administration a) Tourism Administration in India – Ministry of Tourism (Government of India) – National Tourist Organisation (NTO) – World Tourism Day. b) India Tourism Development Coportaion – West Bengal Tourism Development Corporation. c) Incredible India - Brand Ambassadors of Tourism Promotion	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Learning Resources: 1. A.M.A, Barkat(2015). <i>Travel and Tourism Management</i> . Prentice Hall India Learning, New Delhi. 2. J. Page. Stephen (2015). <i>Tourism Management</i> . Routledge, New York.				

3. Kumar, Choudhary, Aditi (2017). *Introduction to Tourism & Hospitality*. CreateSpace Independent Publishing Platform,.
4. Sharma, Kshitiz (2017), *Introduction to Tourism Management*. McGraw Hill Education, New Delhi.
5. Walker, John R. (2017) *Introduction to Hospitality*, Pearson, London

R: Remembering, U: Understanding, A1: Applying, A2: Analyzing, E: Evaluating, C: Creating

Formative Assessment: 50 marks as per Assessment & Evaluation Framework Document of Salesian College

Summative Assessment: 50 marks

- a. Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks)
- b. Four Long Questions to be answered out of six given from mid order of RBT – (20 Marks)
- c. Two Essay Questions to be answered out of four from higher order of RBT – (20 Marks). Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)	Subject Expert (Approved by)
Name: Ms. Aparna Moktan Signature:	Name: Dr. Gouri Dey Signature:	Name: Mr. Ravi Bhushan Singh Signature:	Name- Fr(Dr) Babu Joseph Dr. Sudash Lama

SKILL ENHANCEMENT COURSE

HISSEC101

Core Course	24HISSEC101
Course Title	INDIAN PAINTINGS
Credits	3

Hours/Week	3 hours
Category	Skill Enhancement Course
Semester	1
Regulations	2024

Course Learning Outcomes

After completion of the course, the students will able to-

1. Understanding the evolution of Indian Paintings and its traditions
2. To develop an understanding of prehistoric and protohistoric art like rock art and Harappan art.
3. acquainted with the traditions of Indian art including paintings, manuscripts, and mural painting and its forms.
4. Understand Rajasthani, Pahari, Deccan, Sultanate, and Mughal painting
5. Gain modern and contemporary Indian art and architecture like the colonial period art movements, Bengal School of Arts, etc.
6. Gain knowledge about regional art.

Course Objectives

1. To develop an understanding of prehistoric and protohistoric art like rock art and Harappan art.
2. To know about Indian art in temples manuscripts and mural painting traditions, etc between c. 600 CE and 1200 CE.
3. To know about the Sultanate and Mughal a painting including Rajasthani, Deccan and Pahari traditions.
4. To learn modern and contemporary Indian art like the colonial period art movements, Bengal School of Arts, etc.
5. To learn about regional art

PREREQUISITES: The Course will cover a long history that began with cave paintings and has progressed via ceramics, textiles, miniature paintings, and eventually modern paintings. The

range of painting styles in different sections of the country reflects the country's cultural diversity, with culture and livelihood serving as themes for paintings that were later dominated by religion. The course is selective, specific, and focused on the highlights and salient features of Indian art, both traditional and modern.				
UNITS	CONTENT	LECTURE HOURS	COs	CLs
1	History of Indian Paintings a. Prehistoric and protohistoric art like rock art and Harappan art. b. Tradition of Indian Art	15	CO1 CO2	U R
2	Paintings in Ancient and Medieval Periods a. Temples art b. Monasteries art c. Pahari Paintings d. Sultanate paintings e. Mughal Paintings f. Rajput Paintings g. Deccan Paintings	15	CO3	U A1 & A2
3	Bengal School of Art and Regional Paintings a. Colonial Paintings b. Kalighat Paintings c. Swadeshi paintings and painters d. Bengal School of Art and Movement. e. Regional Paintings of Sub Himalayan region	15	CO4 CO5	U A1 & A2

References-

1. Neumayer, Erwin, Lines of Stone: The pre-historic rock-art of India, South Asia Books, 1993.
2. Goswamy, B.N., Essence of Indian Art, Asian Art Museum of San Francisco, 1986.
3. Huntington, Susan, The Art of Ancient India: Hindu, Buddhist, Jain, Weatherhill, 1985.
4. Guha-Thakurta, Tapati, The making of a new modern Indian art: Aesthetics and nationalism in Bengal, 1850-1920, Cambridge University Press, 1992
5. Mitter, Partha, Indian Art, Oxford History of Art series, Oxford University Press, 2001.
6. Dhar, Parul Pandya, ed., 2011, Indian Art History Changing Perspectives, New Delhi: D.K. Printworld and National Museum Institute (Introduction).

7. Ray, Niharrranjan, An Approach to Indian Art, Calcutta, 1970.

COURSE OBJECTIVES	STATEMENTS	REVISED BLOOM'S TAXONOMY
CO1	1. Explain the history of pre and proto-Historic art 2. Discuss Harappan art forms	U
CO2	Identify the different types of paintings in Temples and Monasteries.	R
CO3	A. Construct the history and types of Sultanate Paintings B. Outline the different types and themes of Mughal paintings C. Categorize different schools and themes of Rajput and Pahari paintings	U&A2
CO4	A. Categorize the different painters of the Bengal School of Art B. Show how the Bengal School of art helped arouse National Consciousness among the Indians	A1 &A2
CO5	Discuss the development of Regional Art of North Bengal	U

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Assessment

- v. *Formative Assessment:* 50 marks as per the Assessment & Evaluation Framework Document of Salesian College
- vi. *Summative Assessment:* 50 marks
 - g) Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks, 2 marks each)
 - h) Four Questions to be answered out of six given from the lower order of RBT
 - i) Two Long Questions to be answered out of Four set from higher order of RBT – (30 Marks).
 - j) Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (prepared by)	Head of the Department (Checked and verified)	Dean (Approved by)	Subject Expert (Approved by)
Name- Dr. Gouri Dey Signature	Name- Dr. Gouri Dey Signature	Name- Mr. Ravi Bhushan Singh Signature-	Name- 1. Prof Madhab Chandra Adhikary- 2. Dr. Sudash Lama- 3. Dr. Binayak Sundas 4. Mr. Soumendra Prosad Saha 5. Dr. Malay Saha

HISMDC101

Core Course	24HISMDC101
Course Title	FREEDOM STRUGGLE IN NORTH BENGAL
Credits	3
Hours/Week	3
Category	Multidisciplinary Course (MDC)
Semester	1
Regulations	2024

Course Objectives

- 1.To help the students to understand the Geo-political profile of North Bengal.
- 2.To help the students to Understand the History of North Bengal in Colonial India.
- 3.To help the students understand the Sannyasi, Fakir, and Tribal Rebellions, Swadeshi, Non-Cooperation, Civil Disobedience, and Quit India Movement in North Bengal.
- 4.To make the students understand the role of the people of North Bengal in the Freedom Movement of India.

Course Learning Outcomes**After completion of the course, the students will able to**

1. To identify the role of Unsung freedom fighters of North Bengal.
2. Understand the History of North Bengal in Colonial India.
3. To know about the Sannyasi, Fakir, and Peasants Rebellions in North Bengal.
4. Acquire knowledge of the Freedom struggle of North Bengal
- 5.To understand the geopolitical profile of North Profile.

PREREQUISITES: The Course is to make students aware of the history of North Bengal during colonial rule and the part played by the region during the freedom movement. A brief biography of unsung freedom fighters of North Bengal is included to highlight the regional history.

UNITS	CONTENT	LECTURE HOURS	Cos	CLs
1	History of North Bengal c. Geo-political profile of North Bengal d. Conquest and expansion of British Rule in North Bengal	15	CO1 CO2	R U
2	Freedom Struggle in North Bengal h. Sannyasi and Fakir Movement. i. Tribal Revolts, Role of Rajbanshi in freedom struggle j. Swadeshi Movement, Non-Co-operation Movement, Civil	15	CO3	U A1& A2

	Disobedience Movement, Quit India Movement.			
3	Unsung Freedom Fighters of North Bengal f. Debi Chaudharani g. Bhawani Pathak h. Jitu Santhal i. Birendranath Dasgupta. j. Dal Bahadur Giri k. Gaga Tshering Dukpa l. Helen Lepcha m. Putalimaya Devi Poddar	15	CO3 CO4	U A1& A2

References-

8. R. C. Majumdar, History of Bengal (Modern Age), 1978.
9. Subhajyoti Ray, Transformations on the Bengal Frontier, Routledge Curzon, London, 2002.
10. Ranajit Das Gupta, Economy, Society and Politics in Bengal: Jalpaiguri, 1869-1947, Oxford, New Delhi, 1992.
11. Swaraj Basu, Dynamics of a Caste Movement: The Rajbansis of North Bengal, 1910-1947, Monohar, Delhi, 2003.
12. Manas Dasgupta, Economic History of North Bengal, University of North Bengal, Siliguri, 2010
13. B. P. Misra, The Sannyasi Rebellion: The Sociology and Economics of Conflicts in Sub-Himalayan Bengal, University of North Bengal, 1985.
14. E.C. Dozey, A Concise History of Darjeeling Since 1835, N.L. Publishers, Siliguri, 2011 (reprint).
15. Sailen Debnath, Social and Political Tension in North Bengal
16. Rup Kumar Barman, From Tribalism to State: Reflections on the Emergence of Koch kingdom.
17. Dey, Gouri, Savitri Devi alias Helen Lepcha's Memoir as a freedom fighter from Eastern Himalayas- (Darjeeling) in UGC Care Journal.
18. Dey, Gouri, Freedom movement and Darjeeling: Putalimaya Devi Poddar an unsung female freedom fighter, article in Itihas Darpan, UGC Care Journal, ISSN-0974-3065, 2022 vol xxvii.

COURSE OBJECTIVES	STATEMENTS	REVISED BLOOM'S TAXONOMY
CO1	Explain the geo-political profile of North Bengal?	U
CO2	Define the process of British expansion in North Bengal	R
CO3	D. Explain the different movement against colonial rule in North Bengal	U&A2

	E. Outline the causes of different movements in North Bengal	
CO4	C. Classify the names of different freedom fighters of North Bengal D. Defend why the freedom fighters of North Bengal are still unheard in the historical context	A1 & A2

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Assessment

- vii. *Formative Assessment:* 50 marks as per the Assessment & Evaluation Framework Document of Salesian College
- viii. *Summative Assessment:* 50 marks
 - k) Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks, 2 marks each)
 - l) Four Questions to be answered out of six given from the lower order of RBT
 - m) Two Long Questions to be answered out of Four set from higher order of RBT – (30 Marks).
 - n) Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (prepared by)	Head of the Department (Checked and verified)	Dean (Approved by)	Subject Expert (Approved by)
Name- Dr. Gouri Dey Signature	Name- Dr. Gouri Dey Signature	Name- Mr. Ravi Bhushan Singh Signature-	Name- 1. Prof Madhab Chandra Adhikary- 2. Dr. Sudash Lama- 3. Dr. Binayak Sundas 4. Mr. Soumendra Prosad Saha 5. Dr. Malay Saha

Core Course	24HISMDC102
Course Title	HISTORY OF INDIAN ART AND ARCHITECTURE
Credits	3
Hours/Week	3
Category	Multidisciplinary Course (MDC)
Semester	2
Regulations	2023

Course Objectives

1. To develop an understanding of prehistoric and protohistoric art like rock art and Harappan art.
2. To be acquainted with the traditions of Indian art including painting and architecture between c. 600 BCE and 600 CE. (Temple and Monasteries architecture)
3. To make the students understand the icons and methods of their making are dealt to understand the ancient knowledge pertaining to the art of building and aesthetics
4. To know about Sultanate and Mughal architecture including Rajasthani architecture(Havelis, Forts, Baoris)
To learn modern and contemporary Indian art and architecture in the colonial period

PREREQUISITES: This course will cover Indian subcontinental artistic and architectural heritage over 4500 years from the time of the Indus Valley Civilization to the present day. The course then more substantially engages with how histories grounded in visibility or a visual culture intersect with such diverse concerns as community and state formation, the exercise of sovereignty and power, religiosity, patronage, travel, colonialism, populism and nationalism. In this course, we will not only examine how visual artifacts such as paintings, sculpture and architecture are produced for specific audiences at specific points in time in India, we will also be examining how those very artifacts, and their likenesses are received or appreciated across a larger geopolitical and temporal spectrum. The course also covers the art and architecture of medieval period.

UNITS	CONTENT	LECTURE HOURS	Cos	CLs
1	Prehistoric Art a. Rock Art b. Harappan Art	15	CO1 CO2	R U

2	Art and Architecture in Ancient Period. a. Temple architecture. b. Monastery architecture.	15	CO3	U A1& A2
3	Medieval and Modern Art and Architecture a. Rajasthani Architecture b. Sultanate architecture c. Mughal art and architecture. d. Colonial art and architecture.	15	CO3 CO4	U A1& A2

References-

1. Neumayer, Erwin, Lines of Stone: The pre-historic rock-art of India, South Asia Books, 1993.
2. Goswamy, B.N., Essence of Indian Art, Asian Art Museum of San Francisco, 1986.
3. Huntington, Susan, The Art of Ancient India: Hindu, Buddhist, Jain, Weatherhill, 1985.
4. Guha-Thakurta, Tapati, The making of a new modern Indian art: Aesthetics and nationalism in Bengal, 1850-1920, Cambridge University Press, 1992
5. Mitter, Partha, Indian Art, Oxford History of Art series, Oxford University Press, 2001.
6. Dhar, Parul Pandya, ed., 2011, Indian Art History Changing Perspectives, New Delhi: D.K. Printworld and National Museum Institute (Introduction).
7. Ray, Niharranjan, An Approach to Indian Art, Calcutta, 1970.

COURSE OBJECTIVES	STATEMENTS	REVISED BLOOM'S TAXONOMY
CO1	Explain's Prehistoric Art.	U
CO2	Write about the features of Temple and Monastery architecture.	R
CO3	a. Illustrate the Themes of architecture in	U&A2

	the ancient period b. Outline the different religious icons in the architecture in the ancient era	
CO4	Classify the different categories, types and features of Mughal, Sultanate and Rajasthani Architecture	A1

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Course Faculty (prepared by)	Head of the Department (Checked and verified)	Dean (Approved by)	Subject Expert (Approved by)
Name- Dr. Gouri Dey Signature	Name- Dr. Gouri Dey Signature	Name- Mr. Ravi Bhushan Singh Signature-	Name- 1. Prof Madhab Chandra Adhikary- 2. Dr. Sudash Lama- 3. Dr. Binayak Sundas 4. Mr. Soumendra Prosad Saha 5. Dr. Malay Saha

24HISVAC101
MUSEUM STUDIES
HOURS: 30
SESSION: 15

The syllabus provides a comprehensive overview of museum studies, covering various aspects of museum theory, practice, and management. It covers a wide range of topics in museum studies, from the fundamentals of museum history and ethics to practical skills like collection management, exhibition

design, and technology integration. The inclusion of guest lectures, museum visits, and a final project presentation adds a hands-on and practical dimension to the course, allowing students to apply their knowledge in real-world settings.

Session 1: Discussion Introduction to Museum Studies

Overview of the course

History and evolution of museums

Types of museums and their roles in society

Session 2: Documentary on Museums as Cultural Institutions

Museums as cultural gatekeepers

Cultural preservation and representation

Ethics in museums

Session 3: Museum Collections and Exhibitions

Acquisition, accessioning, and deaccessioning

Care and conservation of collections

Object handling and documentation

Session 4: Guest lecture Exhibition Planning and Design

Design and curation principles interpretive techniques Visitor engagement and accessibility

Session 5: Museum Education and Public Programs

Educational roles of museums Program development and evaluation Outreach and community engagement.

Session 6: Museum Marketing and Promotion Digital marketing and social media

Public relations and branding

Session 7: Museum Ethics and Legal Issues

Ethical dilemmas in museums

Cultural property and repatriation

Copyright and intellectual property

Session 8: Museum Management and Governance

Organizational structures

Budgeting and financial management

Board governance and leadership

Session 9: Museums and Technology

Digital collections and archives preservation and accessibility

Virtual exhibitions and augmented reality

Session 10: Museum Evaluation and Visitor Studies

Evaluation methodologies

Visitor studies and feedback

Improving the visitor experience

Session 11: Museums and Diversity

Inclusivity and diversity in museum practice

Decolonization and restitution

Representation of underrepresented communities

Session 12: Curatorial Practices

Curatorial roles and responsibilities
Exhibition planning and research
Curatorial ethics

Session 13: Museums and Education
Educational program development
School partnerships and curriculum alignment
Accessibility and inclusion in education

Session 14: Cultural Heritage Preservation
Preservation of intangible heritage
Cultural heritage laws and conventions
Indigenous cultural heritage and protection

Session 15: Museum Careers and Professional Development
Job opportunities in the museum field
Networking and professional organizations
Resume building and interview skills

1. Assessment

Formative Assessment: 50 marks as per the Assessment & Evaluation Framework Document of Salesian College

ix. *Summative Assessment:* 50 marks

- o) Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks, 2 marks each)
- p) Four Questions to be answered out of six given from the lower order of RBT
- q) Two Long Questions to be answered out of Four set from higher order of RBT – (30 Marks).
- r) Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (prepared by)	Head of the Department (Checked and verified)	Dean (Approved by)	Subject Expert (Approved by)
Name- Manisha Pradhan Signature	Name- Dr. Gouri Dey Signature	Name- Mr. Ravi Bhushan Singh Signature-	Name- 1. Prof Madhab Chandra Adhikary- 2. Dr. Sudash Lama- 3. Dr. Binayak Sundas 4. Mr. Soumendra Prosad Saha 5. Dr. Malay Saha

2ND SEMESTER

Course Code	24HISMAJ102
Course Title	Ancient India II (6th century BCE to 7th Century CE)
Credits	04
Lecture hours Hours/Week	60
Category	Major Core
Semester	II
Regulation	2024
Course Outcomes: This course – ● Covers the Political and Cultural history of India from the foundation rule of Mauryas to the Gupta Empire. ● The course will cover the Mauryan age from the time of Chandragupta Maurya to the decline of the Mauryas: including the Ashokan age, centralized administration, Dhamma and Ashokan Inscriptions ● The course also intends to briefly explain the changes in political, social, economic, and cultural scenarios in the post-Mauryan Age. ● The Course covers the rule of various Indo-Greek rulers to shape cultural economic and administrative structures in Ancient India. ● The course will cover the Rise of the Guptas, Administration, Culture and Art, Economy, and Society during the Gupta empire. ● The Course will briefly cover the situation of the Indian Sub-continent post decline of the Guptas.	
Course Objectives: The students will be able to – ● Understand the Political and Cultural History from the Mauryan to the Guptas Chronologically. ● Analyse the reasons for the rise of Mauryan, their administration, Ashokan Dhamma, and the importance of Ashokan Inscriptions to study this period ● To examine the political condition after the decline of the Mauryan Empire and the rise of Sungas, Satavahanas, and Kushans. ● To Understand the rule of Indo-Greeks in Northwest India and their subsequent political history. ● To outline the Rise of the Guptas and the Changes Introduced by different Gupta rulers in terms of administration, Society Culture Art and Economy. ● To Analyse the situation of the Indian Subcontinent after the decline of the Guptas, India.	

Prerequisites: The students will be able to understand the political and Cultural history of India from 6th century BCE to 7th century CE

Syllabus

UNITS	CONTENT	HOURS	Cos	CLs
UNIT-I	Mauryan Period a) Origin of Mauryas, achievements of Chandragupta Maurya and Bindusara b) Ashoka: Extent of empire, Dhamma and its propagation and estimate c) Mauryan administration d) Decline of the Mauryan	15	C O 1 C O 2	U &A2

UNIT-II	Sunga and Satavahana Dynasty 1. Pushyamitra Sunga 2. Satavahana Dynasty - Gautami Putra Satakarni - Vashisthiputra Pulmavi - Yagyashri Satkarni	15	CO3	U
UNIT - III	Rule of Indo-Greeks a.Menander, b.Eucratides Saka Rule and Parthian - Rudradaman Kushan - Origin - Kanishka - Vashiska - Huvishka and Vasudev	10	C O 4	U
UNIT-IV	Gupta Dynasty - Rise of Gupta Dynasty - Great Gupta rulers - Society Art and Culture, - Economy of the Gupta dynasty. - Decline of the empire and its aftermath	20	CO5 CO6	A2

Suggested Books –

1. H.C Raychaudhary- Political History of Ancient India
2. Romila Thapar, Ashoka and the Decline of the Mauryas.
3. B. N Puri- India Under Kushans.
4. R.C Mazumdar, The History and culture of Indian People
5. A.K Narayan, The Indo-Greeks
6. Upinder Singh. A History of Ancient and Early Medieval India: From the Stone Age to the 12th century
7. A.L Basham, Cultural History of India
8. B. N Mukherjee, The Rise and Fall of Kushan Dynasty.
9. S. K Maity, Economic Life in Northern in Northern India in the Guptas Period.

Course Outcomes (Cos) and Cognitive Level Mapping

At the end of this course, the students will be able to

Cos	STATEMENTS	REVISED BLOOM's LEVEL
CO1	Explain the Political and Cultural History of India from Mauryas to Guptas.	U
CO2	Examine the administrative Mechanism under the Mauryas, policies of Dhamma and Ashokan Inscription as a source of understanding Ashokan rule.	A2
CO3	Discuss the Political Condition of India during Sungas/Satavahanas	U

CO4	Explain the influence of Indo Greeks on the political and Cultural life of India.	U
CO5	Examine the reason for the Rise of Guptas, administrative Mechanism, Society Art and Culture and Economy.	A2
CO6	Examine the political situation of the India after the decline of the Guptas.	A2

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

- x. *Formative Assessment:* 50 marks as per the Assessment & Evaluation Framework Document of Salesian College
- xi. *Summative Assessment:* 50 marks
 - s) Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks, 2 marks each)
 - t) Four Questions to be answered out of six given from the lower order of RBT
 - u) Two Long Questions to be answered out of Four set from higher order of RBT – (30 Marks).
 - v) Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (prepared by)	Head of the Department (Checked and verified)	Dean (Approved by)	Subject Expert (Approved by)
Name- Dr. Gouri Dey & Anukta Gairola Signature	Name- Dr. Gouri Dey Signature	Name- Mr. Ravi Bhushan Singh Signature-	Name- 1. Prof Madhab Chandra Adhikary- 2. Dr. Sudash Lama- 3. Dr. Binayak Sundas 4. Mr. Soumendra Prosad Saha

			5. Dr. Malay Saha

HISMAJ103

Core Course	24HISMAJ103
Course Title	SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE ANCIENT AND MEDIEVAL WORLD
Credits	4
Hours/Week	60
Category	Major core
Semester	II
Regulations	2024

Course Objectives

1. To help the students outline the polity, society, economy, and religion of the ancient civilizations.
2. To help students analyze the factors that led to the development of the Roman Empire and how it transformed from a Republic to an Empire.
3. To help the students understand the slave mode of production and the agrarian development in the Roman empire.
4. To make students examine the factors that led to the decline of the Western Roman Empire.
5. To help the students examine the economic developments in Europe from 7th to 14th century
6. To help students understand the rise of Christianity, its expansion, and the growth of the papacy in the Catholic church.
7. To make the students understand the rise of Islam and the concept of Caliphate especially under the Umayyads and Abbasids.
8. To make students explore the impact of the rise of Islam on trade and urbanization in Arabian and Central Asian regions.

Course Learning Outcomes

After completion of the course, the students will able to-

1. Understand the polity, society, economy and religion of the ancient civilizations.

2. Analyse the factors that led to the development of the Roman Empire. 3. Understand the factors that led to the decline of the Western Roman Empire 4. Examine the economic developments in Europe from 7 th to 14 th centuries, with a particular focus on Feudalism. 5. Explain the rise of Christianity and its expansion in the medieval Europe. 6. Illustrate the rise of Islam, formation of Caliphate and changes introduced in the political, cultural and economic domain of Arabia during the Umayyads and Abbasids period.				
PREREQUISITE: The students should have a basic understanding of global geography and a brief idea of human evolution.				
UNITS	CONTENT	LECTURE HOURS	Cos	CLs
1	Ancient Civilizations (any two) a. Greece b. Mesopotamia c. Egypt d. Chinese	12	CO1	U, A
2	Roman Empire a. Principate and Empire b. Slave society c. Agrarian Economy. d. Decline	12	CO2 , CO3 , CO4	A2, U, R
3	Economic developments in Europe from 7 th to 14 th centuries. a. Definition: Feudalism b. Features and Typology of Feudalism c. Reasons for the origin of Feudalism	12	CO5	A2, U
4	Religion and culture in Medieval Europe a. Rise of Christianity b. Expansion of Christianity. c. Development of Catholic Church	12	CO6	U, R

5	Societies in Central Islamic Lands a. Rise of Islam b. Umayyads and Abbasids c. Urbanisation and trade.	12	CO7 , CO8	U, A2

References-

1. Complete History of the World -Richard Overy
2. History of the Nations -Edited by Walter Hutchinson
3. Augustus Caesar- David Shotter
4. Passages from Antiquity to Feudalism- Perry Anderson
5. Empires of Faith- Peter Saaris
6. The Medieval Church- Joseph H. Lynch and Phillip C. Adamo
7. Meccan Trade and Rise of Islam- Patricia Crone
8. The New Cambridge History of Islam Volume 1- Chase Robinson
9. Early Social Formations- Amar Farooqui
10. Social Formations and Cultural Patterns of Ancient World-Rakesh Kumar.

COURSE OBJECTIVES	STATEMENTS	REVISED BLOOM'S TAXONOMY
CO1	a. Discuss the growth of the economy in the ancient civilization Egypt/China/ Mesopotamia/ Greece.	U
CO2	a. Discuss the struggle between the patricians and plebeians in Rome? b. Explain the role of Augustus in bringing stability in Roman republic. c. Highlight the features of First and second settlement of the Principate. d. Define the term principate. e. Evaluate the political, social and economic changes introduced by Augustus.	U, R, and E
CO3	a. Define the term slave mode of production.	R, U

	b. Discuss the agrarian economy of the Roman empire.	
CO4	a. Outline the causes that led to the decline of the Roman Empire	A2
CO5	a. Discuss the economic developments in Europe from the 7th to the 14th centuries. b. Highlight the features of the Manorial system.	U, R
CO6	a. Examine the growth of Christianity in the Medieval Europe. b. Explain the term Great Schism.	A2, U
CO7	a. Explain the term Caliphate. b. Explain the term Fitna. c. Highlight the changes introduced by the Ummayyads. d. Examine the process of Persianisation introduced under the Abbasids.	U, R, A2
CO8	a. Highlight the ideas of Patricia crone in context of rise of Islam. b. Examine the role of stability during Abbasid period for the growth of Urbanisation	R, A2

Course Faculty (prepared by)	Head of the Department (Checked and verified)	Dean (Approved by)	Subject Expert (Approved by)
Name- Ms. Anukta Gairola Signature	Name- Dr. Gouri Dey Signature	Name- Mr. Ravi Bhushan Singh Signature-	Name- 1. Prof Madhab Chandra Adhikary- 2. Dr. Sudash Lama- 3. Dr. Binayak Sundas

			4. Mr. Soumendra Prosad Saha 5. Dr. Malay Saha

Course Code	24TRMMAJ104
Course Title	TOURISM RESOURCES & PRODUCTS
Credits	04
Total Hours	60
Hours per Week	4-5
Course Type	Major
Semester	I
Intended Level	DEGREE
Issue(s) Addressed	Tools and Technique
Course Offered to	BA History and Tourism
Regulation	2024
Course Overview	This course: a) Covers the concept and classification of tourism products b) Explores man-made, cultural, and heritage tourism products c) Focuses specifically on the tourism products of West Bengal
Prerequisite	Basic knowledge of Tourism Products and Resources
Course Objectives	A student will be able to: a) Define and classify tourism products b) Explore the diversities in landform and landscape including outstanding geographical features like climate, flora, and fauna. c) Explain the richness of Indian culture, traditions, customs, and handicrafts, emphasizing their significance in attracting tourists. d) Explore the diversities in landform and landscape including outstanding geographical features like climate, flora, and fauna. e) Describe the emerging trends in tourism product.
Course Outcomes based on RBT and Cognitive Level Mapping	

At the end of this course, a student will be able to:				
Cos	Statements	Cognitive Level Mapping		
CO1	Explain Tourism Products.	R		
CO2	Define different types of Tourism Product.	U		
CO3	Differentiate between Natural Tourism Product and Man-made Tourism Product.	A1		
CO4	State the emerging trends in tourism	A2		
CO5	Define Tourism Resources.	E		
CO6	Enumerate the Tourism product of West Bengal	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Introduction to Tourism product: a) Tourism Product; Definition, Concept & Classifications, b) Nature & Characteristic of India's Tourism Products c) Typology & Nature of Tourism resources – Natural & Man made, Socio cultural, d) Diversities in Landform & Landscape – Outstanding, Geographical features - Climate, Flora & Fauna. e) Nature & Scope to tourist places in India..	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit II	Man-made, Cultural and Heritage Tourism Product. a) Man-made Tourism Products: Indian culture tradition, customs and handicrafts, b) Architectural Heritage of India, different styles of architect in India, c) Music: Classical and folklore, fairs and festivals. d) Cultural and Heritage Products of India. e) Case study of Man-made Tourism Products, Amusement Parks, Museum, Agri-tourism, Kite Festival, Boat Festival, Dance Festival.	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit III	Natural Tourism Product a) Natural Tourism resources in India-Existing use patterns vis-a-vis potential with relation to varied landforms (mountains, deserts, beaches, coastal areas & islands), b) Tourism & nature conservation-Conflicts. c) Natural and Symbiotic Tourism Products. d) Locations, Accessibility, Facilities, Amenities, Unique Selling Propositions (USP), National	15	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E

	Parks & Wildlife Sanctuaries, Hill Stations, Beach Resorts of India.			
Unit IV	Emerging Trends in Tourism Product a) Emerging Trends: Adventure Tourism – Classification of Adventure Tourism b) Land Based –Water Based –Aero Based With suitable examples. c) Medical Tourism, Village Tourism, Community Based Tourism, Agri-tourism, Homestay/BnB d) Sustainable Tourism, Eco-Tourism, Dark Tourism, Blue Tourism, LGBT, MICE and other tourism related areas.	15	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit V	West Bengal Tourism Product a) Natural –National Park, Wildlife Sanctuary, Bird Sanctuary, b) Hill station, Beach, Waterfalls, c) Man Made-Heritage Sites, Historical Monuments, Pilgrimage sites, d) Culture, Art, Dance, Music, Handicrafts, Painting., e) Cuisines and specialty dishes.	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Learning Resources: 1. Jacob, Robinet et al, Indian Tourism Products, Abijeet Publications, New Delhi 2. Acharya Ram, Tourism and Cultural Heritage of India: ROSA Publication, 3. Basham. A.L, The Wonder that was India: Rupa and Company, Delhi. 4. Manoj Dixit, Charu Sheela, Tourism Products, New Royal Books. 5. Hussain. A.K, The National Culture of India, national Book Trust, New Delhi 6. Sarina Singh, India, Lonely Planet Publication. 7. Kaul H.K, ‘Travelers India’ Oxford University Press. 8. Negi, Jagmohan, Adventure Tourism and sports, Kanishka Publisher 9. Basham, A.L., A Cultural History of India. Oxford University Press, USA Stephen Ball, Encyclopedia of Tourism Resources in India, Butterworth –Heinemann				

R: Remembering, U: Understanding, A1: Applying, A2: Analyzing, E: Evaluating, C: Creating

Formative Assessment: 50 marks as per Assessment & Evaluation Framework Document of Salesian College

Summative Assessment: 50 marks

a. Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks)

b.Four Long Questions to be answered out of six given from mid order of RBT – (20 Marks)

c.Two Essay Questions to be answered out of four from higher order of RBT – (20 Marks).

Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)	Subject Expert (Approved by)
Name:Ms.Aparna Moktan Signature:	Name:Dr.Gouri Dey Signature:	Name:Mr.Ravi Bhushan Singh Signature:	Name- Fr(Dr)Babu Joseph Dr.Sudash Lama

2. Course Description

Course Code	24TRMMAJ103				
Course Title	TRAVEL AGENCY MANAGEMENT AND TOUR OPERATIONS				
Credits	04				
Total Hours	60				
Hours per Week	4-5				
Course Type	Major				
Semester	II				
Intended Level	DEGREE				
Issue(s) Addressed	Travel Agency operations and management				
Course Offered to	BA History and Tourism				
Regulation	2024				
Course Overview	This course: a) Covers the concept and classification of tourism agency b) Explores the organizational structure and functioning of the tourism agency				
Prerequisite	Basic knowledge of Travel and Tourism Agency				
Course Objectives	A student will be able to: a) Define and classify tourism agency b) Understand the significance of travel agency and tour operation business, c) Explore the current trends and practices in tourism and travel trade sector.				
Course Outcomes based on RBT and Cognitive Level Mapping					
At the end of this course, a student will be able to:					
Cos	Statements		Cognitive Level Mapping		
CO1	Describe Travel agency.		R		
CO2	Explain the functioning of Travel agency.		U		
CO3	Classify the tour packaging and costing process		A1		
CO4	Outline the importance of tourism laws		A2		
CO5	Evaluate the importance of Travel and Tourism Organisations		E		
Course Content					
Units	Content		Lecture Hours	COs	RBT

Unit I	Introduction to Travel Agency: a) Travel agency and tour operator- meaning, concept, Types and importance. b) Historical growth and development of travel agency and tour operation business. c) Linkages and interrogations in travel agency & tour operation business. d) Entrepreneurship in travel operation and Career in travel agency and tour operation business. e) The future role of Travel Intermediaries.	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit II	Functions of a Travel Agency: a) Travel Agency and Tour Operation Business - Functions of Travel Agency - Setting up a Full-fledged. b) Travel Agency - Sources of Income of a travel agency. c) Diversification of Business - Travel Insurance, Forex, Cargo & MICE. d) IATA Accreditation - Recognition from Government.	15	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit III	Tour Packaging and Costing: a) Tour Packaging & Costing - Importance of Tour Packaging – Classifications of Tour Packages. b) Components of Package Tours - Concept of costing - Types of costs - Components of tour cost. c) Preparation of cost sheet - Tour pricing - Calculation of tour price - Pricing strategies - Tour Packages of Cox & Kings and TCL..	15	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit IV	Travel and Tourism Laws a) Tourism bills of Rights. b) Tourism code. c) International conventions: Warsaw convention 1924, Chicago convention 1944, Brussels convention 1961 and 1966 International convention on travel contract, , Athens convention 1974, Helsinki accord 1976, d) Consumer protection law, 1986. e) International Air Transport Association (IATA) f) Competition act applicable to the tourist as consumers.	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit V	Travel and Tourism Organizations: a) Role and Responsibility of Travel Trade Associations. b) Objectives - Roles and functions of UFTAA, PATA, ASTA, TAAI, IATO, ATAOL, ADTOI, IAAI, FIYTO, TAFI.	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E

Learning Resources:

1. Chand, Mohinder (2009). Travel Agency Management- An Introductory Text, 2/e. New Delhi: Anmol Publications Pvt. Ltd. (L)
2. Stevens, L. (1990). Guide to Starting and Operating a Successful Travel Agency. New York: Delmar Publishers Inc. (L)
3. Negi, Jagmohan (1998). Travel Agency and Tour Operation- Concepts and Principles. New Delhi: Kanishka Publishers, Distributors. (L)
4. Gee, Chuck and Makens, Y. (2000). Professional Travel Agency Management, New York: Prentice Hall (L).

R: Remembering, U: Understanding, A1: Applying, A2: Analyzing, E: Evaluating, C: Creating

Formative Assessment: 50 marks as per Assessment & Evaluation Framework Document of Salesian College

Summative Assessment: 50 marks

a. Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks)

b. Four Long Questions to be answered out of six given from mid order of RBT – (20 Marks)

c. Two Essay Questions to be answered out of four from higher order of RBT – (20 Marks).

Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)	Subject Expert (Approved by)
Name: Ms. Aparna Moktan Signature:	Name: Dr. Gouri Dey Signature:	Name: Mr. Ravi Bhushan Singh Signature:	Name- Fr(Dr) Babu Joseph Dr. Sudash Lama

3. Course Description

Course Code	24TRMMDC101	
Course Title	CONCEPT AND IMPACTS OF TOURISM	
Credits	03	
Total Hours	45	
Hours per Week	3	
Course Type	MDC	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed	Students will learn about how various factors contribute to both rise and fall of tourism industry as a whole.	
Course Offered to	Students with basic knowledge of travel and tourism	
Regulation	2024	
Course Overview	This course: a) Introduces students to the multifaceted concept of tourism and explores its economic, social, cultural, and environmental impacts. b) Students will gain an understanding of the historical development of tourism, current trends, and future challenges.	
Prerequisite	Basic knowledge of tourism and its concepts	
Course Objectives	A student will be able to: d) Understand the basic concepts and definitions of tourism. e) Analyze the economic, social, cultural, and environmental impacts of tourism. f) Examine case studies of tourism impacts in different regions. g) Discuss the forms, scope and types of Tourism	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Understand the basic concepts and definitions of tourism.	R
CO2	Discuss the forms, scope and types of tourism.	U
CO3	Classify the various sources affecting tourism	A1
CO4	Analyze the economic, social, cultural, political and environmental impacts of tourism.	A2
CO5	Defend the need of various bodies supporting the growth of tourism.	E
Course Content		

Units	Content	Lecture Hours	COs	RBT
Unit I	Fundamentals and Practices a) Definitions – Basic Components of Tourism - Forms of Tourism - Scope of Tourism -History of tourism – Travel Motivation - Evolution of Demand - b) Types of Tourism – Business tourism, Pilgrimage Tourism, Cultural Tourism, Heritage, Adventure Tourism, Medical tourism etc.	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit II	Economic Impacts of Tourism a) Positive and Negative Impacts of Tourism b)Economic Impacts of Tourism-Direct, indirect, and induced economic impacts c)Tourism's contribution to GDP and employment generation d)Multiplier effect-Income distribution-Leakage and economic dependency	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit III	Social and Cultural Impacts of Tourism a) Social and Cultural Impacts of Tourism-Sociocultural benefits and costs b) Cultural exchange and commodification-cultural commodification and authenticity-Preservation vs. commodification of local traditions c) Impact on host communities(positive and negative)	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit IV	Environmental Impacts of Tourism a) Environmental Impacts of Tourism- Positive and negative environmental impacts b) Carrying capacity and tourism management c) Case studies on environmental impacts-Analysis of various case studies	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit V	Political Impacts of Tourism a)Government Roles and Policies in Tourism-Role of governments in tourism planning and development-Tourism policy formulation and implementation - Public-private partnerships in tourism governance b)Tourism and Conflict-Tourism as a tool for conflict resolution and peacebuilding-Tourism and political instability c)Role of international organizations (e.g., UNWTO, WTO) in tourism governance	10	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Learning Resources:				

6. Tourism: Principles, Practices, Philosophies* by Charles R. Goeldner and J.R. Brent Ritchie
7. Burkart, A.J & Heinemann Medlik, Tourism: Past. Present and Future, Professional Publishing, London, 1986 reprint
8. Mill, Robert, The Tourism System: An Introductory Text, Hall International, London, 1992.
9. Kamra, Krishan, Basics of Tourism: Theory, Operation, Kanishka Publishers, New Delhi, 2002.
10. Bhatia, A.K. International Tourism Marketing ,Sterling, New Delhi, 2008
11. Dr. S. K. Kabia-Tourism and Environment
12. Wahab, S.E. Tourism Management, Tourism International Press, London, 1986.
13. Dr. Jasbir Singh, Eco-Tourism, I.K. International Publishing, New Delhi , 2010

R: Remembering, U: Understanding, A1: Applying, A2: Analyzing, E: Evaluating, C: Creating

Formative Assessment: 50 marks as per Assessment & Evaluation Framework Document of Salesian College

Summative Assessment: 50 marks

a.Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks)

b.Four Long Questions to be answered out of six given from mid order of RBT – (20 Marks)

c.TwoEssay Questions to be answered out of four from higher order of RBT – (20 Marks).

Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)	Subject Expert (Approved by)
Name:Ms.Aparna Moktan Signature:	Name:Dr.Gouri Dey Signature:	Name:Mr.Ravi Bhushan Singh Signature:	Name-Fr(Dr)Babu Joseph Dr.Sudash Lama

Course Code	24TRMSEC101	
Course Title	INFORMATION TECHNOLOGY FOR TOURISM	
Credits	03	
Total Hours	45	
Hours per Week	3	
Course Type	Skill Enhancement Course	
Semester	II	
Intended Level	CERTIFICATE	
Issue(s) Addressed	Importance of Information Technology for tourism	
Course Offered to	BA History and Tourism	
Regulation	2024	
Course Overview	This course: a) Explores the significant role of Information Technology (IT) in the tourism industry. b) Gives an understanding of various IT tools, platforms, and strategies utilized in the tourism industry and how they contribute to enhancing the overall tourist experience.	
Prerequisite	Basic knowledge of Computer.	
Course Objectives	A student will be able to: a) Comprehend the fundamental concepts of Information Technology and its relevance to the tourism industry. b) Explore the various IT applications in tourism, including reservation systems, online booking platforms, and destination management systems. c) Develop strategies for leveraging Information Technology to improve marketing, operations, and customer satisfaction in tourism enterprises.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
Cos	Statements	Cognitive Level Mapping
CO1	Describe Information Technology (IT).	R
CO2	Explain the importance of IT in tourism.	U
CO3	Classify the various tools of e-commerce in tourism.	A1
CO4	Outline the importance of MS Office in tourism.	A2
CO5	Evaluate the importance of IT in tourism	E

Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Basic of Computer: a) Introduction - Characteristics of computers - Evolution and generation of computers - classification - computer system. b) CPU - memory - various units of a computer system - storage devices - magnetic tape - magnetic disk - optical disk - CD-ROM. c) Input devices - Types - keyboard - mouse - output devices - classification of output - printers - plotters - monitors.	9	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit II	Introduction to Networks and Internet: a) Meaning and types of networks - LAN, MAN and WAN b) Internet, difference between internet and intranet c) Basics: functions, growth, anatomy, Uses, Wireless and Wifi. d) Internet services: ISP, types of accounts, World Wide Web: websites file transfer, browsing, searching	9	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit III	MS Office Applications: a) MS-Word – Meaning and applications of word processing formatting text, writing basic document using Word, Header and Footer, Page formatting, paragraph formatting, saving a document, printing a document. b) MS-Excel – Meaning and applications of spreadsheets. – creating a workbook, saving a workbook, editing a workbook, creating a series, use of basic formulae in Excel, use of functions in Excel, sorting data, creating simple charts. c) MS-PowerPoint – Meaning and applications of presentation. creating simple presentation including slide transitions, bullets, etc.	9	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit IV	E-Commerce and E-payment: a) E-Commerce Framework – Traditional vs E-Business Applications b) Major Categories of E-Commerce – B2C, B2B, C2B and C2C. c) Online Payment – Payments Cards – Electronic Cash – Electronic Wallets – Digital Cards, Internet Technologies – Banking – Net, Mobile	9	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E
Unit V	Technology in Tourism:	9	CO1	R U

	a) CRS (Computerized Reservation Systems), development trends of reservation systems, inventory systems. b) GDS (global distribution systems). c) Designing of Tourist Itinerary: Project work on preparation of a tourist itinerary/ tourist brochure/ information leaflet with the help of computer incorporating important destinations of North Bengal.		CO2 CO3 CO4 CO5	A1 A2 E

Learning Resources:

1. Gray Schneider (2007), Electronic Commerce, Thomson Course Technology, 7th Annual Edition, Noida
2. U.S. Pandey, Rahul Srivastava, Saurabh Shukla (2007), E-Commerce and its applications, S. Chand, 1st Edition, New Delhi.
3. R. Kolkota and A.B. Whinston (1996), Frontiers of Electronic Commerce, New Delhi.
4. P.T. Joseph (2008), Electronic Commerce: A Managerial Perspective, 3rd Edition, Prentice Hall of India Learning, New Delhi.

R: Remembering, U: Understanding, A1: Applying, A2: Analyzing, E: Evaluating, C: Creating

Formative Assessment: 50 marks as per Assessment & Evaluation Framework Document of Salesian College

Summative Assessment: 50 marks

a. Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks)

b. Four Long Questions to be answered out of six given from mid order of RBT – (20 Marks)

c. Two Essay Questions to be answered out of four from higher order of RBT – (20 Marks).

Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)	Subject Expert (Approved by)
Name: Ms. Aparna Moktan Signature:	Name: Dr. Gouri Dey Signature:	Name: Mr. Ravi Bhushan Singh Signature:	Name- Fr(Dr) Babu Joseph Dr. Sudash Lama

1. Course Description

Course Code	23BBASEC101	
Course Title	BUSINESS COMMUNICATION	
Credits	3	
Total Hours	45	
Hours per Week	3	
Course Type	SEC	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed	Clarity, conciseness, tone, professionalism, relevance, audience, format, feedback, context, accuracy.	
Course Offered to	BBA & BBA in Tourism & Hospitality Management	
Regulation	2023	
Course Overview	This course: a) Recognizes the need to enhance written as well as oral communication skills. b) States the importance of effective communication in a globalized economy. c) Describes the importance of effectively drafting business reports and letters.	
Prerequisite	Verbal and non-verbal communication, drafting letters and short presentations.	
Course Objectives (total 5)	A Student will be able to: a) Define and explain the nature and significance of communication. They will grasp the process and principles of communication, b) Recognize various communication models, and identify different communication channels. c) Learn about effective communication, including recognizing barriers and employing strategies to overcome them. d) Understand the importance of listening, types of listening, and methods to enhance listening skills. e) Develop skills in report writing, business correspondence, and oral presentations, including PowerPoint presentations, to effectively communicate in various professional scenarios.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the meaning, nature, and objectives of communication	R
CO2	Explain the principles and process of communication, and identify different models.	U
CO3	Differentiate and analyse various channels of communication, including formal, informal, verbal, and non-verbal.	A1

CO4	Recognize barriers to effective communication and propose strategies to overcome them.	A2		
CO5	Evaluate the significance of listening, identify barriers, and implement techniques for effective listening.	E		
CO6	Compose business reports, letters, and emails, adhering to appropriate formats and etiquettes. Also develop effective oral presentations with well-structured content, applying presentation essentials.	C		
Course Content				
Units	Content	Lecture Hours	COs	RB T
Unit I	Introduction a) Meaning, definition, nature, objectives, and importance of communication. b) Principles of communication and process of communication. c) Models of Communication.	12	CO1 CO2 CO4	R U A1 A2 E C
Unit II	Communication Channels a) Channels of communication. b) Types of communication: Formal, Informal, Verbal, Non- Verbal, Written, Visual communication. c) Levels of communication and direction of communication	12	CO1 CO2	R U A1 A2 E C
Unit III	Effective Communication a) Meaning and barriers to effective communication. b) Ways to overcome barriers to effective communication. c) Meaning, importance, process, and types of Listening. d) Barriers to effective Listening and steps to overcome such barriers	12	CO1 CO2 CO4	R U A1 A2 E C
Unit IV	Report Writing and Business Correspondence a) Types, formats, importance, and process of preparing Business reports. b) Drafting minutes, agenda, inquiry letter, complaint letter, persuasive letter, and proposal. c) Writing Resume, letters, office memorandum, office circulars, notices, and orders. d) Technology for communication. Electronic mail: advantages, safety, and smartness in email. E-mail etiquettes.	12	CO1 CO2 CO4 CO5	R U A1 A2 E C
Unit V	Oral and PowerPoint Presentation a) Importance, features, and essentials of effective oral presentation. b) Making presentations: content and organising.	12	CO1 CO2 CO5 CO6	R U A1 A2 E C

	Delivering a presentation			
Learning Resources: 1. Kaul, A. (2016). <i>Effective Business Communication, 2nd ed.</i> PHI learning. 2. C.B. Gupta (2019). <i>Essentials of Business Communication.</i> Sultan Chand & Sons. 3. Kumar, V., Raj, B., Kapurthala, & Jalandhar. (2017). <i>Comprehension and Communication Skills in English.</i> Kalyani Publishers. 4. Kumar, V., Raj, B., Kapurthala, & Jalandhar. (2017). <i>Comprehension and Communication Skills in English.</i> Kalyani Publishers. 5. Rizvi, M. A. (2005). <i>Effective technical communication.</i> Tata McGraw-Hill. 6. Chanda, S. M. (2010). <i>An Introduction to Critical Thinking.</i> Pearson, Delhi.				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

Formative Assessment (FA – 50 marks)			
FA1 (10 weightage)	Mid-Semester Exams (25 weightage)	FA2 (10 weightage)	Attendance (5 marks)
Multiple-Choice Question and/or Objective-type questions of 20 mark (10 questions of 2 marks each).	GROUP A: 5 very short questions out of 8 carrying 2 marks each. GROUP B: 3 short questions out of 5 carrying 5 marks each. GROUP C: 1 long question out of 2 carrying 10 marks. GROUP D: 1 case study of 15 marks. Total marks: 50	Group activity, Subjective-type questions, or viva-voce carrying 20 marks.	75%-79%– 2 marks 80%-85%– 3 marks 86%-90%– 4 marks Above 90%– 5 marks
Summative Assessment (SA – 50 marks)			
GROUP	NO. OF QUESTIONS TO ATTEMPT	MARKS	RBT (level)
GROUP A	5 very short questions out of 7	2 marks × 5 = 10 marks	Lower-order level
GROUP B	3 short questions out of 5	5 marks × 3 = 15 marks	Higher-order level
GROUP C	1 long question out of 2	10 marks × 1 = 10 marks	Higher-order level
GROUP D	1 case study	15 marks × 1 = 15 marks	Creating level

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Ms. Sunita Sherpa Signature:	Name: Dr. Dipankar Rudra Signature:	Name: Mr. Anirban Ghosh Signature:

1. Course Description

Course Code	23BBASEC102	
Course Title	ENTREPRENEURSHIP DEVELOPMENT	
Credits	3	
Total Hours	45	
Hours per Week	3	
Course Type	Skill Enhancement Course	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed	Issues of start-ups, family businesses, mobilisation of resources, and feasibility of plans.	
Course Offered to	BBA and BBA in Tourism & Hospitality Management	
Regulation	2023	
Course Overview	This course: a) Explain the meaning, elements, determinants and importance of entrepreneurship and creative behaviour. b) Discusses the concept, role and functions of business incubators, angel investors, venture capital and private equity funds. c) c. Recognises the significance of writing the business plan/ project proposal.	
Prerequisite	Basic knowledge about the concept of entrepreneur.	
Course Objectives	A student will be able to: a) Explain the meaning, elements, determinants and importance of entrepreneurship and creative behaviour. b) Discuss the concept of business groups and role of business houses and family business in India; c) Describe the concept, role and functions of business incubators, angel investors, venture capital and private equity fund. d) Prepare the contents of a business plan/ project proposal. e) Evaluate the basic problems faced by start-ups.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the concept, role and functions of business incubators, angel investors, venture capital and private equity fund.	R
CO2	Explain the meaning, elements, determinants and importance of entrepreneurship and creative behaviour.	U
CO3	Demonstrate Public and private system of stimulation.	A1
CO4	Examine the concept of business groups and role of business houses and family business in India.	A2
CO5	Evaluate the basic problems faced by start-ups.	E

CO6	Prepare the contents of a business plan/ project proposal.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Introduction a) Meaning, elements, determinants and importance of entrepreneurship and creative behaviour; b) Entrepreneurship and creative response to the society problems and at work. c) Dimensions of entrepreneurship: intrapreneurship, technopreneurship, cultural entrepreneurship, international entrepreneurship, netpreneurship, ecopreneurship, and social entrepreneurship	12	CO2	R U A1 A2 E C
Unit II	Entrepreneurship and Micro, Small and Medium Enterprises a) Concept of business groups and role of business houses and family business in India; b) The contemporary role models in Indian business: their values, business philosophy and behavioural orientations; c) Conflict in family business and its resolution	12	CO4	R U A1 A2 E C
Unit III	Entrepreneurial Finance a) Public and private system of stimulation, support, and sustainability of entrepreneurship. b) Requirement, availability and access to finance, marketing assistance, technology, and industrial accommodation, Role of industries/entrepreneur’s associations and self-help groups. c) The concept, role and functions of business incubators, angel investors, venture capital and private equity fund.	12	CO1 CO3	R U A1 A2 E C
Unit IV	Sources of business ideas and tests of feasibility. a) Significance of writing the business plan/ project proposal; Contents of business plan/ project proposal; b) Designing business processes, location, layout, operation, planning & control; preparation of project report (various aspects of the project report such as size of investment, nature of product, market potential may be covered); c) Project submission/ presentation and appraisal thereof by external agencies, such as financial/non-financial institutions.	12	CO6	R U A1 A2 E C

Unit V	Mobilising Resources a) Mobilising resources for start-up b) Accommodation and utilities; Preliminary contracts with the vendors, suppliers, bankers, principal customers; c) Contract management: Basic start-up problems.	12	CO5	R U A1 A2 E C

Learning Resources:

1. Kuratko, D. F., & Rao, T. V. (2012). *Entrepreneurship: A South-Asian Perspective*. Cengage Learning.
2. Desai, V. (2009). *Dynamics of Entrepreneurial Development and Management*. Himalaya Publishing House.
3. Holt, D. H. (1992). *Entrepreneurship: New venture creation*. Prentice Hall of India.
4. Plsek, Paul E. (1997). *Creativity, Innovation and Quality. (Eastern Economic Edition)*. New Delhi: Prentice-Hall of India.
5. Singh, N. P. (1985). *Emerging Trends in Entrepreneurship Development*. New Delhi: ASEED.
6. Khanka, S. S. (2006). *Entrepreneurial development*. S. Chand Publishing.
7. Ramachandran, K. (2009). *Entrepreneurship Development: Indian Cases on Change Agents*. Tata McGraw-Hill Pub.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

Formative Assessment (FA – 50 marks)			
FA1 (10 weightage)	Mid-Semester Exams (25 weightage)	FA2 (10 weightage)	Attendance (5 marks)
Multiple-Choice Question and/or Objective-type questions of 20 mark (10 questions of 2 marks each).	GROUP A: 5 very short questions out of 8 carrying 2 marks each. GROUP B: 3 short questions out of 5 carrying 5 marks each. GROUP C: 1 long question out of 2 carrying 10 marks. GROUP D: 1 case study of 15 marks. Total marks: 50	Group activity, Subjective-type questions, or viva-voce carrying 20 marks .	75%-79%– 2 marks 80%-85%– 3 marks 86%-90%– 4 marks Above 90%– 5 marks
Summative Assessment (SA – 50 marks)			
GROUP	NO. OF QUESTIONS TO ATTEMPT	MARKS	RBT (level)
GROUP A	5 very short questions out of 8	2 marks × 5 = 10 marks	Lower-order level
GROUP B	3 short questions out of 5	5 marks × 3 = 15 marks	Higher-order level
GROUP C	1 long question out of 2	10 marks × 1 = 10 marks	Higher-order level
GROUP D	1 case study	15 marks × 1 = 15 marks	Creating level

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Nihel Thapa Signature:	Name: Dr. Dipankar Rudra Signature:	Name: Mr. Anirban Ghosh Signature:

1. Course Description

Course Code	23BBASEC201
Course Title	E-COMMERCE
Credits	03
Total Hours	45
Hours per Week	3
Course Type	Skill Enhancement
Semester	III
Intended Level	Diploma
Issue(s) Addressed	Bricks and Mortar in E-commerce, Threats, Security and encryption, IT Act 2000, E-payments transaction.
Course Offered to	BBA and BBA (Tourism & Hospitality Management)
Regulation	2023
Course Overview	Course Overview: This Course: - Emphasizes the critical need for security in e-commerce environments, discussing vulnerabilities, encryption techniques, and measures to protect communication channels, networks, and servers. - The course delves into various models and methods of e-payments, including debit cards, credit cards, and online banking, while addressing associated risks and the significance of digital signatures. - Students explore the diverse applications of e-commerce across industries such as banking, insurance, marketing, e-tailing, online services, auctions, publishing, and entertainment, highlighting the benefits, challenges, and features of conducting transactions online. - Integrated throughout the course, practical labs offer hands-on experience in website development, encryption techniques, e-payment methods, and online business transactions, reinforcing theoretical concepts with real-world applications.
Prerequisite	Students should possess the ability to comprehend technical terms and concepts related to e-commerce, security, and online transactions.
Course Objectives	- Comprehend the forces driving E-commerce and the technological infrastructure underpinning it, including the dynamics of the World Wide Web and internet evolution. - Understand the importance of security and encryption in E-commerce environments, including identifying vulnerabilities and implementing solutions to protect channels of communication, networks, and servers. - Familiarize with the Information Technology Act 2000 and its recent amendments, including definitions, electronic governance, digital signatures, regulations of certifying authorities, and penalties for cybercrimes. - Gain knowledge of various e-payment systems, including models, methods, and risks associated with e-payments, as well as the legal positions of digital signatures and online banking.

	e. Explore the various facets of online business transactions across industries, including banking, insurance, utilities, marketing, e-tailing, online services, auctions, online learning, publishing, and entertainment. f. Apply theoretical knowledge through practical lab sessions, developing skills in implementing E-commerce solutions and conducting online business transactions securely and efficiently.			
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Define the fundamental concepts of electronic commerce (e-commerce), including its meaning, nature, and key components. Recall the importance of security and encryption in e-commerce.	R		
CO2	Discuss the IT Act 2000 and its recent amendments in relation to cyber-crimes, demonstrating comprehension and understanding of the legal framework governing electronic transactions and cyber security.	U		
CO3	Implement encryption techniques to secure communication channels, networks, servers, and clients involved in e-commerce transactions. Apply theoretical knowledge to practical scenarios, demonstrating proficiency in navigating and utilizing various e-payment platforms securely and efficiently.	A1		
CO4	Analyse the concepts of Electronic Fund Transfer (EFT), Automated Clearing House (ACH), and Automated Ledger Posting, discerning their roles and applications in e-payment ecosystems.	A2		
CO5	Evaluate the diverse applications of e-commerce across various industries such as banking, insurance, utility bill payments, marketing, and e-tailing, recognizing their popularity, benefits, challenges, and distinctive features.	E		
CO6	Formulate strategies for designing, building, and launching an e-commerce website, considering factors such as hardware and software selection, outsourcing vs. in-house development.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Introduction a. Meaning, nature, concepts, advantages, disadvantages and reasons for transacting online. b. Classification of E-Commerce, e-commerce business models (introduction, key elements of a business model and categorizing major E-commerce business models). c. Forces behind ecommerce. Technology used in E-commerce:.	10	CO1	R

	d. The dynamics of World Wide Web and internet (meaning, evolution and features). e. Designing, building and launching e-commerce website (A systematic approach involving decisions regarding selection of hardware, software, and outsourcing vs. in-house development of a website).			
Unit II	Security and Encryption: a. Need and concepts, the e-commerce security environment: (dimension, definition and scope of security), vulnerabilities in the E-commerce environment, solutions. b. Encryption, securing channels of communication, protecting networks and protecting servers and clients.	9	CO2	U
Unit III	IT Act 2000 with recent amendments and Cyber Crimes: a. IT Act 2000: Definitions, Electronic governance, Attribution, acknowledgement and dispatch of electronic records. b. Regulation of certifying authorities, Digital signature, and Digital signatures certificates. c. Duties of subscribers, Penalties and adjudication, Appellate Tribunal, Offences and Cyber-crimes.	9	CO3	A1
Unit IV	E-payment System: a. Models and methods of e-payments (Debit Card, Credit Card, Smart Cards, e-money). b. Digital signatures (procedure, working and legal position), payment gateways; online banking: meaning, concepts, and importance. c. Electronic fund transfer, automated clearing house, automated ledger posting), Risks involved in e-payments.	9	CO4	A2 & E
Unit V	Online Business Transactions a. Meaning, purpose, advantages and disadvantages of transacting online. b. E-commerce applications in various industries like banking, insurance, payment of utility bills, marketing, e-tailing (popularity, benefits, problems and features). c. Online services (financial, travel and career), auctions, online portal, online learning, publishing and entertainment, online shopping from e-tailers.	8	CO5	C
Learning Resources: 1. Laudon, K.C., and GuercioTraver, C. <i>E-Commerce</i>, Pearson Education. 2. Whiteley, D. <i>E-commerce: Strategy, Technology and Applications</i>. McGraw Hill Education 3. Bhaskar, B. <i>Electronic Commerce: Framework, Technology and Application</i>. 4th Ed., McGraw Hill Education				

4. Joseph, P.T. *E-Commerce: An Indian Perspective*. PHI Learning
5. Bajaj, K.K., & Nag, D. *E-commerce*. McGraw Hill Education
6. Madan, S. *E-Commerce*. Taxmann
7. Chhabra, T.N., Jain, H.C., and Jain, A. *An Introduction to HTML*. Dhanpat Rai & Co.
8. Elias, A.M., *Electronic Commerce from Vision to Fulfilment*. Pearson Prentice Hall

Note: Latest edition of text books may be used.

R: Remembering, U: Understanding, A1: Applying, A2: Analyzing, E: Evaluating, C: Creating

2. Assessment

Formative Assessment (FA – 50 marks)			
FA1 (Weightage – 10)	FA2 - Mid-Semester Exams (Weightage – 25)	FA3 (Weightage – 10)	Attendance (5 marks)
Multiple-Choice Question and/or Objective-type questions of 20 marks . (10 questions of 2 marks each)	GROUP A: 5 very short questions out of 8 carrying 2 marks each. GROUP B: 3 short questions out of 5 carrying 5 marks each. GROUP C: 1 long question out of 2 carrying 10 marks. GROUP D: 1 long question of 15 marks (case study). Total marks: 50 marks.	Presentation/ Assignment/ Project/ Group Presentation/ Group Discussion/ Case Study carrying 20 marks.	75%-79% – 2 marks 80%-85% – 3 marks 86%-90% – 4 marks Above 90% – 5 marks
Summative Assessment (SA – 50 marks)			
GROUP	NO. OF QUESTIONS TO ATTEMPT	MARKS	RBT (level)
GROUP A	5 very short questions out of 8	2 marks × 5 = 10 marks	Lower-order level
GROUP B	3 short questions out of 5	5 marks × 3 = 15 marks	Higher-order level
GROUP C	1 long question out of 2	10 marks × 1 = 10 marks	Higher-order level
GROUP D	1 compulsory long question (case study)	15 marks × 1 = 15 marks	Creating level

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Ms. Sunita Sherpa Signature:	Name: Dr. Dipankar Rudra Signature:	Name: Mr. Anirban Ghosh Signature:

1. Course Description

Course Code	23THMVAC101	
Course Title	LEADERSHIP & MANAGEMENT SKILLS	
Credits	1	
Total Session Hours	30	
Number of Sessions	15	
Course Type	VAC	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed	Time management, conflict management, stress management, and self-development.	
Course Offered to	BBA & BBA in Tourism & Hospitality Management	
Regulation	2023	
Course Overview	This course: a) Recognizes the need to enhance Time, Conflict, and Stress Management Skills. b) States the importance of developing self-discipline and control. c) Describes the importance of developing business ideas, product pitching and Innovative leadership.	
Prerequisite	Basic knowledge of leadership and its qualities.	
Course Objectives	A student will be able to: a) Develop essential skills to influence and motivate others. b) Inculcate emotional and social intelligence and integrative thinking for effective leadership. c) Create and maintain an effective and motivated team to work for society. d) Make learners understand personal values and apply ethical principles in professional and social contexts. e) Familiarize the learners with the budgeting process and make them conscious of the significance of budgeting, savings, and investment.	
Course Content		
Session	Session Details	Session Hours
Session I	Present a report/video prepared by group of students. Each group is asked to answer the following questions: a) Did someone emerge as the leader of the group activities? b) Was the group leader effective in motivating the members to work as a team and complete the task? Yes/No and why? c) What kind of leadership style did the leader adopt?	2

Session II	Role Play Select three volunteers from among the learners. Explain a leadership situation. Ask them to act.	2
Session III	The learners are asked to sit in groups of 4-8, depending on class size. Each group must consider that it is responsible for managing the class event and is told to prepare a summary of the following items in 20 minutes. - Fix a suitable date for the event - Work out a budget for the event. - Complete a list of tasks to be performed for organizing the event. - Combine tasks to form roles. - Identify the reporting relationship among the different roles. - Assign roles to different individuals in the group so that the event can be successfully managed. - Each member to prioritize and schedule the tasks included in each role so that all the deadlines are met.	2
Session IV	Activity of Time Management Situation for discussion: Two individuals are asked to paint the walls of two different rooms of identical dimensions. They are given an equal quantity of paint and told to finish the work by the end of the day. One person finishes the work two hours before the end of the day but the painting is patchy and uneven. The other person does not complete the painting of the entire room, he consumes all the paint as well, but whatever work he has done is even and beautiful. Discuss the efficiency and effectiveness of the two painters. They may be asked to answer the question: Are any of the two painters successful in managing their tasks?	2
Session V	Activity on Conflict Management The learners must be asked - Can you recall the last conflict you had with an individual or a group? - Did you resolve it? How was it resolved? What was the outcome of the Conflict? Draw focus on empathy and communication for resolving interpersonal conflicts	2

Session VI	Activity on Stress Management Ask the learners to look at each obstacle they encounter as a learning experience. For example. “You may not have done well in your mid-term exam, but that has motivated you to study harder and ace your final exam”. a) Make the choice not to over-react to stressors and deal with them one at a time For example, take a few deep breaths and carry on. b) Take an objective view of your stressor For example, is preparing dinner for 12 people really that horrible? c) Communicate! Ask the learners not to ruminate or bottle up their emotions, as this will lead to an explosion later on.	2
Session VII	Develop self-discipline and control Tell the learners - “Either train yourself to study harder in preparation for your final examination, or train yourself to work out four times a week to lose those extra kilos that you gained since the last dinner party!” Maintenance! Practice, practice, practice for a long life of resilient living! Learners should be encouraged to inculcate the reading habit, which helps in busting stress. Some suggested readings for learners could be: a) Swami Vivekananda. 1958. Powers of the Mind. Kolkata: Advaita Ashrama. b) Abdul Kalam, APJ. 1999. Wings of Fire- An Autobiography. Universities Press.	2
Session VIII	Activity on Self-Management Skills The learners may be asked to watch this 5.5-minute video on Goleman’s explanation of EI https://www.youtube.com/watch?v=Y7m9eNoB3NU Ask the learners to answer the following question: a) Is IQ or EQ more important for success in Life? b) Establish the significance of EI and self-awareness as a component of EI. This 4.5-minute video on “Can EI be Learnt” can be watched by learners.	2
Session IX	Developing Self-Awareness with JOHARI window Learners may be asked to carry out the JOHARI window exercise in groups of 4. Learners who are willing may be asked to share the findings of the JOHARI window exercise.	2

Session X	Activity on Developing Business Idea Ask learners to identify the market to test their potential ideas. → Share the “DOs” and “DO NOTs”. Do – (example can be) a) The learners must identify a real market and gain insights and honest feedback from potential customers. b) Keep your eyes and ears open and pay close attention to customers’ cues, inputs, etc. DO NOT- (example can be) c) Don’t consider your parents, or friends as a potential market d) • Don’t be adamant to defend your idea or convey an offensive response to criticism.	2
Session XI	Activity on Product Pitching Role Play: Let learners form three groups, each of the group having at least four to five learners. The groups will act as: a) Potential venture capitalists/investors; b) Potential customers; and c) Members of regulatory agencies. Ask each learner to pitch his/her product in front of the three groups. Let each group play a serious role, full of critical inputs. Keep a separate group of observers who provide a careful analysis of each of the pitching event(s). Record the pitching process and ask each of the learners to review his/her pitching. Final suggestion: Ask them to keep rehearsing their pitching process. Through multiple rehearsals and analysis each learner should be able to make a razor sharp and pertinent pitch within one minute.	2
Session XII	Activity on Innovative Leadership Ask learners to write a brief note on their views or any incidents from their past when they realized the importance of any or many of the following: a) Self-Awareness and Control b) Empathy c) Social Expertness d) Personal Influence e) Mastery of Vision Let them interpret these with a free mind without prejudice or external hint or guidance. Once they have written give a brief input to explain the terms.	2
Session XIII	Activity on Designing Skit Role Play: Make multiple groups of learners. Allocate one title each from the following list of ten topics, to each group. a) Words can hurt, pay attention to them	2

	b) Share when you have failures c) Be kind d) Listen e) Disagree with respect f) Show empathy g) Share your own feelings h) Encourage the relationship i) Recognize your feeling j) Explain what feelings do k) Be savvy with discipline l) Apologize with dignity m) Model responsibility n) Make yourself available Ask each group to keep their topic secret from other groups. Now ask each group to come up with a small skit highlighting their topic. Other groups will try to decipher the message which must be the moral embedded in the skit. Let the other groups interpret the topic.	
Session XIV	Activity on Creative Confidence Ask learners to watch the following video for the methodology of developing human-centric solutions for creating social good (this can be a home assignment). The video entitled India's Hidden Hot Beds of Invention Ted Talk by Anil Gupta – https://www.ted.com/talks/anil_gupta_india_s_hidden_hotbeds_of_invention Show them the following Ted talk entitled “How to Build Your Creative Confidence” by David Kelly https://www.ted.com/talks/david_kelley_how_to_build_your_creative_confidence Based on the video, encourage them to build and take forward their idea. Ask any three learners to volunteer for presenting their idea in the five stages of design thinking. Time can be given for them to prepare. Ask other learners to also frame their ideas using the five-point framework of design thinking	2
Session XV	Self-reflection exercise on ethics and integrity: Make the learners do self-analysis and reflection. Ask them to follow the following steps: a) Write a short autobiography (say 100 words). b) Write 100 words about their present situation. c) Write 100 words about their future. Now ask them to identify what	2

	would be the top 5 things/characteristics/personality traits that will help them achieve their future goals and visions.	
Learning Resources: 1. Ashokan, M. S. (2015). <i>Karmayogi: A Biography of E. Sreedharan</i>. Penguin Random House, London, UK. 2. Sinek, S. (2009). <i>Start with Why: How Great Leaders Inspire Everyone to Take Action</i>. Portfolio London: Penguin. 3. Akhilesh, K. B. (n.d). Lecture no 9 Leadership in the NPTEL Course on Evolution of Management. https://nptel.ac.in/courses/122/108/122108038 4. Carnegie, D. (2018). <i>Overcoming Worry and Stress</i>. New Delhi: Manjul Publishing House. 5. Dawkins, E. R. (2016). <i>52 Weeks of Self Reflection—Your Guided Journal of Self Reflection</i>. A B Johnson Publishing, United States.		

2. Assessment

FA (20 marks)	Attendance (5 marks)
Activity-based Assessment.	75%-79%– 2 marks
	80%-85%– 3 marks
	86%-90%– 4 marks
	Above 90%– 5 marks
Summative Assessment (SA – 25 marks)	
Project Submission and Viva voce of 25 marks.	

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Ms. Debarati Deb Signature:	Name: Dr. Dipankar Rudra Signature:	Name: Mr. Anirban Ghosh Signature:

1. Course Description

Course Code	23THMVAC102		
Course Title	CAREER & TEAM SKILLS		
Credits	1		
Total Session Hours	30		
Number of Sessions	15		
Course Type	VAC		
Semester	II		
Intended Level	Certificate		
Issue(s) Addressed	Time management, conflict management, stress management, and self-development.		
Course Offered to	BBA in Tourism & Hospitality Management		
Regulation	2023		
Course Overview	This course: a) Acquire career skills and fully pursue to partake in a successful career path. b) Prepare a good résumé and prepare for interviews and group discussions. c) Understand the significance of team skills and design, develop, and adapt to situations as an individual and as a team member.		
Prerequisite	Basic knowledge of leadership, career and team skills		
Course Objectives	A student will be able to: a) Demonstrate a set of cognitive skills such as critical thinking, problem-solving and the ability to learn for smooth and efficient functioning at a workplace. b) Demonstrate a set of non-cognitive skills such as empathy, creativity, teamwork, and collaboration, for smooth and efficient functioning at a workplace. c) Use common technology messaging tools that are used in an organization for the flow of information and transition from command and control to informal communication during an online or offline team session. d) Actively use and operate online team communication tools such as Webinar, Skype, Zoom, Google, and Hangout. e) Appreciate and demonstrate team skills.		
Course Content			
Session	Session Details		Session Hours
Session I	Resume skills- (Briefing on introducing resume and related terms,		2

	importance, difference between VC, resume and bio-data) Provide some exemplary résumés for learners to evaluate, as a small group assignment based on essential components. Hold discussion on résumés with essential components and without essential components. Ask the learners to identify the errors made in the résumé.	
Session II	Interview skills- (Introduction to the meaning and types of interviews) Role Play: Make small groups of learners. One learner plays the role of interviewee and three or four others can be the interviewers. The role may be reversed after each interviewee answers one question. Other learners can observe and give their comments.	2
Session III	Group discussion skills- (Brief discussion on meaning, importance and types of group discussion) Simulation • Eight to ten learners as participants in a GD sitting in a semi-circle or a U-shaped arrangement. • The panelists may observe the group from a distance. • Duration of the GD maybe 45 minutes to an hour. • Roles that a candidate can play in a GD such as initiator, data giver, criticizer, supporter, listener, questioner, traffic policeman, spectator and leader (coordinator).	2
Session IV	Exploring career opportunities- (Short discussion on process of career exploration. Personal characteristics, requirements of jobs and sources of career information) Project Preparation of Career Case Study in an identified occupation: • Ask the learners to identify professionals in the career of their choice and interview them using an interview schedule or questionnaire. • The learners may analyse the responses in the case study and finalize their career plans. • Learners can also share the case studies with peers to think about a particular career.	2
Session V	Presentation skills (Discussion on meaning, types and strategies of presentation) An assignment can be given to the learners to select a particular type of presentation and suggest the opening and closing of the presentation. After the submission of the assignment, the faculty member can ask a few learners to describe the opening and closing of the presentation. Other learners can note down the strong and weak	2

	points. The same may be shared with the presenters.	
Session VI	Trust and collaboration (Short discussion on Importance of Trust in Creating a Collaborative Team and different types of trust) Learners may be asked to prepare a brief write up on each type of trust and present it in the classroom for sharing. It can be small group work.	2
Session VII	Listening as a team skill (Discussion on listening as a team skill and advantages of effective listening skills) Activity A group discussion can be organized and learners can observe the following advantages of listening skills: • Effective listening implies concentration and the use of other senses as it is more than just hearing the spoken words. • We learn more when we talk less and listen more. • The better we listen, the more will we be listened to. • Listening makes us more knowledgeable and thoughtful. • Without listening, messages are misunderstood and communication breaks down. • Good listeners always come across as wise people. • Good listening and skillful questioning give out a powerful message to those with whom we interact. • Good listening encourages open, honest and full communication. • Always seek clarification while listening, to ensure that your understanding is correct.	2
Session VIII	Brainstorming (Brief discussion on nature, importance and process of brainstorming) Demonstrate a brainstorming session using the following steps: a) Define the problem clearly and lay out any criteria to be met. b) Keep the session focused on the problem. c) Ensure that no one criticizes or evaluates ideas during the session. Criticism introduces an element of risk for group members when putting forward an idea. This stifles creativity and cripples the free-running nature of a good brainstorming session. d) Encourage an enthusiastic, uncritical attitude among members of the group. Try to get everyone to contribute and develop ideas, including the quietest members of the group. Let the students have fun brainstorming. Encourage them to come up with as many ideas as possible, from solidly practical ones to wildly impractical ones. Welcome creativity. e) Ensure that no train of thought is followed for too long. f) Encourage people to develop other people's ideas, or to use other ideas to create new ones. g) Appoint one person to note down ideas that come out of the session. A good way of doing this is to use a flip chart. This should be studied and evaluated after the session.	2

Session IX	Social and cultural etiquette (Brief discussion on importance of social and cultural etiquette in improving interpersonal relationships and the role of social and cultural etiquette in an organization) Organize a brainstorming session on social etiquette. Ask learners to prepare a list of social etiquette people practice in social settings. After the brainstorming session, cross-check whether learners have identified all etiquette listed below. If they have left any, describe them. • Always be on time for get-togethers to show respect for other people's time. • Make eye contact during a conversation. Avoid looking over the other person's shoulder unless you see potential danger. • Never interrupt the other person unless it is very essential • Give and receive compliments graciously. • Don't gossip with and about friends. After all, if you share gossip with someone, that person will wonder what you are saying behind his or her back. • Hold doors for anyone who seems to be struggling, including physically challenged people and parents with young children. • Always carry a gift for the host or hostess, if invited formally. • Do not visit friends or others during illness to avoid their exposure to illness. • Cover your mouth and nose when you sneeze. • Pay your share when you are with a friend or group. If you stiff your friends, they may not invite you again. This includes tipping.	2
Session X	Internal Communication (Brief discussion on the need for effective internal communication and different tools for effective internal communication) The learners may be asked to visit any organization/institution and: - Find out the tools used for internal communication within the organization/institution. - Learn the strengths and weaknesses of each tool (may take feedback from employees and employer/ seniors) - Prepare the write up and present it for discussion in the classroom. This will help to understand the effectiveness of the types of communication tools in making communication more functional and productive within an organization.	2
Session XI	Active listening strategies (Discussion on importance of active listening skills in workplace) Role play: Learners can play the role of a leader and team members and practice listening skills. The faculty member can observe the performance of learners (as a leader and team member) and assess them. Self-evaluation of listening skills: Learners may be asked to visit a few following websites given in the references to know about their listening skills. They may develop their own listening profile and address the	2

	challenges of listening effectively.	
Session XII	Peer behaviour and participation (Discussion on importance of group coherence in an organisation) Organizing a discussion session: • Peer observation reports of the behaviour and participation of each learner during a brainstorming session. • The faculty member may develop some criteria with the help of learners to assess the knowledge and learning of skills. • Self-learning report of each learner about their experience and reflection during a brainstorming session.	2
Session XIII	Peer pressure (Discussion on positive and negative effects of peer pressure) Organise a simulation model on the impact of positive and negative peer pressure and the strategies to overcome negative peer pressure.	2
Session XIV	Developing interpersonal skills (Discussion on the importance of interpersonal skills in management) Students may be asked to see the following video and identify areas of improvement, focus on basic communication skills and improve more advanced communication skills. https://www.skillsyouneed.com/interpersonal-skills.html	2
Session XV	Self-control (Discussion on defining self-control and impacts of self-control in organizational behaviour) The learners can watch the following video to learn about Self Control: Teaching Learners About Their Greatest Inner Strength with Nathan DeWall	2

Learning Resources:

1. Kuratko, D. F., & Rao, T. V. (2012). *Entrepreneurship: A South-Asian Perspective*. Cengage Learning.
2. Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2014). *Empreendedorismo-9*. Amgh Editora.
3. Desai, V. (2009). *Dynamics of Entrepreneurial Development and Management* (pp. 119-134). Himalaya Publishing House.
4. Dollinger, M. J. (1985). *Environmental contacts and financial performance of the small firm*. Journal of Small Business Management (pre-1986), 23(000001), 24.
5. Holt, D. H. (1992). *Entrepreneurship*. New Venture Creation.
6. Plsek, Paul E. (n.d). *Creativity, Innovation and Quality. (Eastern Economic Edition)*, New Delhi: Prentice-Hall of India. ISBN-81-203-1690-8.
7. Singh, N. P. (n.d). *Emerging Trends in Entrepreneurship Development*. New Delhi: ASEED.
8. Khanka, S. S. (2006). *Entrepreneurial Development*. S. Chand Publishing.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

FA (20 marks)	Attendance (5 marks)
Activity-based Assessment.	75%-79%– 2 marks
	80%-85%– 3 marks
	86%-90%– 4 marks
	Above 90%– 5 marks
Summative Assessment (SA – 25 marks)	
Project Submission and Viva voce of 25 marks.	

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Ms. Debarati Deb Signature:	Name: Dr. Dipankar Rudra Signature:	Name: Mr. Anirban Ghosh Signature:

Course Code	23BCOSE101	
Course Title	Entrepreneurship and Start-ups	
Credits	03	
Total Hours	30	
Hours per week	3	
Course Type	Skill Enhancement Course	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course offered to	Commerce	
Regulation	2023	
Course Overview:	This Course is framed to: a. Discuss the skill enhancement course of Entrepreneurship introduces the students to the concepts and importance of Entrepreneurship in the real world and helps them to grasp the culture of start -ups and initiative undertaken by Government of India.	
Prerequisites	Basic knowledge of Entrepreneurial Skills, Women Empowerment, Angel Investors, Government Schemes etc.	
Course Objectives:	A Student will be able to: ● Understand the fundamental concepts and importance of entrepreneurship and creativebehavior. ● Apply entrepreneurial ideas and opportunities in the market. ● Analyze and evaluate the initiatives and programs, such as Skill India, Start-up India, and Make inIndia, that support entrepreneurship. ● Create various business strategies and projects related to start-up and explore ways to overcome the challenges	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	STATEMENTS	Revised BLOOM’s Taxonomy
CO1	Understand the fundamental concepts and importance of entrepreneurship and creativebehavior.	U
CO2	Identify the Factors that influence Entrepreneurship	R
CO3	Explanation of the concept, importance, and steps involved in preparing a business plan.	U

[illegible]

UNIT-II	Entrepreneurship: Founding the Business a) Entrepreneur- Entrepreneurship- Enterprise; entrepreneurial ideas and opportunities in the contemporary business environment; b) Process of entrepreneurship, Skill India, Start-up India, Make in India, Role of industries/entrepreneur's associations and self-help groups, the concept, c) Role and functions of business incubators, angel investors, venture capital and private equity fund. d) Women Entrepreneur: Meaning, Role played by Women Entrepreneur in the economic Development e) Problems faced by Women Entrepreneur, Ways to Overcome the Challenges of Women Entrepreneurs.	10	CO 2 CO 3	R U
UNIT-III	Institutional Programs for Entrepreneurship and Business Plan a) Entrepreneurship Development Programme-Concept, Need for EDP – Problems of EDP– National and State Level Institutions for Entrepreneurship Development Programme b) Business Plan – Meaning Importance, Steps involved in preparing a Business Plan, c) Financial, Marketing, Human Resource, and Technical and Social aspects of the Business Plan. d) Common pitfalls to be avoided while preparing a Business Plan. Idea generation– Sources-Development of product /idea, Environmental scanning and SWOT analysis	10	CO2 CO4 CO5	R R A

Suggested Readings:

- (i) K. Ramachandran: Entrepreneurship Development, McGraw-Hill Education (India) Pvt. Limited.
- (ii) Robert J. Calvin: Entrepreneurial Management, McGraw-Hill
- (iii) Dr. R.C. Bhatia: Entrepreneurship – Business and Management, Sultan Chand & Sons
- (iv) Robert Hisrich, Michael Peters, Dean Shepherd, Entrepreneurship, McGraw-Hill Education
- (v) Desai, Vasant. Dynamics of Entrepreneurial Development and Management. Mumbai, Himalaya Publishing House.
- (vi) Jack M. Kaplan, Jack McGourty: Patterns of Entrepreneurship Management, John Wiley & Sons, Inc.
- (vii) Mathur, Abhay: Entrepreneurship, Taxmann's Publications(P)Ltd.

Blue Print of the Question Paper

Topic	Instructional Objectives	Remembering			Understanding			Applying			Analyzing			Evaluating			Creating			Total
		VS	S	L	VS	S	L	V	S	L	VS	S	L	VS	S	L	V	S	L	
Unit 1: Introduction to Entrepreneurship	To Understand the fundamental concepts and importance of entrepreneurship and creative behavior.	1	1			1			1			1			1					5
Unit 2: Entrepreneurship: Founding the Business	To Apply entrepreneurial ideas and opportunities in the market		1		1	1			1	1	1							1		7
Unit 3: Institutional Programs for Entrepreneurship and Business Plan	To analyze and evaluate the initiatives and programs, such as Skill India, Start-up India, and Make in India, that support entrepreneurship.		1			1	1			1								1		5
Total		2	3	0	1	3	1	0	2	2	1	1	0	0	0	1	0	1	1	17

Course Code	23COMSEC102
Course Title	Computer Applications in Business
Credits	3
Total Hours	45
Hours per Week	3
Course Type	Skill Enhancement Course
Semester	II
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Commerce
Regulation	2023

Course Overview	This Course is framed to: Discuss the computer knowledge to the commerce students. Demonstrate the application of word-processing software (MS Word). Explain the application of MS-Power Point software. Discuss the application of MS-Excel in the field of business.
Prerequisite	Basic knowledge of Computer, MS Office and critical thinking
Course Objectives	A student will be able to: Understand the various concepts & terminologies used in computer. Apply word-processing software in preparation & modification of various business documents. Analyze and evaluate various business documents. Create various business records, good presentation with the help of MS-Office software.

Course Outcomes based on RBT and Cognitive Level Mapping

At the end of this course, a student will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Understand the various concepts & terminologies used in computer.	R U
CO2	Apply word-processing software in preparation & modification of various business documents.	A1 A2
CO3	Analyze and evaluate various business documents.	A2 E
CO4	Create various business records, good presentation with the help of MS-Office software.	C

Course Content

Unit	Content	Lecture Hours	COs	CLs
Unit I	Overview of Information Technology: - Concepts of data - Information system and computer - Impact of information technology on business. - Types of Information System	5	CO1	R U A2
Unit II	Word Processing: - Introduction to Word Processing. - Word processing concepts, - Use of Templates - Working with word document- Editing text, Find and Replace text, Formatting, Spell check, Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting,	10	CO1 CO2 CO3 CO4	R U A1 A2 E C
	Header and Footer, e) Tables: Inserting, filling and formatting a table; Insert Pictures and Video; Printing documents. (Practical: Creating Business Documents using the above facilities)			

Unit III	Power Point Presentations : a) Basics of MS Power Point presentations: Slides, Fonts, Drawing, Editing; b) Inserting: Tables, Images, texts, Symbols; Design; Transition; Animation; and Slideshow. (Practical: Creating Business Presentations using above facilities).	10	CO1 CO2 CO3 CO4	R U A1 A2 E C
Unit IV	Use of MS Excel in Business and Creating Business Spreadsheet: a) Concept of Spreadsheet- Managing, Formatting, Entering data, Editing, and Printing of worksheet. b) Operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs. Spreadsheet functions: Mathematical, Statistical, Financial, Logical, Date and Time, Lookup and reference, Text functions. c) Creating business spreadsheet: Loan and Lease statement; Ratio Analysis; Payroll statements; Capital Budgeting; Depreciation Accounting; Graphical representation of data; Frequency distribution and its statistical parameters; Correlation and Regression	20	CO1 CO2 CO3 CO4	R U A1 A2 E C
Suggested Readings: a) T.D. Malhotra and S. Malhotra, <i>Information Technology and Its Application in Business</i> . Kalyani Publishers, New Delhi. b) Sangita Sardana and Sunil Malhotra, <i>Information Technology and Its Application</i> . Kalyani Publishers, New Delhi. c) K Kumar and S Rajkumar, <i>Computer Application in Business</i> . McGraw Hill Education The suggested readings and guidelines shall be notified by the department at least once in three years based on the selected software. Note: Latest edition of text books may be used.				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. ASSESSMENT

1. *Formative Assessment:* Evaluation Framework Document of Salesian College

2. *Summative Assessment:* Evaluation Framework Document of Salesian College



Salesian College
(Autonomous)
Sonada - Siliguri

National Education Policy (NEP) 2020 Curriculum Framework

For

Bachelor of Commerce

Department of Commerce

Curriculum Document
2023 – 2024

Course Content Template

1. Course Description

Course Code	23BCOOE101
Course Title	Basics of Accounting and Financial Theory
Credits	3
Total Hours	45
Hours per Week	3
Course Type	Multi-disciplinary courses
Semester	I
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Education
Regulation	2023
Course Overview	This course: The course in accounting and finance is designed to provide students with a strong foundation of accounting and finance with essential principles encompassing both accounting and finance domains. Moreover, it empowers students to Overview of investment instruments, including stocks, bonds, mutual funds, commodities, cryptocurrencies, and real estate. The core objective of this course is to enhance students' capacity for critical thinking, thereby fostering critical thinking to enrich overall curriculum comprehension.
Prerequisite	Basic knowledge of finance, accounting, investment avenues, budgeting etc.
Course Objectives (total 5)	A student will be able to: a. Provide a conceptual comprehension of accounting and finance, key terminology such as accounts, assets, liability, capital, income, revenue, gain, profit, surplus, loss, deficit, debit, and credit. Highlight the importance of recording transactions. b. Creates the understanding of the disparities among Personal accounts, Real accounts, and Nominal accounts. Explores the approach to recording transactions. c. Facilitate the aim, students will be introduced to financial planning and budgeting, with a focus on understanding the procedure involved in preparing a budget. d. Familiarize students with different investment alternatives and the decision-making process, the instruction will provide

	an overview of various investment options and their evaluation and process involved in investment decision process.			
Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Describe and discuss the key terminology, concepts tools and techniques used in accounting ang Finance.	R		
CO2	Contrast the Impact of the Financial System on Economic Development.	U		
CO3	Comparing Personal Accounts, Real Accounts, and Nominal Accounts, alongside Journalizing Transaction Procedures for a comprehensive understanding.	A1		
CO4	Illustrate Different Investment Avenues and Judging the Factors that Influence Investment Decisions.	A2		
CO5	Develop the process involved in investment decision process.	E		
CO6		C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Introduction Accounting: Meaning, importance and need. Some basic term accounts, assets, liability, capital, income, revenue, gain, profit, surplus, loss, deficit, debit and credit. Introduction to finance and its features, function, types and sources. Financial system and components; Role of financial system in economic development.	12		R U A1 A2 E C

Unit II	Recording of Transactions Personal account, Real account and Nominal account. Rules for debit and credit; double entry system, journalizing transaction; preparations of ledger, trial balance and financial statements.	10		R U A1 A2 E C
Unit III	Financial Planning and Budgeting Financial planning: Meaning, Importance and need. Steps in the financial planning process. Budget, types of budgets: Personal Budget, Family budget etc. Procedure for preparing budget.	10		R U A1 A2 E C
Unit IV	Investment Principles and Strategies Overview of investment instruments, including stocks, bonds, mutual funds, commodities, cryptocurrencies, and real estate. Investment: meaning, features and objectives. The investment decision process. Factors affecting the investment decision process.	13		R U A1 A2 E C

Learning Resources:

- i. Cornett Adair Nofsinger "**Finance application & Theory**".
- ii. E.Gordon and K.Natarajan " **Financial Markets and institutions**" Himalaya publishing house.
- iii. Prasanna Chandra " **Investment analysis and portfolio management**" McGraw - Hill Education.
- iv. LM Bhole and Jitendra Mahakud " **Financial institution and markets structure, growth and innovation**".
- v. Dr. Vinod Kumar, Atul Gupta and Manmeet Kaur "**Financial markets institutions and financial services**" Taxmann's.
- vi. Dr. Vanita Tripathi "**Fundamentals of investment**" Taxmann's.
- vii. S.N. Maheshwari, Suneel.K. Maheshwari and S.K. Maheshwari "**An Introduction of Accountancy**".
- viii. Prof. Amitabha Basu "**Financial Accounting**" Tee Dee Publications.
- ix. M. Hanif and A. Mukherjee "**Financial Accounting**" Mc Graw Hill education.

- | |
|--|
| <p>x. <i>S. Chand and S.C. Gupta</i> <i>“Financial Accounting”</i> Shukla & Grewal’s.</p> <p>xi. <i>Basu and Das</i> <i>“Financial Accounting”</i> Rabindra library.</p> |
|--|

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

(College round seal in all pages)

Course Code	23BCOMAJ103			
Course Title	Management Principles and Application			
Credits	04			
Lecture Practical Hours/week	60 05			
Category	Core Course			
Semester	II			
Regulation	2023			
Course Overview: This course offers a deep dive into the fundamental principles and practices of management. Covering key areas including planning, organizing, directing, coordinating, and controlling, the course equips students with essential skills to navigate the complex world of business management.				
Prerequisites: No prior knowledge of management is required, Proficiency in written and oral communication.				
Course Objectives: The course provides- • A comprehensive understanding of the significance of management, recognizing its pivotal role in organizational success. • Apply strategic planning techniques to formulate objectives and strategic pathways for effective decision-making. • Analyse organizational structures, coordination strategies, and team dynamics, enhancing the comprehension of effective functioning • Critically evaluate directing principles, diverse leadership styles, and motivation theories, fostering an informed approach to leadership and team engagement.				
Course Outcomes The students will be able to – • A comprehensive understanding of the significance of management, recognizing its pivotal role in organizational success. • Apply strategic planning techniques to formulate objectives and strategic pathways for effective decision-making. • Analyse organizational structures, coordination strategies, and team dynamics, enhancing the comprehension of effective functioning • Critically evaluate directing principles, diverse leadership styles, and motivation theories, fostering an informed approach to leadership and team engagement				
Syllabus				
UNITS	CONTENT	Lecture Hours	COs	CLs
UNIT-I	Introduction to Management a) Management: Concept, Definition, Scope, Levels, and Significance. b) Evolution of the Management Thoughts: Classical Approach -Taylor, Fayol; Neo-Classical Approach-Mayo,	11	CO1	U

	Hawthorne Experiments; Behavioural Approach; Systems Approach; Contingency Approach-Peter F. Drucker, Michael Porter, Senge and C.K. Prahalad.			
UNIT-II	Planning and Organizing a) Planning: Concept, Process, Steps in Planning, Significance and Types of Plan. b) Strategic Planning: Concept, Process, Importance and limitations. c) Environmental Analysis (internal and external environment): Importance and Techniques (SWOT and BCG Matrix). d) Decision-Making: Concept, Process, Types. e) Organizing: Concept, Process, Significance; Organizational Structure– Various forms; Span of Control, Different types of authority, Delegation of authority, Decentralization.	24	CO2	A1
UNIT-III	Directing and Coordinating a) Directing: Concept, Features, Importance, and Limitations. b) Motivation: Concept, Importance, Extrinsic, and Intrinsic motivation; Motivation Theories- McGregor, Maslow, Herzberg. c) Staffing: Concept and Process. d) Leadership: Concept, Importance, Qualities of a successful leader, Theories-Likert, Blake and Mouten, House's Path-Goal theory. e) Communication: Concept, Purpose, Process; Types of communications, Barriers to communication, Overcoming communication barriers. f) Coordinating: Concept, Features, Importance, Internal and External Coordination	15	CO3	A2
UNIT-IV	Controlling Controlling: Concept, Features, Importance and Limitations; Process; Essentials of a sound control system, Principles of Effective Control; Relationship between Planning and Control	10	CO4	E

References Books:

1. Andrew Crane: Business Ethics, Oxford University Press.
2. Peter F. Drucker: Management Tasks, Responsibilities, Practices, Allied Publisher Limited.
3. K.Asathappa: Management and Organisational Behaviour, Himalaya Publishing House.
4. J.S. Chandan: Management Concepts and Strategies, Vikas Publishing House Pvt. Limited.
5. Anil Bhatt: Management Principles. Process and Practices, Oxford University Press.
6. Gene Burton: Management Today, Principles and Practices, Tata McGraw Hill Publishing Company Limited

Course Outcomes (Cos) and Cognitive Level Mapping

At the end of this course, the students will be able to-

COs	STATEMENTS	Revised BLOOM's Taxonomy
CO1	A comprehensive understanding of the significance of management, recognizing its pivotal role in organizational success.	U
CO2	Apply strategic planning techniques to formulate objectives and strategic pathways for effective decision-making.	A1
CO3	Analyse organizational structures, coordination strategies, and team dynamics, enhancing the comprehension of effective functioning	A2
CO4	Critically evaluate directing principles, diverse leadership styles, and motivation theories, fostering an informed approach to leadership and team engagement	E



SALESIAN COLLEGE (AUTONOMOUS)
SONADA-SILIGURI

Curriculum Structure

For

Bachelor of Computer Science (B. Sc CS)

And

Bachelor of Computer Applications (CSA) Programmes

(Basic and Honours Degree)

As per National Education Policy – 2020 guidelines

Department of Computer Science & Applications

First Revision - 2024

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VISION

Vision

Develop young men and women as technocrats, researchers and entrepreneurs in the field of Computer Science and Applications.

Mission

- To conduct and support undergraduate programmes of quality in Computer Science and Applications by means of better teaching-learning methodologies and value-added courses.
- To provide a foundation undergraduate programme which will act as a feeder course for higher studies in the area of Computer Science and Applications.
- To build leadership skills, ethical values and teamwork among the students.
- To provide knowledge and software development skills so students become employable to IT professional and service sectors
- To develop manpower that would provide technical and intellectual leadership to the community.
- To inculcate professional excellence by encouraging projects in industry relevant technologies and through industry interactions.
- To strengthen the collaboration of department and industry through internships, mentorships and professional body activities.
- To foster teaching, research and extension activities for the creation of new knowledge for the development of society.
- To cater to the holistic development of students, following the principles of Don Bosco Institution, so they become intellectually competent, socially sensitive, morally upright and emotionally balanced.

PROGRAM OUTCOMES

Program Outcomes

Degree holders possess knowledge of the relevant field or profession, such that they:	
KNOWLEDGE	PO01: have acquired general understanding and insight into main theories and concepts
	PO02: are aware of the latest knowledge in the relevant field
	PO03: can apply the basic elements of information technology
Degree holders can apply the methods and procedures of the field or profession, such that they:	
SKILLS	PO04: can use the relevant equipment, technology and software
	PO05: can apply critical analytic methods
	PO06: can rationalise their decisions
	PO07: can evaluate critically the methods applied
	PO08: recognise when further data is needed and have the ability to retrieve it, assess its reliability and apply it in an appropriate manner
	PO09: can use reliable data and information resources in the relevant scientific field
	PO10: have acquired an open-minded and innovative way of thinking
Degree holders can apply their knowledge and skills in a practical way in their profession and/or further studies, such that they:	
COMPETENCE	PO11: have developed the competences and independence needed for further studies within the field
	PO12: can work in an independent and organised manner, set goals for their work, devise a work schedule and follow it
	PO13: can participate actively and lead work groups
	PO14: are capable of interpreting and presenting scientific issues and research findings

PROGRAM SPECIFIC OUTCOMES

Program Specific Outcomes

Degree holders possess knowledge of:		PO 01	PO 02	PO 03	PO 04	PO 05	PO 06	PO 07	PO 08	PO 09	PO 10	PO 01	PO 12	PO 13	PO 14
K N O W L E D G E	PSO01: A number of recurring themes, and a set of general principles that have broad application to the field of computer science	√													
	PSO02: The professional, legal, ethical, security, social and cultural issues and responsibilities inherent in the discipline of computing.	√													
	PSO03: The software systems are used in many different domains. This requires both computing skills and domain knowledge	√	√												
	PSO04: Software development fundamentals, including programming, data structures, algorithms and Complexity	√	√	√											
	PSO05: Systems fundamentals, including architectures and organization, operating systems, networking and communication, parallel and distributed computation, and security	√	√	√											
	PSO06: Mathematics fundamentals, including discrete structures, statistics and calculus	√	√	√											
	PSO07: Software engineering fundamentals, including software analysis and design, evaluation and testing, and software engineering processes	√	√	√											
	PSO08: Application fundamentals, including information management and intelligent applications	√	√	√											
	PSO09: Multiple programming languages, paradigms, and technologies	√	√	√											
Degree holders can apply the methods and procedures as follows:															
S K	PSO10: Know how to apply the knowledge they have gained to solve real issues as they will have the ability to analyse a problem, and identify and define the computing requirements				√			√		√					

PROGRAM SPECIFIC OUTCOMES

[illegible]

PROGRAM SPECIFIC OUTCOMES

[illegible]

MODEL PROGRAM STRUCTURE FOR CSA

Model Programme Structure for Bachelor of Computer Application (Basic/Honours) Programme

Sem.	Maor/Core 100 (Credit-4)	Minor/GE/ DSE 100 (Credit-4)	MD (Credit-3)	AECC		SEC-100 (Credit-3)/ Research Project/ Dissertation (Credit-12)	VOC/ Summer internship/ Apprenticeship-50 (Credit-4)	VAC 100 (Credit-4)	Semester Credit
				English-50 (Credit-4)	MIL-50 (Credit-4)				
1 st Year									
I	Paper-1 Paper-2	Paper-I (Elective-1)	Introduction to MS Office (MD1)	English (Cr-2)		SEC-1		Understanding India/ VE	20
II	Paper-3 Paper-4	Paper-I (Elective-2)	Introduction to MS Office (MD2)		Vernacular / Alt English (Cr-2)	SEC-2	VOC/ Summer internship/ Apprenticeship	ENVS	21
Exit option with Undergraduate Certificate in relevant Discipline on completion of 40 credits with 4 credits in work based vocational course offered during summer term or internship/ apprenticeship, in addition to 6 credits from skill-based courses earned during first and second semester.									
2 nd Year									
III	Paper-5 Paper-6	Paper-II (Elective-1)	Advanced Excel (MD3)	English (Cr-2)		SEC-3		Desktop Publishing	20
IV	Paper-7 Paper-8 Paper-9	Paper-II (Elective-2)			Vernacular / Alt English (Cr-2)		VOC/ Summer internship/ Apprenticeship		22
Exit option with Undergraduate Diploma in relevant Discipline on completion of 80 credits with 4 credits in skill based vocational course offered during first or second year summer term.									
3 rd Year									
V	Paper-10 Paper-11 Paper-12	Paper-III (Elective-1) & DSE-1					VOC (Soft skills & Personality Development)		22
VI	Paper-13 Paper-14 Paper-15	Paper-III (Elective-2) & DSE-2					VOC/ Summer internship/ Apprenticeship		20
Exit option with Bachelor's degree in relevant discipline on securing 120 credits. 4 credits in vocational course offered during first or second year summer term.									
4 th Year									
VII	Paper-16, Paper-17	Paper-IV (Elective-1), DSE-3, DSE-4 (Mini Project)							20
	Paper-16, Paper-17	Paper-IV (Elective-1I)				Research Methodologies			
VIII	Paper-18, Paper-19, Paper-20	Paper-V (Elective-1), DSE-5 (Project)							20
	Paper-18, Paper-19	Paper-V (Elective-1I)				Research Project/ Dissertation (Major course based)			20
Students will be awarded Undergraduate (Bachelor's) Honours Degree (with/ without Research) in relevant Discipline									

Question pattern for End-Semester Exam

<Department> (Honours / Program)

Pattern for 50 marks question paper:

Group A (10 marks) – 5 out of 8 questions, each of 2 marks

Group B (20 marks) – 4 out of 6 questions, each of 5 marks

Group C (20 marks) – 2 out of 4 questions, each of 10 marks

PAPER CODE /TITLE:

SEMESTER:

YEAR:

FULL MARKS: 50

ASSESSMENT TYPE: End Semester Examination (Summative) **S:** Short (2mks); **M:** Medium (5mks); **L:** Long (10mks)

QUESTION TYPE: Mixed (Subjective & Objective)

WEIGHTAGE: As per MHRD guideline

MODEL PROGRAM STRUCTURE FOR CSA

BLUEPRINT (COGNITIVE DOMAIN)

20%

35%

25%

←----- **20%** -----→

[illegible]

Assessment/ Evaluation scheme for Theory based subjects

Level	Bloom's Taxonomy Level	Continuous Internal Assessment (50% weightage)						Final Examination (50% weightage)	
		CIA-1 (10%)		CIA-2 (15%)		CIA-3 (20%)			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
1	Remember	60%		40%		30%		30%	
	Understand								
2	Apply	40%		40%		40%		40%	
	Analyse								
3	Evaluate			20%		30%		30%	
	Create								
Total		100%		100%		100%		100%	

CIA – 3 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.

Attendance – 5 marks

Assessment/ Evaluation scheme for Practical/ LAB based subjects

Level	Bloom's Taxonomy Level	Continuous Internal Assessment (50% weightage)						Final Examination (50% weightage)	
		CIA-1 (10%)		CIA-2 (15%)		CIA-3 (20%)			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
1	Remember	30%	30%	20%	20%	15%	15%	15%	15%
	Understand								
2	Apply	20%	20%	20%	20%	20%	20%	20%	20%
	Analyse								
3	Evaluate			10%	10%	15%	15%	15%	15%
	Create								
Total		100%		100%		100%		100%	

CIA–3 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.

Attendance – 5 marks

Assessment/ Evaluation Scheme for Lab Examination

Internal		Final Examination	
Assessment Criteria	Marks	Assessment Criteria	Marks
Attendance	5	Flowchart / Algorithm	10
Task completion	35	Program code	15
Practical Record	10	Execution and Formatting	15
		Viva voce	10
Total	50	Total	50

Possible streams after two years

Code	Description
S1	Full Stack Development
S2	Data Science
S3	Artificial Intelligence & Machine Learning
S4	Cyber Security
S5	Physical Computing

SYLLABUS

FIRST YEAR

Semester I

Course Type	Code	Title of Paper	Maximum Marks			Credits Allotted				Weekly Hours
			CIA	ESE	Total	L	T	P	C	
AECC-1		English	50	50	100	2			2	2
VAC	Two to be taken up by student	VE	25	25	50	1			1	1
		ENVS	25	25	50				1	1
Core/ Major - 1	23CSAMAJ101	Programming in C	50	50	100	3			3	3
	23CSAMAJ101L	Programming in C Lab	50	50	100			2	1	2
Core/ Major - 2	23CSAMAJ102	Digital Electronics	50	50	100	3	0	0	3	3
		Digital Electronics Lab	50	50	100			2	1	2
GE/ Minor-1	23XXXMIN10X	One from following: - Mathematics - Statistics - Physics - Commerce - Economics - Management - Mass Communications & Journalism - Geography	50	50	100	4	1	0	4	4
Multi-Disciplinary - 1	23CSAMDC101	Introduction to MS Word, Excel and PowerPoint	50	50	100	2	0		2	2
	23CSAMDC101	Introduction to MS Word, Excel and PowerPoint Lab	50	50	100			2	1	2
SEC (Siliguri)	23CSASEC101A	Introduction to Cyber Security	50	50	100	2			2	2
	23CSASEC101AL	Introduction to Cyber Security	50	50	100			2	1	2
SEC (Sonada)	23CSASEC101B	Introduction to Office Tools	50	50	100	2			2	2
	23CSASEC101BL	Introduction to Office Tools Lab	50	50	100			2	1	2
Total									23	26

SYLLABUS

Semester II

Course Type	Code	Title of Paper	Maximum Marks			Credits Allotted				Weekly Hours
			CIA	ESE	Total	L	T	P	C	
AECC-2		Vernacular/ Alt English	50	50	100	2			2	2
VAC	Two to be taken up by student	VE	25	25	50	1			1	2
		ENVS	25	25	50	1			1	
VOC		Summer internship/ Apprenticeship on vocational course						4	4	40
Core/ Major - 3	23CSAMAJ103	Object Oriented Programming with Java	50	50	100	3			3	3
	23CSAMAJ103L	Object Oriented Programming with Java Lab	50	50	100			2	1	2
Core/ Major - 4	23CSAMAJ104	Computer Organisation & Architecture	50	50	100	3			3	3
	23CSAMAJ104L	Computer Organisation & Architecture Lab	50	50	100			2	1	2
GE/ Minor-2	23STSMIN10X Or 23MATMIN10X	Paper-I of second minor (Statistics)	50	50	100	4	1	0	4	5
Multi-Disciplinary - 2	23COMOEL101	Accounting and Finance	50	50	100	3	0	0	3	4
SEC	23CSASEC102	Python Programming	50	50	100	2			2	2
	23CSASEC102L	Python Programming Lab	50	50	100			2	1	2
Total									22 (26)	27

SYLLABUS

SECOND YEAR

Semester III

Course Type	Code	Title of Paper	Maximum Marks			Credits Allotted				Weekly Hours
			CIA	ESE	Total	L	T	P	C	
AECC-1		English	50	50	100	2			2	2
VAC	Two to be taken by student	NCC/NSS/Sports/Cultural etc	25	25	50				1	?
			25	25	50				1	
Core/ Major – 3	23CSAMAJ201	Data Structures	50	50	100	3			3	3
	23CSAMAJ201L	Data Structures LAB	50	50	100			2	1	2
Core/ Major - 4	23CSAMAJ202	Operating Systems	50	50	100	3			3	3
	23CSAMAJ202L	Operating Systems Lab	50	50	100			2	1	2
GE/ Minor-1	23XXXMIN20X	Paper-II of previously chosen GE-1	50	50	100	4	0	0	4	4
Multi- Disciplinary - 3	23CSAMDC201	Advanced Excel	50	50	100	3	0	0	3	3
SEC-A	23CSASEC201A	Introduction to Web Technology (HTML, JavaScript & PHP)	50	50	100	2			2	2
	23CSASEC201AL	Introduction to Web Technology (HTML, JavaScript & PHP) Lab	50	50	100			2	1	2
SEC-B	23CSASEC201B	Introduction to Web Technology (Java Technology)	50	50	100	2			2	2
	23CSASEC201BL	Introduction to Web Technology (Java Technology) Lab	50	50	100			2	1	2
Total									22	25

SYLLABUS

Semester IV

Course Type	Code	Title of Paper	Maximum Marks			Credits Allotted				Weekly Hours
			CIA	ESE	Total	L	T	P	C	
AECC-2		Vernacular/ Alt English	50	50	100	2			2	2
VAC	Two to be taken by student	NCC/NSS/Sports/Cultural etc	25	25	50				1	2
			25	25	50				1	
VOC		Summer internship/ Apprenticeship on vocational course						4	4	
Core/ Major-5	23CSAMAJ203A	Graphics programming using OpenGL	50	50	100	3			3	3
	23CSAMAJ203AL	Graphics programming Lab	50	50	100			2	1	2
	23CSAMAJ203B	Programming with Python and ML libraries	50	50	100	3			3	3
	23CSAMAJ203BL	Programming with Python and ML libraries Lab	50	50	100			2	1	2
Core/ Major-6	23CSAMAJ204	Software Engineering	50	50	100	3			3	3
	23CSAMAJ204L	Software Engineering Lab	50	50	100			2	1	2
Core/ Major-7	23CSAMAJ205	Database Management Systems	50	50	100	3			3	3
	23CSAMAJ205L	Database Management Systems Lab	50	50	100			2	1	2
GE/ Minor-2	23STSMIN30X	Paper-II of previously chosen GE-2	50	50	100	4	1	0	4	5
Total									20 (24)	24

SYLLABUS

SEMESTER - I

Course 23CSAMAJ101

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMAJ101	Programming in C	3		45	2
23CSAMAJ101L	Programming in C Lab		1	30	2

Course Objectives:

This course is designed to give an introduction to programming and provide a comprehensive study of the C programming language.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSAMAJ101_1	Understand the basic concepts in computer programming e.g., procedural language, algorithm, flowchart, compiler, assembler, linker etc.
CO_CSAMAJ101_2	Write, compile and debug programs in C language.
CO_CSAMAJ101_3	Use different data types in a computer program.
CO_CSAMAJ101_4	Design programs involving decision structures, loops and functions.
CO_CSAMAJ101_5	Understand the dynamics of memory by the use of pointers.
CO_CSAMAJ101_6	Use different data structures and create/update basic data files.
CO_CSAMAJ101_7	Explain the difference between call by value and call by reference

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										
6																										
7																										

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction to C (a) History of C (b) Overview of Procedural Programming (c) Introduction to Algorithm & Flowcharts	6	CO_CSAMAJ101_1	R, U, A1
Unit-2	Compilation and Execution in C (a) Using Basic Header Files (stdio.h, conio.h, etc) (b) Using main() function (c) Compiling and Executing Simple Programs in C	6	CO_CSAMAJ101_1 CO_CSAMAJ101_2	R, U, A1
Unit-3	Data Types, Variables, Constants, Operators and Basic I/O	7	CO_CSAMAJ101_1 CO_CSAMAJ101_2	R, U, A1

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	(a) Declaring, Defining and Initializing Variables (b) Scope of Variables (c) Using Named Constants, Keywords, Comments (d) Data Types, Casting of Data Types (e) Operators (Arithmetic, Logical and Bitwise) (f) Character I/O (getc, getchar, putc, putchar etc) (g) Formatted and Console I/O (printf(), scanf(), cin, cout)		CO_CSAMAJ101_3	
Unit-4	Expressions, Conditional Statements and Iterative Statements (a) Simple Expressions in C (including Unary Operator Expressions, Binary Operator Expressions) (b) Operators Precedence in Expressions (c) Conditional Statements (if construct, switch-case construct) (d) Syntax and utility of Iterative Statements (while, do-while, and for loops) (e) Use of break and continue statements in loops (f) Nested Statements (Conditional as well as Iterative)	7	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4	R, U, A1, A2
Unit-5	Functions (a) Utility of functions (b) Call by Value (c) Call by Reference (d) Return data type of functions (e) Inline Functions (f) Parameters (g) Differentiating between Declaration and Definition of Functions (h) Command Line Arguments/Parameters in Functions (i) Variable number of Arguments	6	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4 CO_CSAMAJ101_7	R, U, A1, A2
Unit-6	Arrays and Strings (a) One Dimensional Arrays (Declaring and Defining an Array, Initializing an Array, accessing individual elements in an Array, manipulating array elements using loops) (b) Use of various types of arrays (integer, float and character arrays / Strings) (c) Two-dimensional Arrays (Declaring, Defining and Initializing Two-Dimensional Array, Working with Rows and Columns) (d) Introduction to Multi-dimensional arrays	6	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4 CO_CSAMAJ101_7	R, U, A1, A2
Unit-7	User-defined Data Types (Structures and Unions) (a) Understanding utility of structures and unions (b) Declaring, initializing and using simple structures and unions (c) Manipulating individual members of structures and unions (d) Array of Structures, Individual data members as structures (e) Passing and returning structures from functions	4	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4 CO_CSAMAJ101_6 CO_CSAMAJ101_7	R, U, A1, A2, E, C

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	(f) Structure with union as members, Union with structures as members.			
Unit-8	Pointers and References in C (a) Understanding a Pointer Variable (b) Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables) (c) Pointers to Pointers, Pointers to structures (d) Passing pointers as function arguments (e) Returning a pointer from a function (f) Using arrays as pointers, Passing arrays to functions (g) Pointers vs. References (h) Declaring and initializing references (i) Using references as function arguments and function return values	8	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4 CO_CSAMAJ101_5 CO_CSAMAJ101_6 CO_CSAMAJ101_7	R, U, A1, A2, E, C
Unit-9	Memory Allocation in C (a) Differentiating between static and dynamic memory allocation (b) Use of malloc, calloc and free functions (c) Storage of variables in static and dynamic memory allocation	3	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4 CO_CSAMAJ101_5 CO_CSAMAJ101_6 CO_CSAMAJ101_7	R, U, A1, A2, E
Unit-10	File I/O (a) Opening and closing a file (b) Reading and writing Text Files [Using put(), get(), read() and write() functions] (c) Random access files	4	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4 CO_CSAMAJ101_5 CO_CSAMAJ101_6	R, U, A1, A2, E, C
Unit-11	Pre-processor Directives (a) Understanding the Pre-processor Directives (#include, #define, #error, #if, #else, #elif, #endif, #ifdef, #ifndef and #undef) (b) Macros	3	CO_CSAMAJ101_1 CO_CSAMAJ101_2	R, U, A1, C

Suggested Readings

1. "The C Programming Language ANSI C Version", Kernighan & Ritchie, Prentice Hall Software Series.
2. "ANSI C - Made Easy", Herbert Schildt, Osborne McGraw-Hill.
3. "Learning to Program in C", N. Kantaris, Babani.
4. "C - The Complete Reference", Herbert Schildt, Osborne McGraw-Hill.
5. "Programming in C", Reema Thareja, Oxford University Press.

Practical (Laboratory)

CSAMAJ101L: Programming in C Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of problems:

1. WAP to perform input/output of all basic data types.
2. WAP to enter two numbers and find their sum.
3. WAP to reverse a number.
4. WAP to Swap Two Numbers.
5. WAP to Check Whether a Number is Even or Odd
6. WAP to compute the factors of a given number.
7. WAP to enter marks of five subjects and calculate total, average and percentage.
8. WAP to print the sum and product of digits of an integer.
9. WAP to Check Whether a Character is Vowel or Consonant

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10. WAP to Find the Largest Number Among Three Numbers
11. WAP to compute the sum of the first n terms of the following series $S = 1 - 2 + 3 - 4 + 5 - \dots$
12. WAP to compute the sum of the first n terms of the following series $S = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots$
13. WAP to print figures as follow:

*	1	1	1
**	1 1	2 3	1 2
***	1 2 1	4 5 6	1 2 3
****	1 3 3 1	7 8 9 10	1 2 3 4
*****	1 4 6 4 1	11 12 13 14	1 2 3 4 5
* * * * *	A		A
* *	A B		B A
* *	A B C		C B A
* *	A B C D		D C B A
* *	A B C D E		E D C B A
* * * * *	A B C D E F		F E D C B A

14. WAP to perform following actions on an array entered by the user:
 - a) Print the even-valued elements
 - b) Print the odd-valued elements
 - c) Calculate and print the sum and average of the elements of array
 - d) Print the maximum and minimum element of array
 - e) Remove the duplicates from the array
 - f) Print the array in reverse order
 The program should present a menu to the user and ask for one of the options. The menu should also include options to re-enter array and to quit the program.
15. WAP that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
16. Write a program that swaps two numbers using pointers.
17. Write a program in which a function is passed address of two variables and then alter its contents.
18. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main() function.
19. Write a program to find sum of n elements entered by the user. To write this program, allocate memory dynamically using **malloc()** / **calloc()** functions or **new** operator.
20. Write a menu driven program to perform following operations on strings:
21. Show address of each character in string
22. Concatenate two strings without using **strcat** function.
23. Concatenate two strings using **strcat** function.
24. Compare two strings
25. Calculate length of the string (use pointers)
26. Convert all lowercase characters to uppercase
27. Convert all uppercase characters to lowercase
28. Calculate number of vowels
29. Reverse the string
30. Given two ordered arrays of integers, write a program to merge the two-arrays to get an ordered array.
31. WAP to display Fibonacci series
 - (i) using recursion, (ii) using iteration
32. WAP to calculate Factorial of a number
 - (i) using recursion, (ii) using iteration
33. WAP to calculate GCD of two numbers:
 - (i) with recursion (ii) without recursion.
34. Write a menu-driven program to perform following Matrix operations (2-D array implementation):
 - a) Sum b) Difference c) Product d) Transpose
35. Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
36. Write a program to retrieve the student information from file created in previous question and print it in the following format:
Roll No. Name Marks

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37. Copy the contents of one text file to another file, after removing all whitespaces.
38. WAP to write a sentence to a file.
39. WAP to read a line from a file and display it.
40. Write a function that reverses the elements of an array in place. The function must accept only one pointer value and return void.
41. Write a program that will read 10 integers from user and store them in an array. Implement array using pointers. The program will print the array elements in ascending and descending order.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Director (Approved by)
Name: Signature:	Name: Signature:	Name: Signature:

(Seal)

(Seal)

(College Seal)

SYLLABUS

Course 23CSAMAJ102

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMAJ102	Digital Electronics	3		45	3
23CSAMAJ102L	Digital Electronics Lab		1	30	2

Course Objectives:

To introduce the concepts of digital electronics that is at the core of logical and arithmetic operations in a computer.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_CSAMAJ102_1	Understand the basic design of a computer, hardware and software components.
CO_CSAMAJ102_2	Understand the need of different number systems, conversion rules, encoding systems.
CO_CSAMAJ102_3	Understand the basics of gates, Boolean functions and their uses
CO_CSAMAJ102_4	Construct basic combinational circuits and verify their functionalities
CO_CSAMAJ102_5	Apply the design procedures to design basic sequential circuits
CO_CSAMAJ102_6	Design and evaluate a solution to a digital design problem

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										
6																										

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Fundamentals of Computers (a) Generation of Computers and Computer Languages, (b) Computer Systems, (c) Basic block Diagram, (d) Von- Neumann Architecture, (e) Types of Computers, (f) Hardware, Firmware, (g) I/O Devices, (h) Storage classifications, (i) Language translators.	15	CO_CSAMAJ102_1	R, U
Unit-2	Number Systems & Arithmetic (a) Number System: Positional, Binary, Octal, Decimal, Hexa-Decimal and their Representations. (b) Methods of conversion from one Base to another. (c) Binary Addition, Subtraction, Multiplication.	15	CO_CSAMAJ102_1 CO_CSAMAJ102_2	R, U, A1

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	(d) Negative number representation: Sign magnitude, 1's, (f) 2's Complement. (e) Different coding schemes: BCD, EBCDIC, UNICODE, ASCII, GRAY, Excess-3 Codes. (f) Fixed and floating-point representation			
Unit-3	Logic gates (a) AND, OR, NOT Gates and their Truth Tables, NOR, NAND & XOR gates, (b) Boolean algebra: Basic Boolean Laws, De-Morgan's theorem, Boolean function and their truth tables, (c) MAP simplification, Minimization techniques, K-Map, (d) Sum of Product & Product of Sum, (e) Venn diagram.	15	CO_CSAMAJ102_1 CO_CSAMAJ102_2 CO_CSAMAJ102_3 CO_CSAMAJ102_4	R, U, A1, A2, E
Unit-4	Circuits, Adders, Flip Flops, Registers etc. (a) Combinational & Sequential circuits, (b) Half adder & Full adder, (c) BCD adder, (d) Full Subtractor, (e) Multiplexer, De-Multiplexer, Encoder, Decoder. (f) Flip-flops-RS, D, JK, T & Master-Slave flip-flops, (g) Counters, Shift registers	15	CO_CSAMAJ102_1 CO_CSAMAJ102_2 CO_CSAMAJ102_3 CO_CSAMAJ102_4 CO_CSAMAJ102_5 CO_CSAMAJ102_6	R, U, A1, A2, E, C

Suggested Readings

1. Rajaraman V. & Radhakrishnan, "An Introduction to Digital Computer Design", PHI.
2. Malvino & Leach, "Digital Principles & Applications", TMH.
3. S. Salivahanan, S. Arivazhagan, "Digital Circuits and Design", Oxford University Press

Practical (Laboratory)

CSAMAJ102L: Digital Electronics Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of problems:

1. Show the basic operations of AND, OR, and NOT gates.
2. Simplify the Boolean expression: $F = A'B + AB' + AB$.
3. Implement the following Boolean function using logic gates: $F = A \cdot B + \bar{C}$.
4. Design a half adder circuit using basic logic gates.
5. Draw the truth table and Karnaugh map for a 3-input XOR gate.
6. Implement a 4-to-1 multiplexer using basic logic gates.
7. Design a 3-bit binary up-counter using flip-flops.
8. Design a 4-bit shift register with serial input and parallel output.
9. Implement a T flip-flop using a D flip-flop.
10. Design a 4-bit binary comparator circuit.
11. Implement a 3-bit magnitude comparator using basic logic gates.
12. Design a 3-to-8 decoder with enable input.
13. Design a 4-to-1 multiplexer using 2-to-1 multiplexers.
14. Implement a 1-to-4 demultiplexer using basic logic gates.

SYLLABUS

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Director (Approved by)
Name: Signature:	Name: Signature:	Name: Signature:

(Seal)

(Seal)

(College Seal)

SYLLABUS

SEMESTER - II

Course 23CSAMAJ103

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMAJ103	Object Oriented Programming with Java	3		45	3
23CSAMAJ103L	Object Oriented Programming with Java Lab		1	30	2

Course Objectives:

- To introduce students to the Java programming language.
- To create Java programs that leverage the object-oriented features of the Java language, such as encapsulation, inheritance and polymorphism; use data types, arrays and other data collections;
- To implement I/O functionality to read from and write to text files.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSAMAJ103_1	Understand the principles and practices of object-oriented analysis and design in the construction of robust, maintainable programs which satisfy their requirements.
CO_CSAMAJ103_2	Implement, compile, test and run Java programs comprising more than one class, to address a particular software problem.
CO_CSAMAJ103_3	Demonstrate the principles of object-oriented programming.
CO_CSAMAJ103_4	Demonstrate the ability to use simple data structures like arrays in a Java program.
CO_CSAMAJ103_5	Understand the concept of package, interface, multithreading and File handling in java.
CO_CSAMAJ103_6	Ability to make use of members of classes found in the Java API (such as the Math class).

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										
6																										

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels

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Unit-1	Introduction to Java - Java Architecture and Features, Understanding the semantic and syntax differences between C++ and Java, - Compiling and Executing a Java Program, - Variables, Constants, Keywords, Data Types, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, - Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, - Java Methods - Defining, Scope, Passing and Returning Arguments, - Type Conversion and Type and Checking, Built-in Java Class Methods),	6	CO_BCAMAJ103_1 CO_BCAMAJ103_2	R, U
Unit-2	Arrays, Strings and I/O - Creating & Using Arrays (One Dimension and Multi-dimensional), Referencing Arrays Dynamically, - Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability & Equality, Passing Strings To & From Methods, - String Buffer Classes. - Simple I/O using System.out and the Scanner class, Byte and Character streams, Reading/Writing from console and files.	8	CO_BCAMAJ103_1 CO_BCAMAJ103_2 CO_BCAMAJ103_4	R, U, A1
Unit-3	Object-Oriented Programming Overview - Principles of Object-Oriented Programming, Defining & Using Classes, Controlling Access to Class Members, - Class Constructors, Class Variables & Methods, Method Overloading, Objects as parameters, - final classes, Object class, Garbage Collection.	7	CO_BCAMAJ103_1 CO_BCAMAJ103_2 CO_BCAMAJ103_3	R, U, A1, A2,
Unit-4	Inheritance, Interfaces, Packages, Enumerations, Autoboxing and Metadata - Inheritance: (Single Level and Multilevel, Method Overriding, Dynamic Method Dispatch, Abstract Classes), - Interfaces and Packages, Extending interfaces and packages, Package and Class Visibility, - Using Standard Java Packages (util, lang, io, net), - Wrapper Classes, Autoboxing/Unboxing, - Enumerations and Metadata.	14	CO_BCAMAJ103_1 CO_BCAMAJ103_2 CO_BCAMAJ103_3 CO_BCAMAJ103_5	R, U, A1, A2, E,
Unit-5	Exception Handling, Threading, Networking and Database Connectivity - Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions - Multithreading: Thread class & Runnable interface, creating single & multiple threads, Thread prioritization, synchronization & communication, suspending/resuming threads. - Using java.net package, Overview of TCP/IP and Datagram programming. - Accessing and manipulating databases using JDBC.	15	CO_BCAMAJ103_1 CO_BCAMAJ103_2 CO_BCAMAJ103_3 CO_BCAMAJ103_5	R, U, A1, A2, E, C

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Unit-6	Applets and Event Handling - Java Applets: Introduction to Applets, Writing Java Applets, Working with Graphics, Incorporating Images & Sounds. - Event Handling Mechanisms, Listener Interfaces, Adapter and Inner Classes. - The design and Implementation of GUIs using the AWT controls, Swing components of Java Foundation Classes such as labels, buttons, text fields, layout managers, menus, events and listeners; Graphic objects for drawing figures such as lines, rectangles, ovals, using different fonts. - Overview of servlets.	15	CO_BCAMAJ103_1 CO_BCAMAJ103_2 CO_BCAMAJ103_3 CO_BCAMAJ103_6	R, U, A1, A2, E, C

Suggested Readings

1. Ken Arnold, James Gosling, David Homes, "The Java Programming Language", 4/e, 2005.
2. James Gosling, Bill Joy, Guy L Steele Jr, Gilad Bracha, Alex Buckley, "The Java Language Specification, Java SE (Java Series)", 8/e, Addison Wesley, 2014.
3. Joshua Bloch, "Effective Java" 2/e, Addison-Wesley, 2008.
4. Cay S. Horstmann, Gary Cornell, "Core Java 2 Volume 1", 9/e, Prentice Hall, 2012
5. Cay S. Horstmann, Gary Cornell, "Core Java 2 Volume 2 - Advanced Features", 9/e, Prentice Hall, 2013.
6. Bruce Eckel, "Thinking in Java", 3/e, PHI, 2002.
7. E. Balaguruswamy, "Programming with Java", 4/e, McGraw Hill.2009.
8. Paul Deitel, Harvey Deitel, "Java: How to Program", 10/e, Prentice Hall, 2011.
9. Bert Bates, Kathy Sierra, "Head First Java", Orielly Media Inc. 2/e, 2005.
10. "Object Oriented Programming through JAVA", P Radha Krishna, University Press.
11. David J. Eck, "Introduction to Programming Using Java", CreateSpace Independent Publishing Platform, 2009.
12. John R. Hubbard, "Programming with JAVA", Schaum's Series, 2/e, 2004.
13. R. Nageswara, "Core Java: An Integrated Approach", Dreamtech Press.

Practical (Laboratory)

CSAMAJ103L: Programming in JAVA Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of problems:

1. To find the sum of any number of integers entered as command line arguments
2. To find the factorial of a given number
3. To learn use of single dimensional array by defining the array dynamically.
4. To learn use of **.length** in case of a two dimensional array
5. To convert a decimal to binary number
6. To check if a number is prime or not, by taking the number as input from the keyboard
7. To find the sum of any number of integers interactively, i.e., entering every number from the keyboard, whereas the total number of integers is given as a command line argument
8. Write a program that show working of different functions of String and StringBuffer classes like setCharAt(), setLength(), append(), insert(), concat() and equals().
9. Write a program to create a "distance" class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer
10. Modify the "distance" class by creating constructor for assigning values (feet and inches) to the distance object. Create another object and assign second object as reference variable to another object reference variable. Further create a third object which is a clone of the first object.
11. Write a program to show that during function overloading, if no matching argument is found, then java will apply automatic type conversions (from lower to higher data type)

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12. Write a program to show the difference between public and private access specifiers. The program should also show that primitive data types are passed by value and objects are passed by reference and to learn use of final keyword
13. Write a program to show the use of static functions and to pass variable length arguments in a function.
14. Write a program to demonstrate the concept of boxing and unboxing.
15. Create a multi-file program where in one file a string message is taken as input from the user and the function to display the message on the screen is given in another file (make use of Scanner package in this program).
16. Write a program to create a multilevel package and also creates a reusable class to generate Fibonacci series, where the function to generate Fibonacci series is given in a different file belonging to the same package.
17. Write a program that creates illustrates different levels of protection in classes/subclasses belonging to same package or different packages
18. Write a program “DivideByZero” that takes two numbers a and b as input, computes a/b, and invokes Arithmetic Exception to generate a message when the denominator is zero.
19. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.
20. Write a program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
21. Write a program to demonstrate priorities among multiple threads.
22. Write a program to demonstrate multithread communication by implementing synchronization among threads (Hint: you can implement a simple producer and consumer problem).
23. Write a program to create URL object, create a URL Connection using the openConnection() method and then use it examine the different components of the URL and content.
24. Write a program to implement a simple datagram client and server in which a message that is typed into the server window is sent to the client side where it is displayed.
25. Write a program that creates a Banner and then creates a thread to scrolls the message in the banner from left to right across the applet’s window.
26. Write a program to get the URL/location of code (i.e. java code) and document (i.e. html file).
27. Write a program to demonstrate different mouse handling events like mouseClicked(), mouseEntered(), mouseExited(), mousePressed, mouseReleased() and mouseDragged().
28. Write a program to demonstrate different keyboard handling events.
29. Write a program to generate a window without an applet window using main() function.
30. Write a program to demonstrate the use of push buttons

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Course 23CSAMAJ104

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMAJ104	Computer System Architecture	3		45	3
23CSAMAJ104L	Computer System Architecture LAB		1	30	2

Course Objectives:

The course covers the basic principles of computer organization and architecture.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSAMAJ104_1	Be familiar with the building blocks of modern computers
CO_CSAMAJ104_2	Understand binary, octal and hexadecimal number systems
CO_CSAMAJ104_3	Understand the fundamentals of different instruction set architectures and their relationship to the CPU design.
CO_CSAMAJ104_4	Understand the principles and the implementation of computer arithmetic using digital logic.
CO_CSAMAJ104_5	Understand memory organisation

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy
Unit – I	Data representation - Number Systems & Complements - Fixed-point, floating-point and character representation - Addition, subtraction, magnitude comparison, multiplication and division algorithms for integers.	6	CO_BCAMJ104_1 CO_BCAMJ104_2	R, U, A1,
Unit-2	Memory and I/O Unit - Memory hierarchy - Main memory - Cache, Auxiliary and associative memory - Input / Output: External Devices - I/O Modules : Interfaces - Programmed I/O - Interrupt-Driven I/O	6	CO_BCAMJ104_5, CO_BCAMJ104_1	R, U

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	○ Direct Memory Access, I/O Channels.			
Unit-3	Overview of register transfer and micro operations - Register Transfer Language, Register transfer. - Bus and Memory transfer - Arithmetic, Logic & Shift Micro-operations. - Arithmetic Logic Shift Unit.	8	CO_ BCAMJ104_3	R, U, A1
Unit-4	Basic Computer Organization and Design - Instruction codes, Computer registers - Computer instructions. - Timing and Control, Instruction cycle. - Register, I/O, Memory-Reference Instructions - Input-output and interrupt. - Design of Basic computer, Design of Accumulator Unit	8	CO_ BCAMJ104_2, CO_ BCAMJ104_1	R, U, A1, A2
Unit-5	Central Processing Unit - Introduction, General Register Organization, Stack Organization - Instruction format. - Addressing Modes - Data transfer and manipulation - Program Control, Reduced Instruction Set Computer (RISC).	6	CO_ BCAMJ104_4	R, U, A1, A2
Unit -6	Pipeline and Parallel Processing - Parallel Processing - Pipelining - Arithmetic Pipeline - Instruction Pipeline - RISC Pipeline	6	CO_ BCAMJ104_4	R, U, A1, A2

Suggested Readings

1. M. Mano, "Computer System Architecture", Pearson Education 1992.
2. A. J. Dos Reis, "Assembly Language and Computer Architecture using C++ and JAVA", Course Technology, 2004.
3. W. Stallings, "Computer Organization and Architecture - Designing for Performance", 8/e, Prentice Hall of India, 2009.
4. M.M. Mano, "Digital Design", Pearson Education Asia, 2013.
5. Carl Hamacher, "Computer Organization", 5/e, McGraw Hill, 2012.

SYLLABUS

Practical (Laboratory)

CSAMAJ104L: Computer System Architecture Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of problems:

1. General study of Basic & Universal gates
 - a) AND b) OR c) NOT d) NOR
 - e) NAND f) XOR g) XNOR
2. Simple Boolean Expression using Basic gates and Universal gates:
 $\bar{A}.(B+A) + \bar{B}.A$
3. Design Half-Adder, Full-Adder, Half-Subtractor, Full-Subtractor Circuit.
4. Parallel Adder (2-bit, 3-bit) Circuit.
5. Implement logic functions in SOP form using Multiplexer.
6. Implement De-multiplexer.
7. Implement 7- Segment Display with Decoder.
8. Implement Parity Generator (Odd & Even)
9. Implement Magnitude Comparator (1-bit, 2-bit, 3-bit)
10. Circuit Design and implementation of Flip-Flops (SR, JK, D) using ICs
11. Circuit design and implementation of Decoder (2x4) and Encoder (4x2) using ICs

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Signature:	Signature:	Signature:
	(Seal)	(Seal)

(College Seal)

Course 23CSEC101

Course Outcomes Mapping with Program Specific Outcomes							
Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07
1							
2							
3							
4							
5							
6							
7							

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Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction to Cyber Security a) Defining Cyberspace and Overview of Computer and Web-technology b) Architecture of cyberspace c) Communication and web technology d) Internet infrastructure for data transfer and governance e) Regulation of cyberspace f) Concept of cyber security g) Issues and challenges of cyber security	6	CO_CSASEC101_1	R, U, A1
Unit-2	Cyber Crime and Cyber Law (a) Classification of cyber crimes (b) Common cyber crimes (c) Cybercriminals modus-operandi (d) Reporting of cyber crimes (e) Remedial and mitigation measures (f) Legal perspective of cyber crime 1. IT Act 2000 and its amendments 2. Cybercrime and offences (g) Organisations dealing with Cybercrime and Cyber security in India	6	CO_CSASEC101_1 CO_CSASEC101_2	R, U, A1
Unit-3	Social media Overview and Security (a) Introduction to Social networks (b) Types of Social media (c) Social media platforms (d) Social media monitoring (e) Hashtag (f) Social media marketing (g) Social media privacy (h) Challenges, opportunities and pitfalls in online social network (i) Security issues related to social media (j) Flagging and reporting of inappropriate content (k) Laws regarding posting of inappropriate content (l) Best practices for the use of Social media	7	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3	R, U, A1
Unit-4	E-Commerce and Digital Payments (a) Definition of E- Commerce (b) Components of E-Commerce (c) Elements of E-Commerce security (d) E-Commerce threats (e) E-Commerce security best practices (f) Introduction to digital payments (g) Components of digital payment and stake holders (h) Modes of digital payments 1. Banking Cards	7	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4	R, U, A1, A2

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	2. Unified Payment Interface (UPI) 3. e-Wallets 4. Unstructured Supplementary Service Data (USSD) 5. Aadhar enabled payments (i) Digital payments related common frauds and preventive measures (j) RBI guidelines on digital payments and customer protection in unauthorised banking transactions (k) Relevant provisions of Payment Settlement Act, 2007			
Unit-5	Digital Devices Security, Tools and Technologies for Cyber Security (a) End Point device and Mobile phone security (b) Password policy (c) Security patch management (d) Data backup (e) Downloading and management of third-party software (f) Device security policy (g) Cyber Security best practices 1. Significance of host firewall and Anti-virus 2. Management of host firewall and Anti-virus 3. Wi-Fi security 4. Configuration of basic security policy and permissions	6	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4 CO_CSAMAJ101_7	R, U, A1, A2

References

1. Cyber Crime Impact in the New Millennium, by R. C Mishra, Author Press. Edition 2010.
2. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
3. Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson, 13th November, 2001)
4. Electronic Commerce by Elias M. Awad, Prentice Hall of India Pvt Ltd.
5. Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
6. Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.
7. Fundamentals of Network Security by E. Maiwald, McGraw Hill.

Practical (Laboratory)

CSASEC101AL: Introduction to Cyber Security Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

Unit-2	1. Checklist for reporting cybercrime at Cybercrime Police Station. 2. Checklist for reporting cybercrime online. 3. Reporting phishing emails. 4. Demonstration of email phishing attack and preventive measures.
Unit-3	1. Basic checklist, privacy and security settings for popular Social media platforms. 2. Reporting and redressal mechanism for violations and misuse of Social media platforms.
Unit-4	1. Configuring security settings in Mobile Wallets and UPIs. 2. Checklist for secure net banking.

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Unit-5	1. Setting, configuring and managing three password policy in the computer (BIOS, Administrator and Standard User). 2. Setting and configuring two factor authentications in the Mobile phone. 3. Security patch management and updates in Computer and Mobiles. 4. Managing Application permissions in Mobile phone. 5. Installation and configuration of computer Anti-virus. 6. Installation and configuration of Computer Host Firewall. 7. Wi-Fi security management in computer and mobile.

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SYLLABUS

Course 23CSASEC101B

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSASEC101B	Introduction to Office tools	2		30	2
23CSASEC101BL	Introduction to Office tools Lab		1	30	2

Course Objectives:

In this comprehensive course, participants will develop a solid command over fundamental office tools, enabling them to enhance their productivity, streamline tasks, and communicate effectively in a modern workplace.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSASEC102_1	Develop a strong foundation in using Word for various document creation and formatting tasks. They will be equipped to create professional-looking documents, collaborate effectively, and automate processes using features and tools within Microsoft Word.
CO_CSASEC102_2	Develop the skills needed to create visually stunning, engaging, and effective presentations. They will be equipped to convey information with clarity, captivate audiences through multimedia integration, and confidently deliver impactful presentations for various settings and purposes.
CO_CSASEC102_3	Possess a solid understanding of essential Excel functions and features. They will be able to efficiently manage and format data, perform basic calculations, and create simple charts and tables. Participants will gain the foundational skills necessary to use Microsoft Excel for various personal and professional tasks.
CO_CSASEC102_4	Overall, participants will emerge from this unit with a well-rounded proficiency in Microsoft Excel's data management and calculation capabilities. They will be equipped to create and manage structured data tables, perform various calculations using functions, and organize worksheets effectively for both analysis and presentation purposes.

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Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1	✓		✓					✓			✓	✓		✓					✓							
2	✓		✓	✓				✓		✓	✓	✓		✓					✓					✓	✓	✓
3	✓		✓	✓	✓			✓		✓	✓	✓	✓						✓			✓		✓	✓	✓
4	✓		✓	✓	✓			✓		✓	✓	✓	✓						✓			✓		✓	✓	✓

Unit	Contents	Hours	Outcomes	Bloom's Revised Taxonomy Levels
Unit-1	Introduction to Microsoft Word (a) Overview of the Word interface and navigation, Creating and saving documents, Understanding the Ribbon and Quick Access Toolbar, Customizing the Word environment. (b) Text Formatting and Styling: Applying font styles, sizes, and colors, Paragraph formatting (alignment, spacing, indentation), Creating bulleted and numbered lists, Using styles and themes for consistent formatting. (c) Document Layout and Page Setup: Setting page margins, orientation, and size, Headers and footers for document branding, Inserting page breaks and section breaks, Creating and formatting tables for data presentation. (d) Document Organization and Navigation: Inserting and formatting page numbers, Inserting images, shapes, and SmartArt graphics, Wrapping text around objects, Adding and formatting text boxes, Embedding and linking multimedia element. (e) Mail Merge and Automation	9	CO_BCA SEC102_1	R, U, A1
Unit-2	Introduction to Microsoft PowerPoint (a) Overview of the PowerPoint interface and navigation, Creating and saving presentations, Understanding the Slide Master and layout options, Customizing the PowerPoint environment. (b) Slide Design and Layout: Choosing and customizing slide layouts, Applying themes and color schemes, Adding and formatting text boxes and placeholders, Working with shapes and lines for visual impact. (c) Adding Visual Elements: Adding audio and video clips to slides, Adjusting multimedia playback options, Using animations and	8	CO_BCA SEC102_2	R, U, A1, A2

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	transitions for engagement, Creating interactive buttons and hyperlinks. (d) Advanced Slide Techniques: Applying slide transitions and animations, Timing animations and slide transitions, Customizing motion paths for objects, Creating interactive quizzes and surveys (e) Slide Show Customization: Setting up and configuring slide show settings, Applying all learned concepts to create a comprehensive presentation.			
Unit-3	Introduction to Microsoft Excel (a) Overview of Excel interface and workbook navigation, Understanding rows, columns, and cells, Entering and editing data in cells, Formatting cells for text, numbers, and dates. (b) Basic Formulas and Functions: Introduction to basic formulas (addition, subtraction, multiplication, division), Using AutoSum for quick calculations, Applying built-in functions (SUM, AVERAGE, COUNT), Copying and pasting formulas and functions. (c) Cell References and Relative/Absolute Values: Understanding cell references (relative, absolute, mixed), Working with absolute and relative values in formulas, Using cell references in basic calculations, Applying formulas across multiple cells. (d) Data Management and Formatting: Sorting data in ascending and descending order. (e) Introduction to Charts and Graphs: Creating basic charts (column, line, pie), Formatting chart elements (titles, axes, data labels), Customizing chart styles and colors, Adding charts to worksheets and resizing.	8	CO_BCA SEC102_3 CO_BCA SEC102_4	R, U, A1, A2
Unit-4	Working with Microsoft Excel (a) Working with Tables: Creating tables for efficient data management, Sorting and filtering data within tables, Adding and removing rows and columns, Formatting tables for visual appeal. (b) Perform Calculations with Functions: Creating Simple Formulas, Setting up your own formula, Date and Time Functions, Financial Functions, Logical Functions, Functions Mathematical Functions. (c) Worksheet Organization and Printing: Inserting and deleting worksheets, Renaming and color-coding worksheets, Adjusting page setup and print options, Printing worksheets and workbooks.	5	CO_BCA SEC102_3 CO_BCA SEC102_4	R, U, A1, A2

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Suggested Readings

1. Joan Lambert, Curtis Frye. *Microsoft Office 2016 Step by Step*.
2. Nancy Conner, Matthew MacDonald. *Microsoft Office 2016: The Missing Manual*.
3. K. Murali Kumar. *Microsoft Office 2019: A Quick and Easy Guide*.
4. Dr. S. Anbazhagan and S. Paneerselvam. *Microsoft Office 365: A Complete Guide*.

Practical (Laboratory)

CSASEC101BL: Introduction to Office Tools Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

Word	1. Change the font style and size in a Word document 2. Apply bold, italic, and underline formatting to text 3. Create bulleted and numbered lists 4. Set margins and adjust page orientation in Word 5. Insert headers and footers into a document 6. Add page numbers to a document 7. Insert a table into a Word document 8. Merge and split cells in a table 9. Apply borders and shading to table cells 10. Insert images and shapes into a Word document 11. Add hyperlinks to text in a document 12. Embed a spreadsheet or chart into a Word document
Excel	1. Enter data into cells in Excel 2. Perform basic arithmetic operations (addition, subtraction, multiplication, division) in Excel 3. Use autofill to quickly fill a series of cells with data 4. Use the SUM function to add a range of cells 5. Use the IF function to create conditional statements in Excel 6. Apply number formatting (currency, percentage, etc.) to cells in Excel 7. Format cells to display dates and times 8. Apply cell styles and themes to a worksheet 9. Create a chart or graph in Excel 10. Customize the appearance of a chart (titles, axis labels, etc.) 11. Add trendlines or error bars to a chart
PowerPoint	1. Create a new presentation in PowerPoint 2. Add slides to a presentation and choose different layouts 3. Rearrange the order of slides in a presentation 4. Apply a theme to a PowerPoint presentation 5. Change the background colour or image of a slide 6. Apply text formatting (font size, colour, etc.) to slide titles and bullet points 7. Insert images or videos into a PowerPoint presentation 8. Add animations and transitions between slides 9. Embed audio files or add narration to a presentation 10. Start a slideshow from the beginning or from the current slide 11. Use presenter view to view presenter notes while presenting 12. Set up slide timings or record a narration for a slideshow

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Course 23CSASEC103

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSASEC103	Python Programming	2		30	2
23CSASEC103L	Python Programming Lab		1	30	2

Course Overview:

A core Python programming course typically provides a comprehensive introduction to the Python programming language, catering to both beginners and individuals with prior programming experience. The course aims to teach the fundamental concepts, syntax, and techniques required to write efficient and functional Python code.

Course Objectives:

The objectives of a core Python programming course are to equip students with a strong foundation in the Python programming language.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_CSASE103_1	Basic Proficiency: - Write, execute, and understand basic Python programs using appropriate syntax and semantics. - Demonstrate a clear understanding of Python's data types, including numbers, strings, lists, tuples, and dictionaries.
CO_CSASE103_2	Control Flow and Looping: - Implement conditional statements (if, elif, else) to control program flow. - Use loops (for and while) to iterate through sequences and perform repetitive tasks.
CO_CSASE103_3	Function Implementation: - Define functions with parameters and return values. - Utilize function abstraction for modular and reusable code.
CO_CSASE103_4	Data Manipulation: - Effectively manipulate strings and perform operations on lists, tuples, and dictionaries. - Utilize list comprehensions for concise data transformations.
CO_CSASE103_5	Preparation for Advanced Learning: Lay a strong foundation for further exploration of advanced Python topics, such as web development, data science, and machine learning.

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										

Units	Content	Lecture Hours	COs	RBT
Unit-1	Unit-1: Components, control structures, functions.	20		R, U

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	<i>Components:</i> Python Interpreter/Shell, Identifiers, Keywords, Statements and Expressions, Variables, Operators, Precedence and Associativity, Data types, Indentation, Comments, Reading Input, Print Output, Type Conversions, The type() function and Is operator, Dynamic and Strongly Typed Language; <i>Control Flow Statements:</i> The if Decision Control Flow Statement, The if...else Decision Control Flow Statement, The if...elif...else Decision Control Statement, Nested if Statement, The while Loop, The for Loop, The continue and break Statements; <i>Functions:</i> Built-In Functions, Commonly Used Modules, Function Definition and Calling the Function, The return Statement and void Function, Scope and Life time of Variables, Default Parameters, Command Line Arguments; <i>Strings:</i> Creating and Storing Strings, Basic String operations, Accessing Characters in String by Index Number, String Slicing and Joining, String methods			
Unit-2	<i>Lists:</i> Creating Lists, Basic List Operations, Indexing and Slicing in Lists, Built-In Functions Used on Lists, List Methods, The del Statement, <i>Dictionaries:</i> Creating Dictionary, Accessing and modifying key:value pairs in Dictionaries, Built-In Functions Used on Dictionaries, Dictionary methods, The del Statement. <i>Tuples and Sets:</i> Creating tuples, basic tuple operations, indexing and slicing in tuples, built-in functions used on tuples, relations between tuples and lists, relations between tuples and dictionaries, tuple methods, using zip() function, <i>Sets:</i> Set Methods, Frozen set.	20		R, U, A1
Unit-3	<i>Files:</i> Types of files, creating and reading text data, file methods to read and write data, reading and writing binary files, the Pickle module, reading and writing CSV files, <i>Object-oriented programming:</i> Classes and Objects, Creating Classes in Python, Creating Objects in Python, The constructor method, classes with multiple objects, class attributes versus data attributes; encapsulation, inheritance, polymorphism.	20		U, A1, E

Text Books:

1. Gowrishankar S, Veena A, "Introduction to Python Programming", 1st Edition, CRC Press/Taylor & Francis, 2018. ISBN-13: 978-0815394372. [Unit I&II- 2,3,4,5,6,7,8,9 Unit III-11,12].

SYLLABUS

2. Eric Matthes, "Python Crash Course- A Hands-On, Project-Based Introduction to Programming", 2nd Edition, No Starch Press, 2019.[Unit III-15, Unit IV-16]
3. Wesley J. Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education, 2016. [Unit IV-2,5].

Reference Books:

1. Kamthane, A. N., & Kamthane, A.A. , "Programming and Problem Solving with Python", McGraw Hill Education, 2017.
2. Mark Lutz, "Learning Python", 5th edition, Orelly Publication, 2013, ISBN 978- 1449355739.
3. Ljubomir Perkovic, "Introduction to Computing Using Python- An Application Development Focus", Wiley,2012.

Practical (Laboratory)

CSASEC103L: Python Programming Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

Unit-1	1. Write a Python script that prints "Hello, World!" to the console. 2. Create a program that takes two numbers as input from the user and prints their sum. 3. Write a program to calculate the area of a rectangle given its length and width. 4. Write a Python script that demonstrates the use of different data types (integers, floats, strings, booleans). 5. Create a program that swaps the values of two variables without using a temporary variable. 6. Write a program that converts temperature from Celsius to Fahrenheit. 7. Write a Python script that checks whether a number is positive, negative, or zero. 8. Create a program that determines if a given year is a leap year or not. 9. Write a program that compares three numbers and prints the largest one. 10. Write a Python script that prints all the even numbers from 1 to 20 using a for loop. 11. Create a program that calculates the factorial of a number using a while loop. 12. Write a program that prompts the user for a number and prints its multiplication table. 13. Create a program that checks if a given word is a palindrome or not. 14. Write a Python function to calculate the area of a circle given its radius. 15. Create a function that checks if a number is prime or not. 16. Write a program that uses a function to calculate the factorial of a number.
Unit-2	1. Write a Python script that demonstrates basic list operations (creation, accessing elements, appending, slicing). 2. Write a program that sorts a list of numbers in ascending order. 3. Create a dictionary representing a person with keys for "name", "age", and "city". Print each key-value pair. 4. Write a program that takes a dictionary as input and prints all keys and their corresponding values. 5. Add a new key-value pair to an existing dictionary. 6. Write a program that removes a key from a dictionary if it exists, and prints the updated dictionary. 7. Iterate over a dictionary and print only the keys. 8. Write a program that updates the values of a dictionary based on user input. 9. Create a tuple containing the days of the week. Print the third day of the week. 10. Write a program that unpacks a tuple into multiple variables and prints them. 11. Concatenate two tuples and print the result. 12. Write a program that converts a tuple into a list. 13. Iterate over a tuple and print each element. 14. Write a program that checks if a given element exists in a tuple. 15. Create two sets of numbers and find their union, intersection, and difference.

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	16. Write a program that checks if a given element exists in a set. 17. Add an element to a set and print the updated set. 18. Remove an element from a set and print the updated set. 19. Iterate over a set and print each element. 20. Write a program that removes duplicate elements from a list and converts it into a set. 21. Write a program that checks if one set is a subset or superset of another set. 22. Write a program that finds the symmetric difference between two sets.
Unit-3	1. Write a Python script that reads a text file and counts the number of lines. 2. Create a program that reads a CSV file and prints its contents. 3. Write a program that writes data to a text file and reads it back. 4. Create a class called Car with attributes make , model , and year . Include a method get_info() that prints the car's information. 5. Create an object of the Car class and call the get_info() method. 6. Modify the Car class to include an __init__() method that initializes the attributes. 7. Create multiple objects of the Car class with different attributes. 8. Add a class variable num_cars to the Car class that keeps track of the number of cars created. 9. Include a class method display_num_cars() that prints the total number of cars. 10. Create a class ElectricCar that inherits from the Car class. Add an additional attribute battery_size . 11. Override the get_info() method in the ElectricCar class to include battery information. 12. Create a class HybridCar that inherits from both the Car and ElectricCar classes. Add an additional attribute gas_tank_size . 13. Override the get_info() method in the HybridCar class to include both battery and gas tank information. 14. Modify the Car class to make the make , model , and year attributes private. 15. Include getter and setter methods to access and modify these private attributes. 16. Create a class Truck that inherits from the Car class. Override the get_info() method to include additional information specific to trucks. 17. Overload the + operator for the Car class to combine two cars into a new object with combined attributes. 18. Create an abstract base class called Vehicle with abstract methods start() and stop() . 19. Implement the Vehicle class in the Car , ElectricCar , and HybridCar classes.

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SYLLABUS

Course 23CSAVAC101

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAVAC101	Website Designing using WordPress		1	30	2

Course Overview:

This course introduces:

- A comprehensive introduction to WordPress, one of the most popular content management systems (CMS) for website development.
- Students will learn how to create, customize, and manage websites using WordPress.
- Students will be able to build and maintain functional and visually appealing websites for personal blogs, portfolios, small businesses, and more.

Course Objectives:

To enable a student to:

- Understand the basics of WordPress and its role in website development.
- Create and set up a WordPress website from scratch.
- Customize website appearance using themes and templates.
- Add and manage content, including text, images, and multimedia.
- Troubleshoot common issues and perform website maintenance.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_CSAVAC101_1	Enumerate key features and basics of WordPress
CO_CSAVAC101_2	Understand the structure of a website and the importance of tools.
CO_CSAVAC101_3	Classify plugins and tools for content management and optimization.
CO_CSAVAC101_4	Create a simple website or blog.
CO_CSAVAC101_5	Optimize and enhance website security
CO_CSAVAC101_6	Create and Set Up a WordPress Website

Units	Content	Lecture Hours	COs	RBT
Unit-1	Introduction to WordPress - CMS and its uses - WordPress- Advantages & Disadvantages - Creating a Blog website on wordpress.org, installation on localhost and FTP - Choosing and installing WordPress themes. - Customizing website appearance through theme settings. - Creating custom menus and navigation. - Working with widgets and sidebars. - Creating and formatting posts and pages. - Inserting images, videos, and other media. - Organizing content using categories and tags. - Managing comments and discussions.	15	CO1 CO2 CO3 CO4	R U A1 A2
Unit-2	Optimization, Maintenance & Security - Optimizing content for search engines. - Improving website performance and load times. - Ensuring responsive design for various devices. - Creating user accounts and assigning roles. - Setting up user permissions and access levels.	15	CO4 CO5 CO6	A1 A2 E C

SYLLABUS

	f. Implementing basic security measures. g. Identifying and resolving common WordPress issues. h. Backing up and updating the website. i. Regular maintenance tasks for a healthy website. j. Create a 4-page website			

Learning Resources:

Open online resources

1. https://www.tutorialspoint.com/wordpress/wordpress_tutorial.pdf

Practical (Laboratory)

CSAVAC101: Website designing using WordPress

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

1. Install WordPress on a web server.
2. Difference between WordPress.com and WordPress.org.
3. Create a local development environment for WordPress using tools like XAMPP or WAMP.
4. Choose a WordPress theme for a website.
5. Customize a WordPress theme to fit specific design requirements.
6. Create a new page in WordPress.
7. Differentiate between pages and posts in WordPress.
8. Add multimedia content (images, videos) to a page or post.
9. Create and customize navigation menus in WordPress.
10. Explain the concept of parent and child menu items in WordPress.
11. Add custom links to a WordPress menu.
12. Add widgets to the sidebar or footer of a WordPress website.
13. State the purpose of common WordPress widgets like Recent Posts, Categories, and Search.
14. Create custom widgets or modify existing ones.
15. Install and activate plugins in WordPress.
16. Explain the purpose of popular WordPress plugins such as Yoast SEO, Contact Form 7, and WooCommerce.
17. Troubleshoot plugin conflicts in WordPress.
18. Describe the benefits of using page builder plugins like Elementor or Beaver Builder in WordPress.
19. Create custom layouts and designs using a page builder.
20. Integrate custom CSS or JavaScript code into a WordPress website built with a page builder.

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Course 23CSAVAC102

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAVAC102	Graphics Designing		1	30	2

Course Objectives:

The objective of this Graphic Designing (Basic) course is to provide students with a comprehensive introduction to the fundamental principles and techniques of graphic design. Through a balanced blend of theoretical instruction and practical hands-on exercises, students will develop a strong foundation in design concepts, software proficiency, and creative problem-solving skills. By the conclusion of the course, students will be equipped to produce visually appealing and effective designs tailored for both print and digital media. The course aims to enable students to:

- Understand the pivotal role and significance of graphic design in various industries and contexts.
- Comprehend and apply key elements and principles of design, such as line, shape, colour, texture, balance, and contrast, to create visually engaging compositions.
- Familiarize themselves with essential design software, including Adobe Photoshop and Illustrator, to execute design tasks efficiently.
- Demonstrate practical skills through hands-on exercises, culminating in the creation of a basic digital artwork that incorporates fundamental design elements.
- Develop a solid grasp of typography fundamentals, encompassing typefaces, fonts, hierarchy, kerning, and leading, and effectively apply them in layout design.
- Apply principles of effective layout design to craft visually compelling posters, integrating typography and layout techniques learned during the course.
- Gain proficiency in image editing and manipulation, including image resolution, file formats, colour modes, cropping, retouching, and colour adjustments using Photoshop tools.
- Enhance a photograph through practical application of image editing techniques, showcasing an understanding of digital image enhancement.
- Cultivate skills in designing for digital media, producing web graphics and social media posts that communicate effectively in the digital realm.
- Explore the realm of vector graphics and logo design, acquiring a foundational understanding of logo creation.
- Successfully conceive, design, and execute a final project consisting of a simple logo and business card, applying learned design principles and software skills.
- Present and articulate their final design projects, engage in constructive critique, and evaluate design choices effectively.
- By achieving these objectives, students will be well-prepared to embark on their graphic design journey, equipped with a strong foundation that supports further exploration and advancement in the field.

Course Outcomes:

Code	Outcome description
CO_CSAVAC102_1	Upon successful completion of this course, students will have or be able to A comprehensive understanding of the fundamental concepts that underpin the world of graphic design. They will appreciate the pivotal role that graphic design plays in shaping visual communication across various industries and contexts. Students will be adept at identifying and applying essential design elements and principles, including line, shape, colour, texture, balance, and contrast, to create visually captivating compositions. By successfully completing this module, students will have established a strong foundation in graphic design, enabling them to approach design tasks with a critical eye and an informed perspective. They will be equipped to analyze visual compositions, comprehend the interplay of design elements, and initiate their creative journey in the realm of graphic design.
CO_CSAVAC102_2	Developed a comprehensive understanding of the art and science of typography, as well as the principles governing effective layout design. Students will possess the

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	ability to discern and select appropriate typefaces and fonts based on design objectives, and they will have a keen grasp of establishing visual hierarchy through techniques such as kerning and leading. The students will be adept at applying the principles of effective layout design, employing concepts such as alignment, proximity, contrast, and balance to create visually harmonious and compelling compositions. Through hands-on experience, students will have honed their skills by designing a poster that emphasizes the integration of typography and layout elements.
CO_CSAVAC102_3	Developed a proficient skill set in image editing techniques and manipulation, enabling them to effectively enhance and transform digital images. Students will have gained a solid understanding of key technical aspects, including image resolution, file formats, and colour modes, allowing them to make informed decisions when working with visual content. By successfully completing this module, students will possess the practical skills needed to manipulate digital images with precision and creativity. They will be equipped to make visual improvements to photographs, create visually appealing compositions, and effectively convey desired moods and messages through image manipulation. This proficiency in image editing will serve as a valuable asset in various design projects and provide students with a strong foundation for further exploration in the realm of graphic design.
CO_CSAVAC102_4	Acquired the essential skills to excel in the realm of digital design. They will be adept at crafting impactful visuals tailored for digital media, including web graphics and social media posts, effectively engaging audiences in the digital landscape. The students will have a foundational understanding of vector graphics and logo design principles, empowering them to create distinctive and versatile visual identities. Through hands-on experience, students will have successfully conceptualized, designed, and executed a simple logo and business card, showcasing their ability to apply learned concepts to real-world design projects.

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction to Graphics Design (a) Understanding the role and importance of graphic design (b) Elements and principles of design: line, shape, colour, texture, balance, contrast, etc. (c) Introduction to design software (e.g., Adobe Photoshop, Illustrator, InDesign) (d) Hands-on: Creating a simple digital artwork using basic design elements	6	CO_CSAVAC102_1	R, U, A1
Unit-2	Typography and Layout Design (a) Typography fundamentals: typefaces, fonts, hierarchy, kerning, leading (b) Principles of effective layout design (c) Hands-on: Designing a poster with emphasis on typography and layout	8	CO_CSAVAC102_2	R, U, A1
Unit-3	Image Editing and Manipulation (a) Introduction to image resolution, file formats, and colour modes (b) Basic image editing techniques: cropping, retouching, colour adjustments (c) Hands-on: Enhancing a photograph using Photoshop tools	10	CO_CSAVAC102_3	R, U, A1
Unit-4	Digital Design	6	CO_CSAVAC102_4	R, U, A1

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	(a) Designing for digital media: web graphics, social media posts (b) Introduction to vector graphics and logo design			

Recommended Resources:

1. Ellen Lupton. *Thinking with Type*.
2. Williams, Robin. *The Non-Designer's Design Book*.
3. Dabner, David., Stewart, Sandra. and Vickress, Abbie. *Graphic Design School: The Principles and Practice of Graphic Design*.
4. Adobe Creative Cloud Tutorials and Documentation

Websites and Blogs:

Smashing Magazine: A great resource for design articles, tutorials, and inspiration.

Behance: A platform to showcase and discover creative work, offering inspiration and insights.

YouTube Channels:

The Futur: Offers insightful videos on design principles, typography, and more.

Tutpad: Provides a variety of graphic design tutorials for beginners.

Practical (Laboratory)

CSAVAC102: Graphics Design

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

Photoshop	1. Crop an image in Photoshop. 2. Adjust brightness and contrast in Photoshop. 3. Use the clone stamp tool to remove unwanted elements from an image. 4. Use layers in Photoshop. 5. Create a new layer and apply blending modes. 6. Make a selection using the lasso tool in Photoshop. 7. Retouch blemishes in a portrait using the spot healing brush tool. 8. Use the dodge and burn tools to selectively lighten and darken areas of an image.
Illustrator	1. Create a rectangle and a circle in Illustrator. 2. Use the pen tool to draw custom shapes. 3. Apply stroke and fill colours to shapes in Illustrator. 4. Create and format text in Illustrator? 5. Difference between point text and area text. 6. Convert text to outlines in Illustrator. 7. Demonstrate use of artboards in Illustrator. 8. Organize artwork using layers in Illustrator. 9. Create a new layer and rearrange layers in the layer panel.
InDesign	1. How do you create a new document in InDesign? 2. Explain how to set up margins and columns for a document in InDesign. 3. Describe how to add pages to a document in InDesign. 4. How do you import text and images into an InDesign document? 5. Explain how to create text frames and link them together in InDesign. 6. Describe how to adjust image size and position within an InDesign document. 7. How do you create a grid layout for a magazine spread in InDesign? 8. Explain the process of aligning and distributing objects on a page in InDesign. 9. Describe how to apply colours, gradients, and effects to objects in InDesign. 10. How do you export an InDesign document to PDF format?

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	11. Explain how to set up bleeds and crop marks for printing in InDesign. 12. Describe how to package an InDesign document to include all linked images and fonts.

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SYLLABUS

Course 23CSAVAC201

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAVAC201	Desktop Publishing		1	30	2

Course Objectives:

This course offers students the chance to create a collection of publications suitable for inclusion in their portfolios. Participants will work with industry-standard page layout and graphics software, acquiring a comprehensive understanding of print production technology and processes. This includes learning how to effectively communicate with other print experts, estimate expenses, and manage digital output.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_CSAVAC201_1	Gain and employ the abilities to craft both fiction and non-fiction pieces, engage in professional editing, generate digital content, formulate print and web-based materials, and oversee the progression of writing and editing projects.
CO_CSAVAC201_2	Utilize theoretical and technical expertise in innovative ways to align with diverse readerships and markets, addressing their unique needs and expectations.

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction to DTP (a) Preliminary understanding of DTP-related terms (b) Text and graphics formats (c) Difference between drawings and images (d) Image storage formats such as BMP, GIF, TIFF, and JPG/JPEG	4	CO_CSAVAC201_1	R, U, A1
Unit-2	Adobe PageMaker Basics (a) Workspace overview Preferences, menus, toolbox, palettes, converting documents from other programs, saving and closing documents, document pages, master pages, printing a document. (b) Working with Text Utilizing text in PageMaker, importing text, text frames, story editor, character formatting, paragraph formatting, type utilities, working with styles, editing existing styles, working with tables. (c) Working with objects Rectangles and ellipses, polygons, manipulating objects, filling and stroking objects. (d) Working with colour Colours palette, adding new colours, editing and deleting colours, verifying colour suitability for printing, trapping. (e) Working with images and graphics	12	CO_CSAVAC201_1 CO_CSAVAC201_2	R, U, A1

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	Image/graphic file formats, image resolution, placing images, modifying images and graphics, working with frames, text wrap, image masks. (f) Exporting as HTML and PDF files Options for exporting, exporting pages, exporting PDF files.			
Unit-3	CorelDraw (a) Basics of CorelDraw Menus, expanded menus and dialog boxes, toolbars, property bar, status bar, toolbox, zoom tool (zooming in and out), pan tool, document viewing, desktop power tools, starting or opening documents, saving, importing, and exporting files. (b) Rectangles and Ellipses Paths, Objects, Properties, drawing rectangles, rounding rectangle corners, creating ellipses, transforming ellipses into a pie shape or arc. (c) Select, Move, and Size Selecting and deselecting objects, marquee selection, moving an object, copying and pasting objects, cloning objects, copying/moving an object between documents, handles and scaling, altering object dimensions. (d) Polygons, Stars, and Spirals Creating polygons; drawing stars; creating polygons as stars; Creating symmetrical spirals; drawing logarithmic spirals. (e) Nodes and Paths Adding, deleting, joining, and converting using various types of nodes. (f) Lines and Curves Freehand tool, Bezier tool, knife tool, eraser tool, artistic media tool. (g) Colour and Fills Closing object paths, filling with uniform colour, changing outline colour, eyedropper tool, paint bucket tool, interactive mesh fill tool. (h) Working with Text Adding artistic text and paragraph text, using handles, text formatting, flowing text between paragraph text frames, directing paragraph text onto a path and into an object, making text flow around an object, rotating text, free skew tool, interactive drop shadow tool, vector extrusions.	14	CO_CSAVAC201_1 CO_CSAVAC201_2	R, U, A1

Suggested Readings

1. Roger C. Parker and Kate Shoup. *Desktop Publishing & Design For Dummies*.
2. Deke McClelland and Mark AbdeInour. *CorelDRAW for Dummies*.

Practical (Laboratory)

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CSAVAC201: Desktop publishing

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

PageMaker	1. Create a new document in Adobe PageMaker. 2. Setting up page size and orientation. 3. Specify margins and columns for a document in PageMaker. 4. Insert and format text in Adobe PageMaker. 5. Create text frames and link them together. 6. Apply paragraph and character styles to text. 7. Import images and graphics into a PageMaker document. 8. Resize and crop images within PageMaker. 9. Apply borders and effects to images. 10. Arrange and align objects on a PageMaker page. 11. Create master pages and apply them to document pages. 12. Use layers to organize elements within a PageMaker document.
CorelDraw	1. How do you create basic shapes such as rectangles, circles, and polygons in CorelDRAW? 2. Describe how to manipulate objects using the selection and transformation tools. 3. Explain how to apply fills and outlines to shapes in CorelDRAW. 4. How do you create and format text in CorelDRAW? 5. Describe how to convert text to curves for further manipulation. 6. Explain how to apply text effects such as drop shadows and outlines. 7. How do you import images into a CorelDRAW document? 8. Describe how to crop and resize images within CorelDRAW. 9. Explain how to apply effects and filters to images. 10. Describe the process of arranging and aligning objects on a CorelDRAW page. 11. Explain how to use layers to organize elements within a CorelDRAW document. 12. Describe how to create multiple pages and manage page layouts in CorelDRAW. 13. How do you export a CorelDRAW document to common file formats such as PDF or JPEG? 14. Describe how to set up bleeds and crop marks for printing in CorelDRAW. 15. Explain how to adjust colour settings for accurate printing.

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SYLLABUS

Course 23CSAMDC101

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMDC101	Introduction to MS-Word, Excel and PowerPoint	2		30	2
23CSAMDC101L	Introduction to MS-Word, Excel and PowerPoint Lab		1	30	2

Course Overview:

This course introduces:

- How to use MS Office applications use in office work such as creating professional-quality documents; store, organize and analyse information.
- How to perform arithmetic operations and functions.
- How to create dynamic slide presentations with animation, narration, images, and writing professional emails.

Course Objectives:

To enable a student to:

- Create digital documents of professional quality.
- Organize numerical and financial data for analysis
- Create dynamic presentations with animations
- Differentiate and decide type of document to be used for a given task.
- Write emails of professional quality.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_CSAMDC101_1	List the uses and features of MS Word, Excel, PowerPoint
CO_CSAMDC101_2	Understand various text formatting techniques, including fonts, styles, sizes, and alignment.
CO_CSAMDC101_3	Build and manage spreadsheets for data entry, analysis, and organization.
CO_CSAMDC101_4	Apply Formatting techniques, tables, and charts to present data and information effectively.
CO_CSAMDC101_5	Design and create documents for a given event.
CO_CSAMDC101_6	Create documents of professional quality for business and academic purposes.

Units	Content	Lecture Hours	COs	RBT
Unit-1	Introduction to MS Word - Creating, editing, saving and printing text documents - Font and paragraph formatting - Simple character formatting - Inserting tables, smart art, page breaks - Using lists and styles - Working with images - Using Spelling and Grammar check - Understanding document properties - Mail Merge	13	CO1 CO6	R U A1 A2 E C
Unit-2	Introduction to MS Excel - Spreadsheet basics - Creating, editing, saving and printing spreadsheets - Working with functions & formulas	14	CO1 CO3 CO6	R U A1 A2 E

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	c. Modifying worksheets with color & autoformats Graphically representing data: Charts & Graphs			C
Unit-3	Introduction to MS PowerPoint a. Opening, viewing, creating, and printing slides Applying auto layouts b. Adding custom animation c. Using slide transitions d. Graphically representing data: Charts & Graphs Creating Professional Slide for Presentation.	13	CO1 CO4 CO6	R U A1 A2 E C
Unit-4	Internet & e-mails a. What is Internet? b. Receiving Incoming, Messages Sending Outgoing Messages, c. Email addressing, Email attachments d. Browsing, Search engines	5	CO2 CO6	R U E C

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Learning Resources:

Open online resources

1. <https://support.microsoft.com/en-us/office/powerpoint-for-windows-training-40e8c930-cb0b-40d8-82c4-bd53d3398787>
2. <https://support.microsoft.com/en-us/office/excel-video-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb>
3. <https://support.microsoft.com/en-us/office/word-for-windows-training-7bcd85e6-2c3d-4c3c-a2a5-5ed8847eae73>

Practical (Laboratory)

CSAMDC101L: Introduction to MS-Word, Excel and PowerPoint Lab [Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

Word	1. Change the font style and size in a Word document 2. Apply bold, italic, and underline formatting to text 3. Create bulleted and numbered lists 4. Set margins and adjust page orientation in Word 5. Insert headers and footers into a document 6. Add page numbers to a document 7. Insert a table into a Word document 8. Merge and split cells in a table 9. Apply borders and shading to table cells 10. Insert images and shapes into a Word document 11. Add hyperlinks to text in a document 12. Embed a spreadsheet or chart into a Word document
Excel	1. Enter data into cells in Excel 2. Perform basic arithmetic operations (addition, subtraction, multiplication, division) in Excel 3. Use autofill to quickly fill a series of cells with data 4. Use the SUM function to add a range of cells 5. Use the IF function to create conditional statements in Excel 6. Apply number formatting (currency, percentage, etc.) to cells in Excel 7. Format cells to display dates and times 8. Apply cell styles and themes to a worksheet 9. Create a chart or graph in Excel 10. Customize the appearance of a chart (titles, axis labels, etc.) 11. Add trendlines or error bars to a chart
PowerPoint	1. Create a new presentation in PowerPoint

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	2. Add slides to a presentation and choose different layouts 3. Rearrange the order of slides in a presentation 4. Apply a theme to a PowerPoint presentation 5. Change the background colour or image of a slide 6. Apply text formatting (font size, colour, etc.) to slide titles and bullet points 7. Insert images or videos into a PowerPoint presentation 8. Add animations and transitions between slides 9. Embed audio files or add narration to a presentation 10. Start a slideshow from the beginning or from the current slide 11. Use presenter view to view presenter notes while presenting 12. Set up slide timings or record a narration for a slideshow
Email	1. Initiate a mail merge in Microsoft Word. 2. Connect a data source, such as an Excel spreadsheet, to a Word document for mail merge. 3. Insert merge fields into a Word document. 4. Format merge fields to display specific data types, such as dates or currency. 5. Preview individual merged documents in Microsoft Word. 6. Edit merge documents to ensure proper formatting and content. 7. Filter and sort data in the mail merge recipient list. 8. Explore options available for completing a mail merge, such as printing or sending emails. 9. Perform the actual merge to generate personalized documents for each recipient. 10. Troubleshoot common issues that may arise during the merge process.

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SEMESTER - III

Course 23CSAMAJ201

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMAJ201	Data Structures	3		45	3
23CSAMAJ201L	Data Structures LAB		1	30	2

Course Objectives:

The objective of this course is to teach students various data structures and to explain them algorithms for performing various operations on these data structures.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSAMAJ201_1	Demonstrate familiarity with major algorithms and data structures.
CO_CSAMAJ201_2	Analyse performance of algorithms and choose the appropriate data structure and algorithm design method for a specified application.
CO_CSAMAJ201_3	Determine which algorithm or data structure to use in different scenarios and be familiar with writing recursive methods.
CO_CSAMAJ201_4	Demonstrate understanding of the abstract properties of various data structures such as stacks, queues, lists, trees and graphs and Use various data structures effectively in application programs.
CO_CSAMAJ201_5	Demonstrate understanding of various sorting algorithms, including bubble sort, insertion sort, selection sort, heap sort and quick sort.

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Arrays a) Single and Multi-dimensional Arrays, b) Sparse Matrices (Array and Linked Representation)	5		R, U, A1
Unit-2	Stacks (a) Implementing single / multiple stack/s in an Array (b) Prefix, Infix and Postfix expressions (c) Utility and conversion of these expressions from one to another (d) Applications of stack (e) Limitations of Array representation of stack	5		R, U, A1
Unit-3	Linked Lists	10	CO_CSAMAJ101_1 CO_CSAMAJ101_2	R, U, A1

SYLLABUS

	(a) Singly, Doubly and Circular Lists (Array and Linked representation) (b) Normal and Circular representation of Stack in Lists (c) Self-Organizing Lists (d) Skip Lists		CO_CSAMAJ101_3	
Unit-4	Queues (a) Array and Linked representation of Queue, De-queue, Priority Queues	5	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4	R, U, A1, A2
Unit-5	Recursion (a) Developing Recursive Definition of Simple Problems and their implementation (b) Advantages and Limitations of Recursion (c) Understanding what goes behind Recursion (Internal Stack Implementation)	5	CO_CSAMAJ101_1 CO_CSAMAJ101_2 CO_CSAMAJ101_3 CO_CSAMAJ101_4 CO_CSAMAJ101_7	R, U, A1, A2
Unit-6	Trees (a) Introduction to Tree as a data structure (b) Binary Trees (Insertion, Deletion, Recursive and Iterative Traversals on Binary Search Trees) (c) Threaded Binary Trees (Insertion, Deletion, Traversals) (d) Height-Balanced Trees (Various operations on AVL Trees)	20		
Unit-7	Searching and Sorting (a) Linear Search (b) Binary Search (c) Comparison of Linear and Binary Search (d) Selection Sort (e) Insertion Sort (f) Merge Sort (g) Shell Sort (h) Comparison of Sorting Techniques	5		
Unit-8	Hashing (a) Introduction to Hashing, Deleting from Hash Table, Efficiency of Rehash Methods, Hash Table Reordering (b) Resolving collision by Open Addressing, Coalesced Hashing, Separate Chaining, Dynamic and Extendible Hashing, (c) Choosing a Hash Function, Perfect Hashing Function			

Suggested Readings

1. Adam Drozdek, "Data Structures and algorithm in C++", 3/e, Cengage Learning, 2012.
2. Sartaj Sahni, Data Structures, "Algorithms and applications in C++", 2/e, Universities Press, 2011.
3. Aaron M. Tenenbaum, Moshe J. Augenstein, Yedidyah Langsam, "Data Structures Using C and C++", 2/e, PHI, 2009.
4. Robert L. Kruse, "Data Structures and Program Design in C++", Pearson, 1999.
5. D.S Malik, "Data Structure using C++", 2/e, Cengage Learning, 2010.
6. Mark Allen Weiss, "Data Structures and Algorithms Analysis in Java", Pearson Education, 3/e, 2011
7. Aaron M. Tenenbaum, Moshe J. Augenstein, Yedidyah Langsam, "Data Structures Using Java", 2003.
8. Robert Lafore, "Data Structures and Algorithms in Java", 2/e, Pearson/ Macmillan Computer Pub, 2003.
9. John Hubbard, "Data Structures with JAVA", McGraw Hill Education (India) Private Limited, 2/e, 2009.

SYLLABUS

10. Goodrich, M. and Tamassia, R. "Data Structures and Algorithms Analysis in Java", 4/e, Wiley, 2013.
11. Herbert Schildt, "Java The Complete Reference (English) Paperback", 9/e, Tata McGraw Hill, 2014.
12. D. S. Malik, P.S. Nair, "Data Structures Using Java", Course Technology, 2003.

Practical (Laboratory)

CSAMAJ201L: Data Structures Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

1. Write a program to search an element from a list. Give user the option to perform Linear or Binary search. Use Template functions.
2. WAP using templates to sort a list of elements. Give user the option to perform sorting using Insertion sort, Bubble sort or Selection sort.
3. Implement Linked List using templates. Include functions for insertion, deletion and search of a number, reverse the list and concatenate two linked lists (include a function and also overload operator +).
4. Implement Doubly Linked List using templates. Include functions for insertion, deletion and search of a number, reverse the list.
5. Implement Circular Linked List using templates. Include functions for insertion, deletion and search of a number, reverse the list.
6. Perform Stack operations using Linked List implementation.
7. Perform Stack operations using Array implementation. Use Templates.
8. Perform Queues operations using Circular Array implementation. Use Templates.
9. Create and perform different operations on Double-ended Queues using Linked List implementation.
10. WAP to scan a polynomial using linked list and add two polynomials.
11. WAP to calculate factorial and to compute the factors of a given no. (i) using recursion, (ii) using iteration
12. WAP to display Fibonacci series (i) using recursion, (ii) using iteration
13. WAP to calculate GCD of 2 numbers
(i) with recursion (ii) without recursion
14. WAP to create a Binary Search Tree and include following operations in tree:
(i) Insertion (Recursive and Iterative Implementation)
(ii) Deletion by copying
(iii) Deletion by Merging
(iv) Search a no. in BST
(v) Display its preorder, postorder and inorder traversals Recursively
(vi) Display its preorder, postorder and inorder traversals Iteratively
(vii) Display its level-by-level traversals
(viii) Count the non-leaf nodes and leaf nodes
(ix) Display height of tree
(x) Create a mirror image of tree
(xi) Check whether two BSTs are equal or not
15. WAP to convert the Sparse Matrix into non-zero form and vice-versa.
16. WAP to reverse the order of the elements in the stack using additional stack.
17. WAP to reverse the order of the elements in the stack using additional Queue.
18. WAP to implement Diagonal Matrix using one-dimensional array.
19. WAP to implement Lower Triangular Matrix using one-dimensional array.
20. WAP to implement Upper Triangular Matrix using one-dimensional array.
21. WAP to implement Symmetric Matrix using one-dimensional array.
22. WAP to create a Threaded Binary Tree as per inorder traversal, and implement operations like finding the successor / predecessor of an element, insert an element, inorder traversal.
23. WAP to implement various operations on AVL Tree.

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SYLLABUS

Course 23CSAMAJ202

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMAJ202	Operating Systems	3		45	3
23CSAMAJ202L	Operating Systems LAB		1	30	2

Course Objectives:

The objective of the course is to provide basic knowledge of computer operating system structures and functioning.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSAMAJ202_1	Understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.
CO_CSAMAJ202_2	Understand the difference between process & thread, issues of scheduling of user level processes / threads and their issues & use of locks, semaphores, monitors for synchronizing multiprogramming with multithreaded systems and implement them in multithreaded programs.
CO_CSAMAJ202_3	Gain knowledge about the concepts of deadlock in operating systems and how they can be managed / avoided and implement them in multiprogramming system.
CO_CSAMAJ202_4	Demonstrate the design and management concepts along with issues and challenges of main memory, virtual memory and file system.
CO_CSAMAJ202_5	Understand the types of I/O management, disk scheduling, protection and security problems faced by operating systems and how to minimize these problems.

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction a) Basic OS functions, resource abstraction, types of operating systems– multiprogramming systems, batch systems, time sharing systems b) Operating systems for personal computers & workstation`s, process control & real time systems	10		R, U, A1
Unit-2	Operating System Organization (a) Processor and user modes, kernels, system calls and system programs.	6		R, U, A1

SYLLABUS

Unit-3	Process Management (a) System view of the process and resources, process abstraction, process hierarchy, threads, threading issues, thread libraries (b) Process Scheduling, non-pre-emptive and pre-emptive scheduling algorithms (c) Concurrent and processes, critical section, semaphores, methods for inter-process communication (d) Deadlocks	20		R, U, A1
Unit-4	Memory Management (a) Physical and virtual address space (b) Memory allocation strategies -fixed and variable partitions, paging, segmentation, virtual memory	10		R, U, A1, A2
Unit-5	File and I/O Management (a) Directory structure, file operations, file allocation methods, device management.	10		R, U, A1, A2
Unit-6	Protection and Security (a) Policy mechanism, Authentication, Internal access Authorization.	4		

Suggested Readings

1. A Silberschatz, P.B. Galvin, G. Gagne, "Operating Systems Concepts", 8th Edition, John Wiley Publications 2008.
2. A.S. Tanenbaum, "Modern Operating Systems", 3/e, Pearson Education 2007.
3. G. Nutt, "Operating Systems: A Modern Perspective", 2/e, Pearson Education 1997.
4. W. Stallings, "Operating Systems, Internals & Design Principles", 5/e, Prentice Hall of India. 2008.
5. M. Milenkovic, "Operating Systems - Concepts and design", Tata McGraw Hill 1992.
6. "Operating Systems", A K Sharma, University Press.

Practical (Laboratory)

CSAMAJ202L: Operating Systems Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities: **[Implement the followings using Bash Shell Script]**

1. Evaluate : $1 * 2^3 + 2 * 4^3 + 3 * 6^3 + \dots$ up to n terms
2. Evaluate : $1^2 + 3^2 + 6^2 + 10^2 \dots$ up to n terms
3. Evaluate : $1 * 3^2 + 2 * 5^2 + 3 * 7^2 + \dots$ up to n terms
4. Evaluate : $1 - 2 + 3 - 4 + \dots$ up to n terms
5. Print the following:

*	5 4 3 2 1	1	* * * * *
**	4 3 2 1	1 2	*
***	3 2 1	1 2 3	* * * * *
****	2 1	1 2 3 4	* * * *
*****	1	1 2 3 4 5	* * *
			* *
			*

6. Find the factorial of a number.
7. Find HCF and LCM of 2/3 numbers.
8. Check whether a given year is leap year or not.
9. Find the sum of squares of the digits of a numbers.
10. Find the Armstrong numbers between 100 & 999.

SYLLABUS

11. Check whether a given number is prime or not.
12. Print all the prime numbers between 1 & 100.
13. Print the multiplication table of a number.
14. Check whether a number is perfect square or not.
15. Find the first and last digit of any number and find their product.
16. Find the Area of Circle, Rectangle, or Triangle using user-input.
17. Find the prime factors of a number.
18. Convert a decimal number to binary.
19. Convert a binary number to decimal.
20. Check whether a given string is palindrome or not.
21. Abbreviate a name.
22. Reverse a string.
23. Find the largest and smallest numbers from a list of 10 integers.
24. Find the numbers and their sums between 100 to 300 which are divisible by 3 and 7.
25. Calculate ${}^nC_r$ using function.

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Course 23CSASEC201A

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSASEC201A	Introduction to Web Technology (HTML, JavaScript & PHP)	2		30	3
23CSASEC201AL	Introduction to Web Technology (HTML, JavaScript & PHP) LAB		1	30	2

Course Overview:

This course introduces students to the understanding of web technology fundamentals and gives practical skills in HTML, JavaScript, and PHP programming for web development.

Course Objectives:

To enable a student to:

- Gain a foundational understanding of how the World Wide Web works, including client-server architecture, HTTP protocol, and web standards.
- Learn the basics of HTML and CSS
- Learn the basics of JavaScript as a client-side scripting language for adding interactivity and dynamic behaviour to web pages
- Learn basics of PHP (Hypertext Pre-processor) as a server-side scripting language for building dynamic web applications with its integration with web server.
- Integrate databases such as MySQL/MariaDB for dynamic content generation and data-driven web applications
- Make use of essential tools/ software used for web development

Course Outcomes:

Code	Outcome description
CO_CSASEC201A_1	Upon successful completion of this course, students will be able to Explain how the World Wide Web works, including client-server architecture, HTTP protocol, and web standards
CO_CSASEC201A_2	Develop simple web pages/forms using HTML and CSS
CO_CSASEC201A_3	Make the web page/form interactive by the use of JavaScript
CO_CSASEC201A_4	Perform server-side scripting making use of web server
CO_CSASEC201A_5	Perform database integration and make the content data driven
CO_CSASEC201A_6	Use essential tools/ software used in web development (editing, debugging, testing etc)

Course Outcomes mapping with Program Specific Outcomes

Outcomes	1	2	3	4	5	6
PSO1						
PSO2						
PSO3						
PSO4						
PSO5						
PSO6						
PSO7						
PSO8						
PSO9						
PSO10						
PSO11						
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PSO18						
PSO19						
PSO20						
PSO21						
PSO22						
PSO23						
PSO24						
PSO25						
PSO26						

SYLLABUS

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Web Basics and Overview Introduction to: a) Internet, World Wide Web, Web Browsers, URL, MIME, HTTP b) Web Programmers Toolbox c) HTML Common tags: List, Tables, images, forms, frames, Cascading Style Sheets (CSS) & its Types. d) Java Script - Declaring variables, functions, Event handlers (onclick, onsubmit, etc.,) and Form Validation.	10		R, U, A1
Unit-2	a) Introduction to XML: - Document type definition - XML Schemas - Presenting XML - XHTML - Using XML Processors: DOM and SAX b) PHP: - Declaring Variables, - Data types, - Operators, - Control structures, - Functions.			
Unit-3	Web Servers: a) Handling Http Request & Responses b) Cookies and Session tracking.			
Unit-4	Database Access: a) Connecting to database in PHP, b) Execution of Simple Queries,			

TEXT BOOKS:

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNITs 1, 2)

REFERENCE BOOKS:

1. Programming world wide web-Sebesta, Pearson Education,2007.
2. Internet and World Wide Web – How to program by Dietel and Nieto PHI/ Pearson Education Asia.
5. An Introduction to WEB Design and Programming –Wang-Thomson
6. PHP: The Complete Reference Steven Holzner TataMcGraw-Hill.

Practical (Laboratory)

CSASEC201AL: Introduction to Web Technology (HTML, JavaScript & PHP) Lab [Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

SYLLABUS

1. Create an HTML document with the different formatting options i.e. Bold, Italics, Underline, Headings (Using H1 to H6 heading styles), Font (Type, Size and Colour), Background (Coloured background/Image in background), Paragraph, Line Break, Horizontal Rule, Pre tag
2. Create an HTML document which consists of: Ordered List, Unordered List, Nested ordered and/or unordered List and Image
3. Create an HTML document which implements Internal linking as well as External linking.
4. Create a table using HTML demonstrating use of columns and rows, merging multiple rows and/or columns etc. with data and image values and contents with hyperlinking
5. Create a typical student data capture form for the purpose of admission to your college using different types of HTML controls i.e. Text Box, Option/radio buttons, Check boxes, Reset and Submit buttons etc.
6. Create HTML documents having multiple frames in different possible formats/organization.
7. Information Structure: In this exercise, student will practice identifying the structure of an information object
8. Deconstructing an XML Document: In this exercise, student will practice identifying the explicit structure within an XML document. In a sense, this is the reverse of what you did in Exercise #7.
9. Creating XML Mark-up: In this exercise, create some XML mark-up based on the tree representation from previous exercise and the content from the original sample document.
10. Well-Formedness: This exercise checks your understanding of the constraints for well-formedness based on some sample code document to be provided by the concerned teacher. Are the supplied code document instances well-formed? Explain any NO answers.
11. Create a PHP page using functions for comparing three integers and print the largest number.
12. Write a function to calculate the factorial of a number (non-negative integer). The function accept the number as an argument.
13. WAP to check whether the given number is prime or not.
14. Create a PHP page which accepts string from user. After submission that page displays the reverse of provided string.
15. Write a PHP function that checks if a string is all lower case.
16. Write a PHP script that checks whether a passed string is palindrome or not? (A palindrome is word, phrase, or sequence that reads the same backward as forward, e.g., madam or nurses run)
17. WAP to sort an array.
18. Write a PHP script that removes the whitespaces from a string. Sample string: 'The quick " " brown fox'
Expected Output : Thequick""brownfox
19. Write a PHP script that finds out the sum of first n odd numbers.
20. Create a login page having user name and password. On clicking submit, a welcome message should be displayed if the user is already registered (i.e.name is present in the database) otherwise error message should be displayed.
21. Write a PHP script that checks if a string contains another string.
22. Create a simple 'birthday countdown' script, the script will count the number of days between current day and birth day.
23. Create a script to construct the following pattern, using nested for loop.
*
* *
* * *
* * * *
24. Write a simple PHP program to check that emails are valid.
25. WAP to print first n even numbers.
26. \$color = array('white', 'green', 'red')
Write a PHP script which will display the colours in the following way
: Output:
white, green, red,
☐ green
☐ red
☐ white
27. Using switch case and dropdown list display a —Hello! message depending on the language selected in drop down list.
28. Write a PHP program to print Fibonacci series using recursion.
29. Write a PHP script to replace the first 'the' of the following string with 'That'. Sample: 'the quick brown fox jumps over the lazy dog.'

SYLLABUS

Expected Result: That quick brown fox jumps over the lazy dog.

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SYLLABUS

Course 23CSASEC201B

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSASEC201B	Introduction to Web Technology (Java Technology)	2		30	3
23CSASEC201BL	Introduction to Web Technology (Java Technology) LAB		1	30	2

Course Overview:

This course introduces students to the understanding of web technology fundamentals including client-server architecture, HTTP protocol and web standards along the Java technology path.

Course Objectives:

To enable a student to:

- Gain a foundational understanding of how the World Wide Web works, including client-server architecture, HTTP protocol, and web standards.
- Learn the basics of HTML and CSS
- Learn the basics of JavaScript as a client-side scripting language for adding interactivity and dynamic behaviour to web pages
- Learn the basics of Servlets a Java-based technology for creating dynamic web content, including handling HTTP requests and responses, session management, and servlet lifecycle.
- Learn the basics of Java Server Pages (JSP) for creating dynamic web pages
- Integrate Java web applications with databases using JDBC

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSASEC201B_1	Explain how the World Wide Web works, including client-server architecture, HTTP protocol, and web standards
CO_CSASEC201B_2	Develop simple web pages/forms using HTML and CSS
CO_CSASEC201B_3	Make the web page/form interactive by the use of JavaScript
CO_CSASEC201B_4	Develop Servlets for server-side operations
CO_CSASEC201B_5	Develop JSP forms for dynamic data driven web pages.
CO_CSASEC201B_6	Perform database operations, including connecting to databases, executing SQL queries, and handling result sets.

Course Outcomes mapping with Program Specific Outcomes

Outcomes						PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																															
2																															
3																															
4																															
5																															
6																															

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels

SYLLABUS

Unit-1	Web Basics and Overview Introduction to: e) Internet, World Wide Web, Web Browsers, URL, MIME, HTTP f) Web Programmers Toolbox g) HTML Common tags: List, Tables, images, forms, frames, Cascading Style Sheets (CSS) & its Types. h) Java Script - Declaring variables, functions, Event handlers (onclick, onsubmit, etc.,) and Form Validation.	10		R, U, A1
Unit-2	c) Introduction to XML: - Document type definition - XML Schemas - Presenting XML - XHTML - Using XML Processors: DOM and SAX			
Unit-3	Web Servers and Servlets: c) Introduction to Servlets d) Lifecycle of a Servlet e) JSDK f) Deploying Servlet g) The Servlet API h) The javax Servlet Package i) Reading Servlet parameters j) Reading Initialization parameters k) The javax.servlet HTTP package l) Handling Http Request & Responses m) Cookies and Session tracking.			
Unit-4	JSP Application Development: a) The Anatomy of a JSP Page, b) JSP Processing. c) JSP Application Design and JSP environment d) JSP Declarations, Directives, Expressions, Scripting Elements, implicit objects			
Unit-5	Database Access: a) Database Programming using JDBC, JDBC drivers, b) Studying Javax.sql.* package c) Connecting to database in JSP d) Execution of Simple Queries e) Accessing a Database from a Servlet.			

TEXT BOOKS:

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNITs 1, 2)
2. Core Servlets and Java Server Pages Volume 1: Core Technologies by Marty Hall and Larry Brown Pearson (Units 3, 4, 5)

REFERENCE BOOKS:

1. Programming world wide web-Sebesta, Pearson Education,2007.
2. Internet and World Wide Web – How to program by Dietel and Nieto PHI/ Pearson Education Asia.
3. Jakarta Struts Cookbook, Bill Siggelkow, SPD O' Reilly for chap8.
4. March's beginning JAVA JDK 5, Murach, SPD
5. An Introduction to WEB Design and Programming –Wang-Thomson

SYLLABUS

Practical (Laboratory)

CSASEC201BL: Introduction to Web Technology (Java Technology) Lab [Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

Unit-1	1. Create an HTML document with the different formatting options i.e. Bold, Italics, Underline, Headings (Using H1 to H6 heading styles), Font (Type, Size and Colour), Background (Coloured background/Image in background), Paragraph, Line Break, Horizontal Rule, Pre tag 2. Create an HTML document which consists of: Ordered List, Unordered List, Nested ordered and/or unordered List and Image 3. Create an HTML document which implements Internal linking as well as External linking. 4. Create a table using HTML demonstrating use of columns and rows, merging multiple rows and/or columns etc. with data and image values and contents with hyperlinking 5. Create a typical student data capture form for the purpose of admission to your college using different types of HTML controls i.e. Text Box, Option/radio buttons, Check boxes, Reset and Submit buttons etc. 6. Create HTML documents having multiple frames in different possible formats/organization.
Unit-2	1. Deconstruct an XML Document: In this exercise, student will practice identifying the explicit structure within an XML document. 2. Create XML Mark-up: In this exercise, create some XML mark-up based on the tree representation from previous exercise and the content from the original sample document.
Unit-3	1. What is a servlet and how does it differ from other Java technologies for web development? 2. Describe the lifecycle of a servlet. 3. Create and configure a servlet in a Java web application. 4. Explain the concept of servlet mapping and how it is configured in a web.xml file. 5. Difference between URL patterns like exact match, prefix, and suffix mapping. 6. Map multiple servlets to different URL patterns in a web application. 7. Describe the role of HTTP methods such as GET, POST, PUT, DELETE in servlets. 8. Explain how to handle different types of HTTP requests in a servlet. 9. Retrieve request parameters and headers in a servlet. 10. What is session management in the context of web applications? 11. Describe the different ways to manage sessions in Java web applications. 12. Store and retrieve session attributes in servlets.
Unit-4	1. What is JavaServer Pages (JSP) and how does it relate to servlets? 2. Describe the structure of a JSP page and its lifecycle. 3. Embed Java code and expressions in a JSP page. 4. Print a table of numbers from 5 to 15 and their squares and cubes using alert. 5. Print the largest of three numbers. 6. Find the factorial of a number n. 7. Enter a list of positive numbers terminated by Zero. Find the sum and average of these number s. 8. A person deposits Rs 1000 in a fixed account yielding 5% interest. Compute the amount in the account at the end of each year for n years. 9. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list. 10. Demonstrate use of JSP directives like page, include, and taglib. 11. Demonstrate use of common JSP actions such as forward, include. 12. Include external resources like CSS and JavaScript in a JSP page.
Unit-5	1. Connect to a database using JDBC from a JSP page. 2. Execute SQL queries and handle result sets in a servlet or JSP page.

SYLLABUS

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Director (Approved by)
Name:	Name:	Name:
Signature:	Signature:	Signature:

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SYLLABUS

Course 23CSASEC202

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSASEC202	Introduction to R Programming	2		30	2
23CSASEC202L	Introduction to R Programming LAB		1	30	2

Course Overview:

This course introduces the R programming language, RStudio IDE, basic operations and functions, data import/export, data cleansing and manipulation and data visualization.

Course Objectives:

To enable a student to:

- Have familiarity of the programming language and the Integrated Development Environment.
- Import / export data available in various formats, into and out of the environment
- Perform basic cleansing of data and do basic manipulations of the same
- Perform basic analysis of data.
- Perform visualization of data and/or its analysis.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSASEC202_1	Setup the environment and manage its configuration
CO_CSASEC202_2	Write programs in R language
CO_CSASEC202_3	Import/ load data into the environment; export data out of the environment
CO_CSASEC202_4	Perform basic statistical analysis of data
CO_CSASEC202_5	Perform visualization of the data analysis

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
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Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction (a) Understanding R (b) RStudio: Familiarize yourself with the RStudio IDE (Integrated Development Environment) and its features. (c) Simple Program: Learn how to write and execute basic R programs. (d) Variables: Concept of variables in R and how to assign and manipulate values.	10		R, U, A1
Unit-2	Data types and Operators:			

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	(a) Data Types: Different data types in R, including numeric, character, and date. (b) Nchar: to determine the number of characters in a string. (c) Logical Operators: (e.g., AND, OR, NOT) in R. (d) Subset Data, Square Brackets, and Logic Statements (e) Logic Statements and cbind Command: cbind function to combine data frames.			
Unit-3	Control statements: (f) If Statement: for conditional execution of code. (g) If Else Statement: for multiple conditional branches. (h) For Loop: iterative execution of code. (i) While Loop: for repetitive execution of code until a condition is met.			
Unit-4	Vector and Matrices: (a) Vectors: working with vectors in R. (b) Explore advanced vector operations, such as vector indexing and subsetting (c) Getting Specific Items from a Vector (d) Matrix: Concept of a matrix. Create and manipulate matrices in R. (e) Explore advanced matrix operations, such as matrix transposition and multiplication.			
Unit-4	Data Frames, Lists and File Operations: (a) Data Frame: Working with data frames to store tabular data. (b) Additional techniques to manipulate and analyse data frames in R. (c) List: Create and manipulate lists in R. (d) Read CSV files: import data from CSV files into R. (e) Read text files: import data from text files into R.			
Unit-5	Charts and Plots: (a) Charts: Bar charts, pie charts, and scatter plots. (b) Mean, attach /detach, levels, and summary statistics in R. (c) Stacked Bar Charts and Clustered Bar Charts, Categorical data. (d) Scatter Plot, Relationships between two continuous variables.			

References:

Practical (Laboratory)

CSASEC202L: Introduction to R programming Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

1. Install R and RStudio on your system.

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2. Demonstrate the key features of the RStudio interface.
3. Explain the difference between R scripts and R markdown documents.
4. Create a new R script in RStudio.
5. Install and load packages in R.
6. Import data into RStudio from external sources.
7. Perform basic data manipulation tasks such as subsetting and filtering in R.
8. Demonstrate the concept of vectors and how they are used in R.
9. Create basic plots in R using the base plotting system.
10. What are the advantages of using ggplot2 for data visualization in R?
11. Customize plots using ggplot2 syntax.
12. Export plots created in RStudio to external files.
13. Demonstrate usage of functions in R (By defining and using).
14. Demonstrate the concept of control structures (such as loops and conditional statements) in R programming.
15. Demonstrate handling of missing data in R.
16. Demonstrate some common methods for conducting descriptive statistics in R.
17. Demonstrate basic hypothesis testing in R.
18. Interpret the output of statistical tests conducted in R.
19. Describe some resources or methods for getting help with R programming when encountering difficulties.

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SEMESTER - IV

Course 23CSAMAJ203A

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMAJ203A	Graphics programming with OpenGL	3		45	3
23CSAMAJ203AL	Graphics programming Lab		1	30	2

Course Objectives:

- **Understand Fundamental Concepts**

Gain a deep understanding of fundamental graphics programming concepts, including rasterization, rendering pipeline, transformations, and shading techniques.

- **Learn OpenGL Architecture**

Explore the architecture and functionality of OpenGL, including its core features, libraries, and extensions, to effectively leverage its capabilities in graphics programming.

- **Develop Proficiency in OpenGL Programming**

Acquire proficiency in programming graphics applications using OpenGL APIs, including setting up a rendering context, managing buffers, and implementing shaders for rendering objects.

- **Explore 2D and 3D Graphics Rendering**

Learn techniques for rendering both 2D and 3D graphics using OpenGL, including rendering primitives, textures, lighting, and implementing perspective transformations for realistic rendering.

- **Implement Interactive Graphics Applications**

Learn to develop interactive graphics applications using OpenGL, including user input handling, camera control, and real-time rendering techniques to create immersive user experiences.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSAMAJ203A_1	Acquire knowledge about different graphics systems and models, including raster and vector graphics, and understand their underlying principles.
CO_CSAMAJ203A_2	Have knowledge about OpenGL architecture
CO_CSAMAJ203A_3	Develop proficiency in graphics programming using OpenGL, including setting up the development environment and writing basic OpenGL code.
CO_CSAMAJ203A_4	Understand geometrical objects, transformations and viewing in both 2D and 3D spaces, including matrix representations and homogeneous coordinates, perspective and orthographic projections, and explore methods for hidden surface removal; illumination and shading techniques, including the use of light sources, surface detail, and material properties.
CO_CSAMAJ203A_5	Implement interactive Graphics applications

Course Outcomes mapping with Program Specific Outcomes

1	2	Outcomes
		PSO01
		PSO02
		PSO03
		PSO04
		PSO05
		PSO06
		PSO07
		PSO08
		PSO09
		PSO10
		PSO11
		PSO12
		PSO13
		PSO14
		PSO15
		PSO16
		PSO17
		PSO18
		PSO19
		PSO20
		PSO21
		PSO22
		PSO23
		PSO24
		PSO25
		PSO26

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Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction a) Motivation, Uses, History b) Graphics Systems and Models c) Graphics Programming: Getting started with OpenGL d) Input and Interaction in OpenGL.	5		R, U, A1
Unit-2	Transformation, Viewing, Illumination and Shading (a) Geometrical Objects and Transformations in 2D and 3D, homogeneous coordinates, matrix representation (b) windows and viewports (c) Viewing in 3D, projections, hidden surface removal; (d) Light, shading and materials. Illumination and Shading, light sources, (surface detail, ray tracing, radiosity)	7		R, U, A1
Unit-3	Processing, shading (a) From Vertices to Fragments: modelling, geometry processing, rasterization, fragment processing. (b) Clipping, hidden surface removal, antialiasing (c) Discrete techniques: buffers, bit and pixel operations, texture mapping, compositing (d) Programmable shaders: OpenGL shading language, fragment shaders, cub and bump maps.	20		R, U, A1
Unit-4	Modelling and rendering (a) Modelling Techniques, trees, scene graphs; (b) Curve and surface representation (c) Advanced rendering techniques: ray tracing, radiosity, image-based rendering.	15		R, U, A1, A2

Reference Books:

Edward Angel, Interactive Computer Graphics: A Top-Down Approach with OpenGL, 4th edition, Addison-Wesley, 2005.

Additional References:

SYLLABUS

1. Edward Angel, OpenGL: A primer, 2nd edition, Addison-Wesley, 2005
2. The OpenGL Programmer's Guide (the Redbook), Addison-Wesley
3. The OpenGL Reference Manual (the Bluebook), Addison-Wesley
4. James D. Foley, Andries van Dam, Steven K. Feiner, John F. Hughes, Computer Graphics : Principles & Practices, Addison Wesley Longman, 2nd edition in C, 1994
5. Donald Hearn, M. Pauline Baker, Computer Graphics, 2nd edition, C version, Prentice Hall, 1996.

Practical (Laboratory)

CSAMAJ203AL: Graphics programming Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

1. Set up an OpenGL development environment on your system.
2. Describe the basic structure of an OpenGL program.
3. Illustrate vertices, edges, and polygons in OpenGL.
4. Explain the OpenGL rendering pipeline and its stages.
5. Specify geometric primitives in OpenGL?
6. Set up and manage a window for OpenGL rendering.
7. Demonstrate use of shaders in OpenGL in the rendering process.
8. Create and compile shaders in an OpenGL program.
9. Transform objects in 3D space using matrices in OpenGL.
10. Demonstrate the concept of camera transformations and how they are implemented in OpenGL.
11. Specify lighting and material properties in an OpenGL scene.
12. Explain the different types of shading models available in OpenGL (e.g., flat shading, Gouraud shading, Phong shading).
13. Describe the process of texture mapping in OpenGL.
14. Load and apply textures to objects in an OpenGL scene.
15. Demonstrate the use of framebuffer objects (FBOs) in advanced rendering techniques.
16. Explain the concept of vertex buffer objects (VBOs) and how they improve rendering performance in OpenGL.
17. Describe some common techniques for optimizing OpenGL rendering performance.
18. Handle user input (e.g., keyboard and mouse events) in an OpenGL application.
19. List some resources or methods for further learning and exploring advanced topics in OpenGL graphics programming.

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Course 23CSAMAJ203B

Outcomes	
1	PSO1
2	PSO2
3	PSO3
4	PSO4
5	PSO5
6	PSO6
7	PSO7
	PSO8
	PSO9
	PSO10
	PSO11
	PSO12
	PSO13
	PSO14
	PSO15
	PSO16
	PSO17
	PSO18
	PSO19
	PSO20
	PSO21
	PSO22
	PSO23
	PSO24
	PSO25
	PSO26

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Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction (a) History & features (b) Setting up path (c) Basic syntax, python data structures & (d) data types (e) Simple input & output variables & operators in python	6	CO_CSAMAJ203B_1	R, U, A1
Unit-2	Python program flow (a) Indentation (b) Conditional statements (c) Looping & range statement (d) Control statements (e) Function and parameter passing (e) (f) Scope and namespaces	6	CO_CSAMAJ203B_1 CO_CSAMAJ203B_2	R, U, A1
Unit-3	Data structures (a) List: introduction, accessing list, operations, working with lists, function and methods (b) Tuples: introduction, accessing tuples, operations, working, functions and methods (c) Dictionaries: introduction, accessing values in dictionaries, working with dictionaries, (d) String manipulation, sets and their operations, working with sequences, list (e) comprehensions	7	CO_CSAMAJ203B_1 CO_CSAMAJ203B_2 CO_CSAMAJ203B_3	R, U, A1
Unit-4	Functions & Modules (a) Defining a function (b) Calling a function (c) Types of function & function arguments (d) Global and local variable (e) Importing module (f) Math module & random module (g) Packages	7	CO_CSAMAJ203B_1 CO_CSAMAJ203B_2 CO_CSAMAJ203B_3 CO_CSAMAJ203B_4	R, U, A1, A2
Unit-5	Object Oriented Programming (OOP) (a) Class and objects (b) Inheritance and polymorphism (c) Encapsulation and abstraction (d) Advanced OOP concepts (decorators, magic method)	6	CO_CSAMAJ203B_1 CO_CSAMAJ203B_2 CO_CSAMAJ203B_5	R, U, A1, A2
Unit-6	File handling & exceptions handling (a) file handling modes (b) opening & closing files (c) reading & writing files (d) writing & appending to files (e) exception & exception handling (f) except clause, try?, finally clause, user defined exception	6	CO_CSAMAJ203B_1 CO_CSAMAJ203B_3 CO_CSAMAJ203B_5 CO_CSAMAJ203B_6	R, U, A1, A2
Unit-7	Libraries used for machine learning (a) Scikit-learn (b) NumPy (c) Pandas	7	CO_CSAMAJ203_7	R, U, A1, A2

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	(d) Matplotlib and Seaborn (e) Tensorflow (f) Pytorch (g) Keras (h) Opencv (i) Mediapipe			

Text Books:

1. Gowrishankar S, Veena A, "Introduction to Python Programming", 1st Edition, CRC Press/Taylor & Francis, 2018. ISBN-13: 978-0815394372. [Unit I&II- 2,3,4,5,6,7,8,9 Unit III-11,12].
2. Eric Matthes, "Python Crash Course- A Hands-On, Project-Based Introduction to Programming", 2nd Edition, No Starch Press, 2019.[Unit III-15, Unit IV-16]
3. Wesley J. Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education, 2016. [Unit IV- 2,5].

Reference Books:

1. Kamthane, A. N., & Kamthane, A.A. , "Programming and Problem Solving with Python", McGraw Hill Education, 2017.
2. Mark Lutz, "Learning Python", 5th edition, Orelly Publication, 2013, ISBN 978- 1449355739.
3. Ljubomir Perkovic, "Introduction to Computing Using Python- An Application Development Focus", Wiley,2012.

Practical (Laboratory)

CSAMAJ203BL: Programming with Python and ML libraries Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

1. State the key advantages of using Python for machine learning development?
2. Set up a Python development environment for machine learning.
3. Install popular machine learning libraries such as scikit-learn, TensorFlow, and PyTorch?
4. Explain the role of NumPy and Pandas in data pre-processing for machine learning tasks.
5. Load and manipulate datasets using Pandas?
6. Demonstrate data visualization in Python using libraries such as Matplotlib and Seaborn.
7. Illustrate the steps involved in data pre-processing for machine learning tasks.
8. Demonstrate different ways of handling missing values and categorical data during data pre-processing.
9. Explain the concept of feature scaling and its importance in machine learning.
10. Demonstrate different types of feature scaling techniques available in scikit-learn.
11. Demonstrate the process of splitting a dataset into training and testing sets for model evaluation.
12. Demonstrate training of a machine learning model using scikit-learn.
13. State some common algorithms available in scikit-learn for classification and regression tasks.
14. Evaluate the performance of a machine learning model using metrics such as accuracy, precision, recall, and F1-score.
15. Explain the concept of cross-validation and its importance in model evaluation.
16. Describe the process of building and training neural networks using TensorFlow or PyTorch.
17. State some common neural network architectures used in deep learning tasks.
18. Demonstrate handling of overfitting and underfitting in machine learning models.
19. State some resources or methods for further learning and exploring advanced topics in Python programming and machine learning.

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Course 23CSAMAJ204

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMAJ204	Software Engineering	3		45	3
23CSAMAJ204L	Software Engineering LAB		1	30	2

Course Objectives:

The aim of the course is to assist the student in understanding the basic theory of software engineering, and to apply these basic theoretical principles to a group software development project.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_ CSAMAJ204_1	Select and implement different software development process models
CO_ CSAMAJ204_2	Extract and analyse software requirements specifications for different projects
CO_ CSAMAJ204_3	Develop some basic level of software architecture/design
CO_ CSAMAJ204_4	Apply standard coding practices
CO_ CSAMAJ204_5	Define the basic concepts and importance of Software project management concepts like cost estimation, scheduling and reviewing the progress.
CO_ CSAMAJ204_6	Identify and implement of the software metrics
CO_ CSAMAJ204_7	Apply different testing and debugging techniques and analysing their effectiveness.

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
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Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction a) The Evolving Role of Software b) Software Characteristics c) Changing Nature of Software d) Software Engineering as a Layered Technology e) Software Process Framework f) Framework and Umbrella Activities g) Process Models h) Capability Maturity Model Integration (CMMI)	8		R, U, A1

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Unit-2	Requirement Analysis (a) Software Requirement Analysis (b) Initiating Requirement Engineering Process (c) Requirement Analysis and Modelling Techniques (d) Flow Oriented Modelling (e) Need for SRS - Characteristics and Components of SRS	10		R, U, A1
Unit-3	Software Project Management (a) Estimation in Project Planning Process (b) Project Scheduling	8		R, U, A1
Unit-4	Risk Management (a) Software Risks (b) Risk Identification (c) Risk Projection and Risk Refinement (d) RMMM Plan	8		R, U, A1, A2
Unit-5	Quality Management (a) Quality Concepts (b) Software Quality Assurance (c) Software Reviews (d) Metrics for Process and Projects.	8		R, U, A1, A2

Suggested Readings

1. R.S. Pressman, "Software Engineering: A Practitioner's Approach", 7/e, McGraw-Hill, 2009.
2. P. Jalote, "An Integrated Approach to Software Engineering", 2/e, Narosa Publishing House, 2003.
3. K.K. Aggarwal and Y. Singh, "Software Engineering", 2/e, New Age International Publishers, 2008.
4. I. Sommerville, "Software Engineering", 8/e, Addison Wesley, 2006.
5. D. Bell, "Software Engineering for Students", 4/e, Addison-Wesley, 2005.
6. R. Mall, "Fundamentals of Software Engineering", 2/e, Prentice-Hall of India, 2004.

Practical (Laboratory)

CSAMAJ204L: Software Engineering Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

Srl #.	Practical Title
1	Problem Statement, Process Model
2	Requirement Analysis: • Creating a Data Flow • Data Dictionary, Use Cases
3	Project Management: • Computing FP • Effort • Schedule, Risk Table, Timeline chart
4	Design Engineering: • Architectural Design • Data Design, Component Level Design
5	Testing: • Basis Path Testing

Sample Projects:

1. Criminal Record Management: Implement a criminal record management system for jailers, police officers and CBI officers
2. DTC Route Information: Online information about the bus routes and their frequency and fares

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3. Car Pooling: To maintain a web-based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.
4. Patient Appointment and Prescription Management System
5. Organized Retail Shopping Management Software
6. Online Hotel Reservation Service System
7. Examination and Result computation system
8. Automatic Internal Assessment System
9. Parking Allocation System
10. Wholesale Management System

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Course 23CSAMAJ205

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMAJ205	Database Management Systems	3		45	3
23CSAMAJ205L	Database Management Systems LAB		1	30	2

Course Objectives:

To educate students with fundamental concepts of Database Management Systems, Data Models, Different Database Languages.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSAMAJ205_1	Analyse Data Base design methodology.
CO_CSAMAJ205_2	Extract and analyse software requirements specifications for different projects with focus on database requirements and design.
CO_CSAMAJ205_3	Analyse the difference between traditional file system and DBMS.
CO_CSAMAJ205_4	Able to handle with different Data Base languages.
CO_CSAMAJ205_5	Draw various data models for Data Base and write SQL queries.

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
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Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction a) Characteristics of database b) Data models, c) Database system architecture d) Data independence	6		R, U, A1
Unit-2	Entity Relationship (ER) Modelling (a) Entity types (b) Relationships (c) Constraints	8		R, U, A1
Unit-3	Relational Data Model (a) Relational model concepts (b) Relational constraints (c) Relational algebra (d) SQL queries	20		R, U, A1
Unit-4	Database Design (a) Mapping ER/EER model to relational database	15		R, U, A1, A2

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	(b) functional dependencies (c) Lossless decomposition (d) Normal Forms (up to BCNF)			
Unit-5	Transaction Processing (a) ACID properties (b) Concurrency control	3		R, U, A1, A2
Unit-6	File Structure and Indexing (a) Operations on files (b) File of Unordered and ordered records (c) overview of File organizations (d) Indexing structures for files (Primary index, secondary index, clustering index) (e) Multilevel indexing using B and B+ trees	8		

Suggested Readings

1. R. Elmasri, S.B. Navathe, "Fundamentals of Database Systems", 6/e, Pearson Education, 2010.
2. R. Ramakrishnan, J. Gehrke, "Database Management Systems", 3/e, McGraw-Hill, 2002.
3. A. Silberschatz, H.F. Korth, S. Sudarshan, "Database System Concepts", 6/e, McGraw Hill, 2010.
4. R. Elmasri, S.B. Navathe, "Database Systems Models, Languages, Design and application Programming", 6/e, Pearson Education, 2013.
5. Database Book: "The Principles and Practices Using MySQL", Narain Gehani, University Press.

Practical (Laboratory)

CSAMAJ205L: Database Management Systems Lab

[Credit: 1, Lab Hours: 30]

Students are advised to do laboratory/practical practice not limited to, but including the following types of activities:

Create and use the following database schema to answer the given queries

EMPLOYEE Schema

Field	Type	NULL	KEY	DEFAULT
Eno	Char(3)	NO	PRI	NIL
Ename	Varchar(50)	NO		NIL
Job_type	Varchar(50)	NO		NIL
Manager	Char(3)	YES	FK	NIL
Hire_date	Date	NO		NIL
Dno	Integer	YES		NIL
Commission	Decimal(10,2)	YES		NIL
Salary	Decimal(7,2)	NO		NIL

Query List:

1. Query to display Employee Name, Job, Hire Date, Employee Number; for each employee with the Employee Number appearing first.
2. Query to display unique Jobs from the Employee Table.
3. Query to display the Employee Name concatenated by a Job separated by a comma.
4. Query to display all the data from the Employee Table. Separate each Column by a comma and name the said column as THE_OUTPUT.
5. Query to display the Employee Name and Salary of all the employees earning more than Rs2850.
6. Query to display Employee Name and Department Number for the Employee No= 7900.
7. Query to display Employee Name and Salary for all employees whose salary is not in the range of Rs1500 and Rs2850.
8. Query to display Employee Name and Department No. of all the employees in Dept 10 and Dept 30 in the alphabetical order by name.

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9. Query to display Name and Hire Date of every Employee who was hired in 1981.
10. Query to display Name and Job of all employees who don't have a current Manager.
11. Query to display the Name, Salary and Commission for all the employees who earn commission.
12. Sort the data in descending order of Salary and Commission.
13. Query to display Name of all the employees where the third letter of their name is 'A'.
14. Query to display Name of all employees either have two 'R's or have two 'A's in their name and are either in Dept No = 30 or their Manger's Employee No = 7788.
15. Query to display Name, Salary and Commission for all employees whose Commission Amount is 14 greater than their Salary increased by 5%.
16. Query to display the Current Date.
17. Query to display Name, Hire Date and Salary Review Date which is the 1st Monday after six months of employment.
18. Query to display Name and calculate the number of months between today and the date each employee was hired.
19. Query to display the following for each employee <E-Name> earns < Salary> monthly but wants < 3 * Current Salary >. Label the Column as Dream Salary.
20. Query to display Name with the 1st letter capitalized and all other letter lower case and length of their name of all the employees whose name starts with 'J', 'A' and 'M'.
21. Query to display Name, Hire Date and Day of the week on which the employee started.
22. Query to display Name, Department Name and Department No for all the employees.
23. Query to display Unique Listing of all Jobs that are in Department # 30.
24. Query to display Name, Dept Name of all employees who have an 'A' in their name.
25. Query to display Name, Job, Department No. And Department Name for all the employees working at the Delhi location.
26. Query to display Name and Employee no. Along with their Manger's Name and the Manager's employee no; along with the Employees,, Name who do not have a Manager.
27. Query to display Name, Dept No. And Salary of any employee whose department No. and salary matches both the department no. And the salary of any employee who earns a commission.
28. Query to display Name and Salaries represented by asterisks, where each asterisk (*) signifies Rs.100.
29. Query to display the Highest, Lowest, Sum and Average Salaries of all the employees
30. Query to display the number of employees performing the same Job type functions.
31. Query to display the no. of managers without listing their names.
32. Query to display the Department Name, Location Name, No. of Employees and the average salary for all employees in that department.
33. Query to display Name and Hire Date for all employees in the same dept. as Blake.
34. Query to display the Employee No. And Name for all employees who earn more than the average salary.
35. Query to display Employee Number and Name for all employees who work in a department with any employee whose name contains a 'T'.
36. Query to display the names and salaries of all employees who report to King.
37. Query to display the department no, name and job for all employees in the Sales department.

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Course 23CSAMDC201

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMDC201	Advanced MS Excel	2		30	2
23CSAMDC201L	Advanced MS Excel Lab		1	30	2

Course Overview:

This course is designed to provide participants with a comprehensive understanding of Microsoft Excel, a powerful spreadsheet application. Participants will learn essential Excel skills, from basic functionalities to more advanced features, enabling them to effectively organize, analyse, and present data.

Course Objectives

This course enables students to:

- 1. Master Advanced Formulas and Functions**
Understand and apply advanced formulas and functions, including nested functions, array formulas, logical functions and lookup and reference functions, to solve complex problems.
- 2. Perform Advanced Statistical Analysis**
Implement advanced statistical functions and analyse data using built-in statistical tools.
- 3. Perform Data Analysis Using PivotTables and PivotChart**
Create, customize, and utilize PivotTables and PivotChart for sophisticated data analysis and reporting.
- 4. Implement Advanced Data Visualization Techniques**
Design and customize advanced chart types, apply conditional formatting and use sparklines & data bars to effectively visualize data trends.
- 5. Import, Export, and Manage Data**
Import data from various sources, export data in different formats and manage data connections & refresh operations for efficient data handling.
- 6. Utilize Conditional Formatting and Data Validation**
Create dynamic, interactive spreadsheets with customized drop-down lists and data entry controls that enhance data accuracy and visual insights.
- 7. Apply Advanced Data Analysis Tools**
Use tools like Solver for optimization, data tables for sensitivity analysis, Scenario Manager for what-if analysis and Goal Seek for target value analysis.
- 8. Protect, Collaborate and Share Excel Files**
Protect worksheets and workbooks with security measures, share and collaborate on Excel files with others and integrate Excel with other Microsoft Office applications for comprehensive workflows.
- 9. Automate Tasks Using Macros and VBA**
Record and edit Macros, write simple VBA scripts and implement automation to streamline repetitive tasks.
- 10. Generate Comprehensive Reports**
Create, customize and automate complex reports using Excel, ensuring clear and effective presentation of data.

Course Outcomes

SYLLABUS

Code	Outcome description (Upon successful completion of this course, students will be able to)
CO_23CSAMDC201_1	Utilize advanced formulas and functions to efficiently solve complex data analysis problems.
CO_23CSAMDC201_2	Conduct advanced statistical analysis using built-in statistical functions and tools.
CO_23CSAMDC201_3	Create and customize PivotTables and PivotChart for in-depth data analysis and visualization.
CO_23CSAMDC201_4	Design and implement advanced data visualizations using a variety of chart types, conditional formatting and sparklines.
CO_23CSAMDC201_5	Efficiently import, export, and manage data from multiple sources and formats using Excel.
CO_23CSAMDC201_6	Implement advanced conditional formatting to highlight critical data patterns and trends & apply data validation techniques to ensure data integrity and facilitate efficient data entry.
CO_23CSAMDC201_7	Use advanced data analysis tools such as Solver, data tables, Scenario Manager and Goal Seek to perform complex analyses.
CO_23CSAMDC201_8	Protect workbooks & worksheets to ensure data integrity and security, Collaborate effectively on shared Excel files and integrate Excel workflows with other Microsoft Office applications.
CO_23CSAMDC201_9	Automate repetitive tasks by recording Macros and writing VBA scripts, enhancing productivity.
CO_23CSAMDC201_10	Generate comprehensive and automated reports, presenting data clearly and effectively for decision-making purposes.

Unit	Contents	Hour	Course Outcomes	RBT Levels
1	Advanced Formulas and Functions Overview of advanced Excel capabilities, Logical functions (IF, AND, OR, NOT), Lookup and reference functions (VLOOKUP, HLOOKUP, INDEX, MATCH). Array Formulas and Advanced Functions Introduction to array formulas, Advanced functions (OFFSET, INDIRECT, ROW, COLUMN). Advanced Statistical Functions Overview of advanced statistical functions, Practical applications of statistical analysis.	12	CO1 CO2	R U A1 A2 E C

SYLLABUS

Unit	Contents	Hour	Course Outcomes	RBT Levels
2	Data Analysis with PivotTables and PivotChart Creating and customizing PivotTables, Advanced PivotTable techniques (Calculated Fields, Grouping). Advanced Data Visualization Techniques Creating and customizing advanced charts (Waterfall, Funnel, Combo), Using sparklines and data bars.	8	CO3 CO4	R U A1 A2 E C
3	Data Import and Export Techniques Importing data from various sources (CSV, SQL, Web), Exporting data to different formats. Conditional Formatting and Data Validation Advanced conditional formatting rules, Data validation techniques and creating drop-down lists. Scenario Manager and Goal Seek Scenario Manager for what-if analysis, Goal Seek for target value analysis. Advanced Data Analysis Tools Using Solver for optimization problems, Data tables for sensitivity analysis.	16	CO5 CO6 CO7	U A1 A2 C
4	Data Protection and Security Protecting worksheets and workbooks, Password protection and user permissions. Collaboration and Sharing Sharing and collaborating on Excel files, Using Excel with other Office applications.	8	CO8	U A1 E
5	Introduction to Macros Basics of Macros, Recording and running Macros. Advanced Macros and VBA Basic VBA concepts, Writing simple VBA scripts.	8	CO9	U A1 C
6	Advanced Reporting Techniques Creating comprehensive reports using Excel, Customizing and automating reports.	8	CO10	U A1, A2 C

References

- Alexander, Michael, Richard Kusleika, and John Walkenbach. *Microsoft Excel 2019 Bible*. Wiley, 2019.
- Harvey, Greg. *Excel 2019 All-in-One For Dummies. For Dummies*, 2019.
- Alexander, Michael, and Dick Kusleika. *Excel 2019 Power Programming with VBA*. Wiley, 2019.
- Hong, Bryan. *Advanced Excel for Productivity: Learn the Tricks to Maximize Your Data*. CreateSpace Independent Publishing Platform, 2019.
- Harvey, Greg. *Excel 2019 for Dummies. For Dummies*, 2019.
- McFedries, Paul. *Excel Data Analysis For Dummies. For Dummies*, 2018.
- Bluttman, Ken. *Excel Formulas and Functions For Dummies. For Dummies*, 2018.
- Humphrey, M.L. *Excel 2019 Essentials*. M.L. Humphrey, 2019.

SYLLABUS

Core/ Major Courses:

Course Code	Title
23CSAMAJ101	Programming in C
23CSAMAJ102	Digital Electronics
23CSAMAJ103	Object Oriented Programming with Java
23CSAMAJ104	Computer Organisation & Architecture
23CSAMAJ201	Data Structures
23CSAMAJ202	Operating Systems
23CSAMAJ203	Graphics programming using OpenGL
23CSAMAJ204	Software Engineering
23CSAMAJ205	Database Management Systems

Skill Enhancement Courses:

Course Code	Title
23CSASEC101	Introduction to Cyber Security
23CSASEC102	Python Programming
23CSASEC201A	Introduction to Web Technology – PHP based
23CSASEC201B	Introduction to Web Technology – JSP based
23CSASEC202	Introduction to R Programming

Course Code	23MCJVAC 101
Course Title	Desktop Publishing (Adobe Indesign)
Credits	1
Lecture Hours	30
Sessions	15
Hours/Week	2
Category	Value Added Course (vac-II)
Semester	II
Regulation	2024
Course Overview: This course – - Introduces students to the fundamental concepts of Desktop Publishing - Explains the basics of software used in desktop publishing, Especially Adobe Indesign 2021+ - Explores different elements of graphics and Layout designing	
Prerequisites and/or Note(s): Basic understanding of using a Windows PC and Word processing softwares	
Course Objectives: The course is designed to help learners to- - Understand the concept and industry of desktop publishing - Develop essential skills and knowledge about using the desktop publishing software - Create professional print productions - Nurture a creative mindset essential to design - Familiarize the learners about the latest computing technologies required in the field	
Course Outcomes: The course is designed to help learners to: - Critically examine various newspaper and magazine formats, print production materials - Learn, demonstrate and create using different industry standard software - Understand the basics of desktop publishing and develop their own designing aesthetic - Apply different theories and elements while designing - Create meaningful industry standard print publications and showcasing them online in a portfolio	

Course Content

Session	Content	Hours
1	Introductory session about the course, Syllabus and Adobe Indesign Students will be asked about any experiences in graphics design and layout during their school tenure and will shown the basics of Software	2
2	Introduction to the Adobe Indesign Interface I Essentials of Adobe Indesign Workspace Toolbar, Control Bar, Layer bar, Color bar	2
3	Introduction to the Adobe Indesign Interface II Customizing the workspace according to the need, display options, effects, locking the selections, Color	2
4	Essentials of Adobe Indesign Toolbar I Working with Adobe Indesign Tools, Drawing and Typing with Adobe Indesign	2

5	Essentials of Adobe Indesign Toolbar II Placing images and managing images with Adobe Indesign	2
6	Essentials of Adobe Indesign Toolbar III Alignment, Paragraph, Page Information, Page Set Up	2
7	Essentials of PNG Placement and Wrap Placing PNG images in Adobe Indesign, Working with Royalty free websites	2
8	Essentials of Typography Working with different typefaces and Typography composition	2
9	Essentials of Typography II Downloading external typefaces and working with them	2
10	Essentials of Poster Design Principles of Poster designing	2
11	Essentials of Poster Design II Designing a poster using Adobe Indesign	2
12	Essentials of Newspaper Designing Principles of newspaper designing	2
13	Essentials of Newspaper Designing II Elements of a newspaper	2
14	Essentials of Newspaper Designing III Designing a College newspaper using adobe Indesign	2
15	Creation of Final Copy of the Newspaper	2

Assessment:

Formative Assessment: 10 internal +5 attendances.

Summative Assessment: Assignment submission 30 marks.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Signature:	Name: Signature:	Name: Signature:

(Seal)

(Seal)



Salesian College
(Autonomous)
Sonada - Siliguri

**National Education Policy (NEP) 2020 Curriculum Framework
For
Bachelor of Science/Arts in Economics**

Department of Economics

**Curriculum Document
2023 – 2024**

Vision

The Department envisions to develop an academic environment that is conducive to promote high quality education and research, and to offer educational opportunities to the students so as to develop them into accomplished professionals with an economic bent of mind, who can be successful across different avenues.

Mission

The mission of the department to achieve high academics excellence, create an environment for holistic development of the students, instil critical thinking, foster a better understanding of global, national, and local socioeconomic conditions and problems, and establish a research-oriented ecosystem for the students.

1. Programme Overview

Bachelor of Science/Arts in Economics is a four-year degree programme with the possibility of completing the fourth year with research if a particular student secures 75% CGPA in the previous exams.

2. Programme Objectives and Outcomes (POs)

After completion of the programme, a student will be able to:	
Knowledge	PO01: Develop a foundational understanding of economic principles to analyse economic systems and principles.
	PO02: Build quantitative skills necessary for economic analysis, such as mathematics, statistics and econometrics, to effectively interpret economic data.
	PO03: Foster critical thinking skills to evaluate economic issues, policies and arguments, and to make informed decisions based on economic arguments.
	PO05: Gain a historical context for economic theories and policies, allowing students to understand the evolution of economic thought and institutions.
	PO05: Explore ethical dimensions of economic decisions and policies, including issues related to social justice, environmental sustainability and economic equality.
Skills	PO06: Develop effective written and oral communication skills to convey economic ideas, theories, and research findings clearly and persuasively.
	PO07: Gain proficiency in using economic software, data analysis tools, and technology, relevant to economic research and analysis.
	PO07: Demonstrate financial literacy and understanding of personal finance, including budgeting, investing, and retirement planning.
	PO08: Apply economic principles to real world scenarios, including case – studies, projects and research assignments.
Competence	PO09: Develop problem solving skills that are applicable across various fields and industries, emphasizing the ability to address practical economic challenges.
	PO10: Initiate a life as an independent economic thinker, staying updated on the latest economic theories, policies and trends.
	PO11: Develop critical thinking and problem solving skills, to identify economic problems and to conduct independent research.

3. Programme Specific Objectives & Outcomes (PSOs)

By the end of the Course, the students will be able to:	
Knowledge	PSO1: Develop understanding of the microeconomic and macroeconomic theories.
	PSO2: Build quantitative skills to understand economic theories, using mathematics, statistics and economics.
	PSO3: Gain the historical and contemporary knowledge about Indian Economy, issues and progress.
	PSO3: A Develop a deep knowledge about development theories.
	PSO4: Gain comprehensive understanding of public finance principles and government budgeting.
	PSO5: Master International Trade theories, exchange rates and global economic institutions.
	PSO6: understand the economic dimensions of gender inequality, including the gender wage gap, labour force participation, and gender based discrimination.
	PSO7: Acquire deep understanding of the healthcare systems, including their organisation, financing and delivery systems.
Skills	PSO1: Analyse and model microeconomic scenarios, evaluate market outcomes and apply microeconomic principles to real world situations.
	PSO2: Analyse macroeconomic trends and indicators, assess the impact of govt policies on the economy and predict economic fluctuations.
	PSO3: Formulate and solve mathematical economic models and apply mathematical optimisation techniques.
	PSO4: Design and conduct economic surveys, analyse economic data using statistical software.
	PSO5: Analyse Indian Economic data and trends and formulate policies for Indian Context.
	PSO6: Assess the impact of development policies and analyse development indicators.
	PSO7: Assess the impact of exchange rate fluctuations.
	PSO8: Evaluate Govt budgets and fiscal policies and analyse the economic impact of public programs.
	PSO9: Evaluate healthcare cost effectiveness and analyse healthcare market dynamics.
	PSO10: Able to analyse gender based economic disparities and assess environmental policy impacts.
Competence	PSO1: Formulate and assess economic policies and micro level.
	PSO2: Have critical evaluation of macroeconomic policies and prescription.
	PSO3: Conduct economic analysis using advanced mathematical methods.
	PSO4: Present and interpret statistical findings in economics.
	PSO5: Have critical evaluation on international trade policies.
	PSO6: Design efficient public policies and fiscal strategies.
	PSO7: Contribute to healthcare policy and management decisions.
	PSO8: Promote gender sensitive and environmentally sustainable economic policies.
	PSO9: Conduct independent research.

4. PROGRAMME MATRIX

➤ COURSE CODE & COURSE TITLE:

4.1. Major Courses

	Course Code	Course Titles
1	23ECNMAJ101	Introductory Microeconomics
2	23ECNMAJ102	Mathematical Economics - I
3	23ECNMAJ103	Introductory Macroeconomics
4	23ECNMAJ104	Mathematical Economics - II
5	23ECNMAJ201	Intermediate Microeconomics - I
6	23ECNMAJ202	Intermediate Macroeconomics - I
7	23ECNMAJ203	Intermediate Microeconomics - II
8	23ECNMAJ204	Intermediate Macroeconomics - II
9	23ECNMAJ205	Mathematical Economics - III
10	23ECNMAJ301	Indian Economy - I
11	23ECNMAJ302	Development Economics
12	23ECNMAJ303	Statistics - I
13	23ECNMAJ304	Indian Economy - II
14	23ECNMAJ305	International Economics
15	23ECNMAJ306	Statistics and Econometrics
16	23ECNMAJ307	Sample Survey
WITH RESEARCH		
17	23ECNMAJ401	Economic Thought
18	23ECNMAJ402	Environmental Economics
19	23ECNMAJ403	Tourism Economics
20	23ECNMAJ404	Agricultural Economics
21	23ECNMAJ405	Gender Economics
WITHOUT RESEARCH		
17	23ECNMAJ401	Economic Thought
18	23ECNMAJ402	Environmental Economics

19	23ECNMAJ403	Tourism Economics
20	23ECNMAJ404	Agricultural Economics
21	23ECNMAJ405	Economics of Health and Education
22	23ECNMAJ406	Public Economics
23	23ECNMAJ407	Economic History of India
24	23ECNMAJ408	Tribal Economics

4.2. Minor Course

	Course Code	Course Title
1	23ECNMIN101	Microeconomics

4.3. Multi-Disciplinary Course (MDC)

	Course Code	Course Title
1	23ECNMDC101	Microfinance
2	23ECNMDC102	Public Economics and Policy Analysis

4.4. Skill Enhancement Course (SEC)

	Course Code	Course Title
1	23ECNSEC101	Basic Computer Applications
2	23ECNSEC102	Travel and Tourism

4.5. Value Added Course (VAC)

	Course Code	Course Title
1	23ECNVAC101	Economic Debate and Discussion

5. Programme Matrix

Semester	Course Code	Course Type	Title of the Course (40 characters including space)	Credit	Lecture Tutorial Practical (L+T+P)	Total Hours	Total Marks
I	23ECNMAJ101	Major	Introductory Microeconomics	4	4+0+0	60	100
	23ECNMAJ102	Major	Mathematical Economics - I	4	4+0+0	60	100
	23ECNMIN101	Minor	Microeconomics	4	4+0+0	60	100
	23ECNMDC101	MDC	Microfinance	3	3+0+0	45	100
	23AECE101	AEC	Compulsory English	2	2+0+0		50
	23ECNSEC101	SEC	Basic Computer Applications	3	2+0+2	45	100
	23SCSVAC1	VAC	Value Education	1	1+0+0	15	25
	23ECNVAC101	VAC	Economic Debate and Discussion	1	0+0+2	30	25
	Total						
II	23ECNMAJ103	Major	Introductory Macroeconomics	4	4+0+0	60	100
	23ECNMAJ104	Major	Mathematical Economics – II	4	4+0+0	60	100
	23ECNMDC102	MDC	Public Economics and Policy Analysis	3	3+0+0	45	100
	23ECNAEC102	AEC	ALT Eng	2	2+0+0		50
	23ECNSEC102	SEC	Travel and Tourism	3	2+0+2	45	100
	23SCSVAC2	VAC	Environmental Education	1			25
	23ECNVAC102	VAC		1			25
	Total						

6. Course Content

6.1 Course Description

Course Code	23ECNMAJ101	
Course Title	Introductory Microeconomics	
Credits	4	
Total Hours	60	
Hours per Week	4	
Course Type	Major	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Economics	
Regulation	2023	
Course Overview	This course: a) Introduces economics. b) Discusses the concepts of Demand and supply. c) Covers the theory of Consumers Behaviour. d) Covers the theory of producers Behaviour.	
Prerequisite	Students should possess proficiency in the English language and effective communication skills.	
Course Objectives	The objectives of the course are to: a. Introduce economics as a subject to the students. b. Provide the students with the concepts of Demand and Supply. c. Provide the students with the understanding of Market Elasticity. d. Provide the students with the understanding of the theories of consumers behaviour. e. Provide the students with the understanding of the theory of producers’ behaviour.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Define Economics.	R, U
CO2	Discuss the concepts of Demand and Supply and discuss the factors affecting demand and supply.	R, U, A1
CO3	Explain and calculate the elasticities of demand and supply.	R, U, A1, A2
CO4	Analyse consumers behavior using cardinal and ordinal theories.	R, U, A1, A2
CO5	Analyse producers’ behavior.	R, U, A1, A2
Course Content		

Units	Content	Lecture Hours	COs	RBT
Unit I	Exploring the Subject Matter of Economics: a. Scope and method of economics b. The economic problem: scarcity and choice c. Opportunity cost and decision making d. Decision takers: Households, firms and Central authorities	5	CO1	R U
Unit II	Demand and Supply: a. Determinants of individual demand and supply b. Law of demand and Law of supply c. Demand and supply schedule demand and supply curve d. Market versus individual demand and supply e. Shifts in the demand and supply curve. f. Market equilibrium and stability of equilibrium.	15	CO2	R U A1 A2
Unit III	Elasticity of demand & supply: a. The concept of elasticity of demand b. Point and arc elasticity, cross price elasticity and income elasticity of demand c. Elasticity of supply	5	CO3	R U A1 A2 E
Unit IV	Consumer and Households Behaviour: a. Cardinal utility theory: Law of diminishing Marginal Utility, derivation of Marshallian demand curve. b. Ordinal utility theory: Indifference curves and their properties, budget line, consumers' equilibrium. c. Income Consumption Curve, price consumption curve and Engel's curve. d. Demand elasticity and classification of commodities, Normal, Inferior and Giffen goods, Income and Substitution effect e. Revealed Preference Theory.	20	CO4	R U A1 A2 E
Unit V	Producer/Firm Behaviour: a. The concepts of Total Revenue, Marginal Revenue and Average Revenue b. Production function c. Law of variable proportion d. Fixed co-efficient production function e. Returns to a factor, returns to scale, iso-quant and its properties, iso-cost line. f. Marginal rate of technical substitution g. Equilibrium of the producer	15	CO5	R U A1 A2 E

	h. Constrained output maximization and constrained cost minimization i. Expansion path j. Elasticity of substitution k. Cobb-Douglas and CES production function.			

Learning Resources:

- Ahuja, H.L. (2010). Modern Economics. S. Chand and Co. Ltd.
- Gravelle, & Rees. Microeconomics. Pearson.
- Henderson, & Quandt. Microeconomic Theory. McGraw Hill.
- Stiglitz, J.E., & Walsh, C.E. Economics. W.W. Norton.
- Case, K.E., & Fair, R.C. Principles of Economics. Pearson Education Inc.
- Koutsoyiannis. Microeconomic Theory. Macmillan.
- Lipsey, & Chrystal. An Introduction to Positive Economics. OUP.
- Madalla, & Miller. Microeconomics-Theory and Applications. McGraw Hill.
- Mankiw, N.G. Economics: Principles and Applications. India edition by South Western.
- Pindyck, Rubinfeld, & Mehta. Microeconomics. Pearson Education Asia. (CTB)
- Salvatore, D. Microeconomics. OUP.
- Varian, H.R. Intermediate Microeconomics: A Modern Approach. (CTB)
- Gould, & Lazear. Micro Economics.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

6.1.1 Assessment

- Formative Assessment:* 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- Summative Assessment:* 50 marks (Time: 2 hours)

Marks distribution as follows:

- Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of RBT. $2 \times 5 = 10$.
- Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
- Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Mr. Bickey Sharma Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:
	(Seal)	(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Ms. Decha Kumari Signature:		

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6.2 Course Description

Course Code	23ECNMAJ102	
Course Title	Mathematical Economics - I	
Credits	4	
Total Hours	60	
Hours per Week	4	
Course Type	Core	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Economics	
Regulation	2023	
Course Overview	This course: a. Covers the concepts of Sets, Matrix and Determinants. b. Explores Basic calculus and its application in Economics. c. Covers Maxima and Minima and its application in Economics.	
Prerequisite	Students need to have had studied either mathematics or business mathematics and business economics in class 12.	
Course Objectives (total 5)	The objectives of the course are: a. Enable students to understand the concepts of Sets and solve mathematical problems related to them. b. Enable students to understand the concepts of matrices and determinants and solve mathematical problems related to them. c. To provide the knowledge of basic calculus to the students, including differential Calculus, integral calculus and maxima and minima. d. Enable students to apply the concepts of differential calculus, integral calculus and to solve problems in economics. e. Enable students to apply the concepts of maxima and minima and to solve problems in economics.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Define sets and solve mathematical problems related to them.	R
CO2	Explain the concepts of matrices and determinants and solve mathematical problems related to them.	U & AI
CO3	Demonstrate the knowledge of basic calculus to the students, including differential Calculus, integral calculus and maxima and minima.	A2

CO4	Apply the concepts of differential calculus, integral calculus and to solve problems in economics.	E		
CO5	Apply the concepts of maxima and minima and to solve problems in economics.	R		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Theory of Sets: a. Sets, Set Notations, Set Operations. b. Convex Sets and their Properties. c. Relations, Functions and their Properties. d. The Number System.	15	CO1	R U A1 A2 E
Unit II	Matrices and Determinants: a. Vectors and Matrices, Matrix operations, Determinants. b. Inverse Matrix, Solution of a system of linear equation. c. Bordered Hessian Determinant and Cramer’s rule. d. Applications in Economics: Comparative Static Analysis and Derivation of Slutsky Equation.	15	CO2	R U A1 A2 E
Unit III	Differential Calculus and Applications in Economics: a. Derivative of a Function, Rules of Differentiation, Partial and Total Differentiation, Euler’s Theorem. b. Applications in Economics: Demand Function, Elasticity of Demand, Marginal Revenue, Marginal Utility, Marginal Cost, Slope and Curvature of Indifference Curve, Point of Inflexion, Returns to Scale. c. Homogeneous Functions and their Properties, Cobb-Douglas Production Function and their Properties.	10	CO3	R U A1 A2 E
Unit IV	Integral Calculus and Applications in Economics: a. Concept of Integration, Rules of Integration, Definite and Indefinite Integral. b. <i>Applications in Economics:</i> Finding out Total Revenue Functions, Total Cost Function. Consumption Function	10	CO4	R U A1 A2 E

	and Saving Function when Marginal Functions are given. c. Consumer's Surplus and Producer's Surplus.			
Unit V	Maxima and Minima and Applications in Economics: - Extreme Values of Bi-variate Functions, Sufficient Condition for Extreme Values, First and Second Order Conditions for Optimization without Constraints. - Constraints Optimization Problems in Economics: Lagrange Multiplier Method, Utility Maximization subject to Budget Constraint, Output Maximization subject to Cost Constraint, Cost Minimization subject to an Output Constraint. - Relation between AP and MP, Relation between AC and MC, Expansion Path. - Derivation of Ordinary and Compensated demand curves.	10	CO5	R U A1 A2 E

Learning Resources:

- Allen, R. G. D. Mathematical Analysis for Economics. Macmillan.
- Archibald, & Lipsey. An Introduction to the Mathematical Treatment of Economics. AITBS.
- Bailey, D. Mathematics in Economics. McGraw Hill.
- Baumol, W. J. Operations Research – An Introduction. Prentice Hall.
- Chiang, A. C., & Wainwright, K. Fundamental Methods of Mathematical Economics. McGraw Hill. (CTB)
- Dorfman, R. P., Samuelson, P. A., & Solow, R. M. Linear Programming and Economics Analysis. McGraw Hill.
- Geoff, Renshaw. Maths for Economics. OUP.
- Henderson, J. M., & Quandt, R. D. Micro Economic Theory – A Mathematical Approach. McGraw Hill. (CTB)
- Hoy, M., Livernois, J., McKenna, C., Rees, R., & Stengos, T. Mathematics for Economics. Prentice Hall.
- Mukherjee, B., & Pandit, V. Mathematical Methods for Economic Analysis. Allied.
- Silberberg, E. The Structure of Economics – A Mathematical Analysis. McGraw Hill. (CTB).
- Taha, H. A. Operations Research – An Introduction. Prentice Hall.
- Yamane, T. Mathematics for Economists – An Elementary Survey. Prentice Hall.
- Sydsæter, K., & Hammond, P. Mathematics for Economic Analysis. Pearson E. Asia, New Delhi. (CTB)

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

6.2.1 Assessment

- i. *Formative Assessment*: 50 marks as per Assessment & Evaluation Framework Document of Salesian College

- ii. *Summative Assessment*: 50 marks (Time: 2 hours)

Marks distribution as follows:

- a. Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of RBT. $2 \times 5 = 10$.

- b. Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.

Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Mr. Phu Tshering Sherpa Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:
	(Seal)	(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Ms. Decha Kumari Signature:		

(College round seal in all pages)

6.3 Course Description

Course Code	23ECNSEC101	
Course Title	Basic Computer Applications	
Credits	3	
Total Hours	60	
Hours per Week	4	
Course Type	Skill Enhancement Course	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Economics	
Regulation	2023	
Course Overview	This course: a. Covers introduction to computers. b. Discusses the storage devices. c. Introduces word processing. d. Discusses worksheets. e. Covers Presentation graphics. f. Covers application of computer applications in economics.	
Prerequisite	Students should possess proficiency in the English language and effective communication skills.	
Course Objectives	The objectives of the course are to: a. Introduce the concept of computers to the students. b. Enable students to understand storage devices. c. Provide the basics of word processing to the students. d. Provide the basics of spreadsheets to the students. e. Provide the knowledge of graphic presentation to the students. f. Enable students to apply computer applications in economics.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of the course, the student will be able to:		
COs	Statements	Cognitive Level Mapping
C01	Discuss the history, concepts and characteristics of computing systems	R,U
C02	Discuss storage devices	R,U
C03	Explain the techniques of operating on a MS Word worksheet	R,U,A1,A2,E
C04	Outline the steps in operating on MS Excel Work	R,U,A1,A2,E
C05	Create powerpoint presentations	R,U,A1,A2,C
C06	Apply computer applications in economics	R,U,A1,A2,C

Units	Content	Lecture Hours	COs	RBT
Unit I	Introduction to Computer: a. History of development of Computers. b. Concepts of Computer System, Characteristics; Capabilities and limitations. c. Generations of Computers. d. Basic components of Computer System	5	C01	R U
Unit II	Storage Devices: a. Storage fundamentals; Primary vs Secondary. b. Data Storage and Retrieval methods. c. Sequential, Direct and Index Sequential and Various Storage Devices	5	C02	R U
Unit III	Word Processing - MS Word: a. Introduction to Word Processing. b. Introduction to MS Word: Features. c. Creating, Saving and Opening documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard, Shortcut. d. Editing a Document, Selecting, Inserting, Deleting, Moving text. e. Previewing documents, printing documents, shrinking a document to fit a page. f. Formatting Documents: Paragraph formats, Aligning Text and Paragraph, Borders and Shading, Headers and Footers, Multiple Columns.	15	C03	R U A1 A2 E
Unit IV	Worksheet & MS Excel: a. Worksheet basics, creating worksheet, entering data into worksheet, heading information, data, text, dates, cell formatting values, saving & protecting worksheet. b. Working with single and multiple workbook – coping, renaming, moving, adding and deleting, coping entries and moving between workbooks, c. Working with formulas & cell referencing, Formatting of worksheet. Previewing & Printing worksheet, Graphs and charts, various charts type, formatting grid lines & legends, previewing & printing charts.	15	C04	R U A1 A2 E

Unit V	Presentation Graphics - MS Power Point a. Features and various versions, Creating presentation using Slide master and template in various colour scheme, b. Working with different views and menus of power point, Working with slides. c. Drawing and inserting objects using Clip Art's pictures and charts. d. Custom Animation, slide transition effects and other animation effects.	10	C05	R U A1 A2 C
Unit VI	Applications in Economics: a. Population census versus sample surveys. b. Random sampling, Frequency distribution and summary Statistics, Data entry. c. Mathematical Functions, Financial functions, Statistical Functions. d. Creating simple Line, Bar and Pie charts, Simple two variable regressions.	10	CO6	R U A1 A2 C
Learning Resources: • Rajaraman, V. (2014): Fundamental of Computer, Prentice Hall India Pvt. Limited, New Delhi. (CTB) • Dubey, Manoj (2013): P C Packages, Kamal Prakashan, Indore. • Mansoor, A. I. T. (2014): Tools and Applications, Pragya Publications, Matura. • Ash Narayan Sah (2012): Data Analysis Using Microsoft, Excel Books, India. (CTB)				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

6.3.1 Assessment

i. *Formative Assessment:* 50 marks as per Assessment & Evaluation Framework Document of Salesian College

ii. *Summative Assessment:* 50 marks

ii. i. Theory paper of 50 marks, scaled down to 25 marks.(Time: 2 hours)

a. Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of RBT. $2 \times 5 = 10$.

b. Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.

c. Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$

ii. ii. Practical paper of 50 marks, scaled down to 25 marks. Marks distribution as follows:

a. Lab report: 10 marks b. Viva-voce: 10 marks c. Department/subject specific questions: 30 marks.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Ms. Ashiya Thapa Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:
	(Seal)	(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Ms. Decha Kumari Signature:		

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6.4. Course Description

Course Code	23ECNVAC101
Course Title	Economic Debate and Discussion
Credits	1
Total Hours	30
Hours per Week	2
Course Type	Skill Enhancement Course
Semester	I
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Economics
Regulation	2023
Course Overview	This course is designed to engage students in meaningful debates and discussions on various economic topics, enabling them to develop critical thinking skills and a deeper understanding of economic concepts. Through constructive debates and open dialogues, students will explore controversial issues, analyze multiple perspectives, and build their ability to formulate and defend informed opinions. This module aims to create a dynamic learning environment where students actively participate in analyzing real-world economic challenges and policy decisions.
Course Objectives	By the end of this course, students will: • Develop critical thinking skills by evaluating economic arguments, identifying logical fallacies, and analyzing complex economic issues from multiple viewpoints. • Deepen their understanding of fundamental economic concepts by applying them to realworld scenarios and debating their implications. • Improve their ability to communicate complex economic ideas persuasively and concisely in both written and verbal forms. • Enhance research skills through in-depth exploration of economic topics, data analysis, and evidence-based argumentation. • Cultivate an atmosphere of respectful and constructive debate, where differences in opinion are valued, and students learn to engage in civil discourse. • Cultivate an atmosphere of respectful and constructive debate, where differences in opinion are valued, and students learn to engage in civil discourse. • Apply economic principles to contemporary economic challenges and policy decisions, gaining practical insights into real-world economic issues. • Encourage independent thinking and the ability to question prevailing economic wisdom by examining the strengths and weaknesses of various economic theories and policies. • Develop a global perspective by exploring economic debates from international and cross-cultural angles, recognizing the interconnectedness of economies.

	Synthesize knowledge gained throughout the module to critically evaluate the economic policies and decisions made by governments, organizations, and individuals.
Session 1: Introduction to economic debate. Importance of Economic Debates. Rules of constructive debates and respectful discourse. Session 2: Debate on economic systems – Capitalism vs Socialism vs mixed economies. Debate on importance of Government in an economy. Pros and cons of Economic systems. Session 3: Discussion on the causes and consequences of Income Inequality. Policy Debates on addressing Income Inequality. Discussion on role of taxation, minimum wages and wealth redistribution. Session 4: Debate on contemporary economic topics. Session 5: Debate on Economic Growth vs Environmental Sustainability. Debate on Sustainable Development. Session 6: Discussion on benefits and challenges of Globalisation. Debate on Free Trade vs Protectionism. Debate on the impacts of international trade on local industries and labour market. Session 7: Debate on Public vs Private healthcare systems. Debate on the current healthcare system in India. Session 8: Debate on contemporary economic topics. Session 9: Discussion on the role of education in economics development. Debate on Public vs Private education systems. Debate on the present education system in India. Session 10: Discussion on the minimum wage and labour market challenges in India. Discussion on the history of the plantation labour systems in the tea gardens in North Bengal. Discussions on contemporary challenges faced by the tea garden labours in the North Bengal region. Session 11: Debate on the impact of automation on employment. Debate on the role of technology on economics Development. Session 12: Debate on contemporary economic topics. Session 13: Discussion on Sustainable tourism. Debate on the impact of tourism in the North Bengal region. Urban tourism vs rural tourism. Session 14: Debate on emerging economic issues like climate change. Student-led debate on pressing economic topics. Reflection and takeaways. Session 15: Final discussion and feedback.	

6.4.1 Assessment

The course carries 25 marks. The evaluation will be done continuously by the course instructor based on the individual performance and participation of the students in each session. A final score will be tabulated and assigned by the end of the course bases on the evaluators observation through it.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Mr. Bickey Sharma Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:

(Seal)

(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Ms. Decha Kumari Signature:		

6.5. Course Description

Course Code	23ECNMAJ103	
Course Title	Introductory Macroeconomics	
Credits	4	
Total Hours	60	
Hours per Week	4	
Course Type	Major	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Economics	
Regulation	2023	
Course Overview	This course: a. Introducesmacroeconomics b. ExplainsNational IncomeAccounting c. Discussetheclassicaltheoryofmacroeconomics d. Explainsthefundamentals oftheKeynesiantheoryofincomeandemployment	
Prerequisite	Students should have understanding of English language	
Course Objectives	The objectives of the course are to: i. Enable students to define macroeconomics, understand its nature and to differentiate it from microeconomics. ii. Provide the students with the concept of national income accounting. iii. Provide the students with the understanding of the classical theory of macroeconomics. iv. Introduce and explain to the students the Keynesian theory of macroeconomics. v. Provide the students with the concept of the Keynesian Multiplier.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	DefineMacroeconomics and Differentiate it from Microeconomics.	R
CO2	DiscusstheconceptsofNational Income Accounting.	U
CO3	Explainthe Classical Theory of Income and Employment.	A1
CO4	Demonstrate deep understanding of the Simple Keynesian Model.	A2
CO5	Discuss the Simple Keynesian Multiplier	E
Course Content		

Units	Content	Lecture Hours	COs	RBT
Unit I	Introduction to Macroeconomics: a. Nature of Macroeconomics b. Scope and Importance of Macroeconomics c. Difference between microeconomics and macroeconomic.	6	CO1	R U
Unit II	National Income Accounting: a. Definitions of National Income, Concepts of GNI, GDP, GNP, NDP, NNP and NNP at factor cost and at market price, three methods of GNP b. Methods of measuring National Income, c. Difficulties in the measurement of National Income d. Price indices: CPI, WPI and GDP deflator, e. Nominal GNP and real GNP f. Saving-Investment gap and its relation with budget deficit and trade surplus. g. National income as a measure of welfare.	15	CO2	R U A1 A2
Unit III	The Classical Theory: a. Basic ideas of Classical Macroeconomics b. Say's Law c. Quantity Theory of Money, Loanable fund theory d. The Classical Theory of Income and Employment determination e. Full Employment and wage-price flexibility f. Classical Dichotomy and Neutrality of Money.	10	CO3	R U A1 A2 E
Unit IV	The Simple Keynesian Model (SKM) in a Closed Economy: a. The Simple Keynesian Model (SKM) in a Closed Economy without Government b. The Keynesian Consumption Function c. The Keynesian Saving Function d. Income determination in SKM e. Stability of equilibrium f. The concept of effective demand- the concept of demand-determined output.	15	CO4	R U A1 A2 E
Unit V	Multiplier: a. The Simple Keynesian Multiplier b. Static vs. dynamic multiplier c. The paradox of thrift d. The SKM in a Closed Economy with	14	CO5	R U A1 A2 E

	Government; government expenditure and tax e. The government expenditure multiplier and the tax rate multiplier f. The balanced budget multiplier g. The budget surplus h. Effects of tax changes and government purchases on budget surplus i. The full employment budget			
Learning Resources: - Ahuja, H. L. (2010). Modern Economics. S. Chand and Co. Ltd. - Ackley, (CTB). Macroeconomic Theory and Policy, 2nd Edition. - D'Souza, E. (2009). Macroeconomics. Pearson Education. - Mankiw, N. Gregory. (2010). Macroeconomics, 7th Edition. Worth Publishers. - Blanchard, Olivier. (2009). Macroeconomics, 5th Edition. Pearson Education, Inc. - Dornbusch, R., & Fischer, S. (CTB). Macroeconomics, 4th Edition. McGraw Hill. - Froyen, Richard T. (2005). Macroeconomics, 2nd Edition. Pearson Education Asia. - Sikdar, S. (CTB). Principles of Macroeconomics. Oxford University Press. - Branson, W. H. (2nd Edition). Macroeconomic Theory and Policy. All India Traveler Bookseller. - Pal, Tapas Kr. (2018). Macroeconomics-Theory & Policy. Platinum Publisher, Kolkata.				

6.5.1 Assessment

- Formative Assessment:* 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- Summative Assessment:* 50 marks (Time: 2 hours)

Marks distribution as follows:

- Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of RBT. $2 \times 5 = 10$.
- Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
- Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Mr. Bickey Sharma Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:
	(Seal)	(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Ms. Decha Kumari Signature:		

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6.6. Course Description

Course Code	23ECNMAJ104	
Course Title	Mathematical Economics - II	
Credits	4	
Total Hours	60	
Hours per Week	4	
Course Type	Major	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Economics	
Regulation	2023	
Course Overview	This course: a. Covers and explores the concepts of difference equations. b. Explores the concepts of differential equations. c. Covers theory of games.	
Prerequisite	Students need to have had studied either mathematics or business mathematics and business economics in class 12.	
Course Objectives	The objectives of the course are to: i. Provide the students with the concept of first order differential equations and enable them to apply the same in economics. ii. Provide the students with the concept of second order differential equations and enable them to apply the same in economics. iii. Provide the students with the understanding of first order difference equations and enable them to apply the same in economics. iv. Provide the students with the understanding of second order difference equations and enable them to apply the same in economics. v. To provide the students with the understanding of the theory of games.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Demonstrate understanding of Differential Equations and apply it in Economics.	R
CO2	Explain the concept of second order differentials and apply it in economics.	U & AI
CO3	Solve problems involving first order difference equations and apply it in economics.	A2
CO4	Solve problems involving second order difference equations and apply it in	E

	economics.			
CO5	Explain the theory of games, solve problems involving games and apply the theory of games in economics.	R		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Differential Equations: a. Definition of Differential Equation, Definition of First Order and Solution of First Order Differential Equations. b. Applications in Economics: Time Path of Price and Quantity in Comparative Markets, Time Path of Income in Simple Keynesian Model, Stability Model, Time Path of Inflation and Unemployment Rates, Harrod- Domar and Solow Growth Model.	10	CO1	R U A1 A2 E
Unit II	a. Definition of Second Order Differential Equation. b. Solution of Second Order Differential Equations and its applications in economics.	10	CO2	R U A1 A2
Unit III	Difference Equations: a. Definition of Difference Equation, Solution of Difference Equations, First Order Difference Equations. b. Applications in Economics: the Cobweb Model, the Dynamic Multiplier, Nature of the Time Path – A Graphical Analysis, Interpretation of the Time Path	10	CO3	R U A1 A2 E
Unit IV	a. Definition of Second order Difference Equation, Solution of Second order Difference Equations. b. Applications in Economics: The Multiplier Accelerator Interaction Model, Inflation and Unemployment in Discrete Case.	10	CO4	R U A1 A2 E
Unit V	Theory of Games: a. Introduction and Definition. b. Structure of Game, Pay-off Matrix, Two-Person Zero Sum Game, Non-Zero Sum Game. c. The Maximin and Minimax Principle, Games with an without Saddle Points.	20	CO5	R U A1 A2 E

	d. Dominance Property, Pure and Mixed Strategy, Graphical Solution of (2XN) and (MX2) Games.			
Learning Resources: • Allen, R. G. D. Mathematical Analysis for Economics. Macmillan. • Archibald, & Lipsey. An Introduction to the Mathematical Treatment of Economics. AITBS. • Bailey, D. Mathematics in Economics. McGraw Hill. • Baumol, W. J. Operations Research – An Introduction. Prentice Hall. • Chiang, A. C., & Wainwright, K. Fundamental Methods of Mathematical Economics. McGraw Hill. (CTB) • Dorfman, R. P., Samuelson, P. A., & Solow, R. M. Linear Programming and Economics Analysis. McGraw Hill. • Geoff, Renshaw. Maths for Economics. OUP. • Henderson, J. M., & Quandt, R. D. Micro Economic Theory – A Mathematical Approach. McGraw Hill. (CTB) • Hoy, M., Livernois, J., McKenna, C., Rees, R., & Stengos, T. Mathematics for Economics. Prentice Hall. • Mukherjee, B., & Pandit, V. Mathematical Methods for Economic Analysis. Allied. • Silberberg, E. The Structure of Economics – A Mathematical Analysis. McGraw Hill. (CTB). • Taha, H. A. Operations Research – An Introduction. Prentice Hall. • Yamane, T. Mathematics for Economists – An Elementary Survey. Prentice Hall. • Sydsæter, K., & Hammond, P. Mathematics for Economic Analysis. Pearson E. Asia, New Delhi. (CTB)				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

6.6.1 Assessment

- i. *Formative Assessment*: 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. *Summative Assessment*: 50 marks (Time: 2 hours)

Marks distribution as follows:

- a. Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of RBT. $2 \times 5 = 10$.
- b. Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
- c. Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Mr. Phu Tshering Sherpa Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:
	(Seal)	(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Ms. Decha Kumari Signature:		

6.7. Course Description

Course Code	23ECNSEC102	
Course Title	Travel and Tourism	
Credits	2	
Total Hours	45	
Hours per Week		
Course Type	Skill Enhancement Course	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Economics	
Regulation	2023	
Course Overview	This course: a. Covers introduction of tourism. b. Discusses the measurement of Tourism. c. Covers Cultural Heritages in India. d. Discusses special interest tourism. e. Discusses tourism in North Bengal	
Prerequisite	Students should possess proficiency in the English language and effective communication skills.	
Course Objectives	The objectives of the course are to: a. To introduce the concept tourism to the students. b. To enable students explain the measurement of tourism. c. To enable students to discuss the cultural heritage in India. d. To provide students with the concept of special interest tourism. e. To enable students to discuss the tourism in North Benga.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Discuss tourism	R,U
CO2	Explain the concept of measurement of tourism	R,U,A1,A2
CO3	Discuss the cultural heritage of India	R,U,A1,A2,E
CO4	Explain special interest tourism	R,U,A1,A2,E
CO5	Critically analyse the tourism in North Bengal	R,U,A1,A2,E

Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Definition of Tourism: a. Definition of tourism, tourist, distinction between tourist and excursionist. b. Nature and scope of tourism management; functions of tourism management c. Historical development of tourism; Types of tourism, Forms of Tourism; Domestic tourism; International tourism; d. Tourism principle; Factors affecting the growth of tourism in India.	8	C01	R U
Unit II	Measurement of Tourism: a. Components of tourism, Tourism motivations, Tourism importance; b. Application of economics in tourism; c. Determinants of tourism demand and tourism supply; tourism demand forecasting and tourism supply forecasting; d. Employment and Income creation.	10	C02	R U A1 A2
Unit III	Cultural Heritage of India: a. Archaeological sites of India, Monuments; Forts; Palaces, Historical importance building. b. UNESCO and World heritage sites in India: Religious sites in India. c. Pilgrimage tourism and its significance in tourism. Handicrafts in tourism: Fairs and festivals in India and its importance in tourism. .	10	C03	R U A1 A2 E
Unit IV	Special Interest Tourism: a. Tourism market; Health tourism, Ecotourism, Village tourism, Sustainable tourism; b. National parks; Wildlife & bird sanctuaries in India;	10	C04	R U A1 A2 E

	c. Desert tourism; Mountain tourism; Beach tourism. d. Positive and Negative Impacts of Tourism; Socio cultural impact; Economic impact; Environmental and Ethnographical Impact.			
Unit V	Tourism North Bengal: a. Important tourism sites in W.B. Darjeeling and Dooars. b. Role of ecotourism in North Bengal	7	C05	R U A1 A2 E
Learning Resources: - Sinha, P.C. (Ed.) Tourism Management (Vol. 4). [Include any additional information about the edition, if applicable, e.g., (2nd ed.)] CTB. - Mill, J., & Morrison, A. Tourism Systems. - Gartner, R. (Ed.). Tourism Development. [Include any additional information about the edition, if applicable, e.g., (3rd ed.)] CTB. - Cooper, C., Fletcher, J., Gilbert, D., & Wanhill, S. Tourism: Principles and Practices. - World Tourism Organization (WTO). Sustainable Tourism Development, Guide for Local Planners. - Gupta, S.P., Lal, K., & Bhattacharya, M. Cultural Tourism in India. CTB. - Lumsdon, L. Tourism Marketing. - Holloway, J. C., & Robinson, C. Marketing for Tourism. - Kotler, P. Marketing Management Analysis, Planning and Control. PHI. - Kotler, P., & Armstrong, G. Principles of Marketing. PHI. - Stanton, W. J. Fundamentals of Marketing. McGraw Hill. - Bhattacharya, K. Sisir. Marketing Management. National Publishing House.				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

6.7.1 Assessment

- i. *Formative Assessment:* 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. *Summative Assessment:* 50 marks
 - ii. i Theory paper of 50 marks, scaled down to 25 marks. (Time: 2 hours)
 - a. Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of RBT. $2 \times 5 = 10$.
 - b. Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - c. Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$

- ii. ii. Project work of 50 marks, scaled down to 25 marks. Marks distribution as follows:
 a. Project report: 10 marks b. Viva-voce: 10 marks c. Department/subject specific questions: 30 marks.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Ms. Ashiya Thapa Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:
	(Seal)	(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Ms. Decha Kumari Signature:		

(College round seal in all pages)

6.8. Course Description

Course Code	23ECNMN101			
Course Title	Microeconomics			
Credits	4			
Total Hours	60			
Hours per Week	4			
Course Type	Minor			
Semester	I			
Intended Level	Certificate			
Issue(s) Addressed				
Course Offered to	Other than Economics Major			
Regulation	2023			
Course Overview	This course: a. Introduces economics b. Discusses the concepts of Demand and supply c. Covers the theory of Consumers Behaviour d. Covers the theory of producers Behaviour			
Prerequisite	Students should possess proficiency in the English language and effective communication skills.			
Course Objectives (total 5)	A student will be able to: i. Provide the students with the fundamentals of demand analysis. ii. Provide the students with the understanding of utility and consumption. iii. Enable students to understand the theory of production. iv. Enable students to understand the theory of cost. v. Enable students to understand the different types of market structures.			
Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Explain the fundamentals of Demand theory.	R		
CO2	Discuss the concepts of utility and consumption.	U		
CO3	Discuss the theory of Production.	A1		
CO4	Display the understanding of the theory of cost.	A2		
CO5	Discuss the different types of market structure.	E		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Demand Analysis: a. Definition of Demand b. Determinants of Demand, Demand Curve and Demand Function, Law of Demand. c. Measurement of Own price	15		R U

	elasticity of Demand, Cross price elasticity of Demand and Income elasticity of Demand. d. Factors determining Elasticity of Demand.			
Unit II	Consumption and Utility: a. Definition of Total Utility (TU) and Marginal Utility (MU), Relationship between TU and MU, b. Law of Diminishing Marginal Utility, c. Condition of Equilibrium of the Consumer. d. Indifference Curve Analysis: Definition and Characteristics of Indifference Curve (IC). e. Marginal Rate of Substitution (MRS), Budget Line, Consumer's Equilibrium, f. Price Effect, Income Effect, Substitution Effect, Consumer Surplus.	15	CO2	R U A1 A2
Unit III	Theory of Production: a. Definition of Production Function. b. Definition of Total Product (TP), Average Product (AP) and Marginal Product (MP), c. Derivation of AP and MP from TP Curve. d. Law of Variable Proportions, Producer's equilibrium, Expansion Path, Laws of Returns to Scale.	10	CO3	R U A1 A2 E
Unit IV	Theory of cost: a. Fixed Cost and Variable Cost, Average Cost and Marginal Cost, Shape of Cost Curves, Relation between Average Cost and Marginal Cost. b. Definitions of Total Revenue (TR), Average Revenue (AR) and Marginal Revenue (MR) and relationship among AR, MR and Price Elasticity of Demand.	10	CO4	R U A1 A2 E
Unit V	Perfect and Imperfect Competition: a. Classifications of Markets, Characteristics of Perfect Competition, Short-run and Long-run Equilibrium of the Firm, Short run Supply Curve of the Firm, Price Determination in a Perfectly Competitive Market.	10		R U A1 A2 E

	b. Monopoly: Characteristics, Price and Output Determination in Monopoly, Basic Concepts of Price Discrimination. c. Characteristics of Monopolistic Competition, Oligopoly and Duopoly markets.			
Learning Resources: - Ahuja, H.L. (2010): Modern Economics, S. Chand and Co. Ltd. - Ferguson and Gould (2001): Microeconomic Theory, published by All India Traveller Book Seller. - Joseph E. Stiglitz and Carl E. Walsh (2007): Economics, W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition. - Karl E. Case and Ray C. Fair (2007): Principles of Economics, Pearson Education Inc., 8th Edition. - Lipsey, R.G. (1963): An Introduction to positive Economics, Weidenfeld and Nicholson, London. N. Gregory Mankiw (2007): Economics: Principles and Applications, India edition by South Western, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition.				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

6.8.1 Assessment

i. *Formative Assessment*: 50 marks as per Assessment & Evaluation Framework Document of Salesian College

ii. *Summative Assessment*: 50 marks (Time: 2 hours)

Marks distribution as follows:

- Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of RBT. $2 \times 5 = 10$.
- Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
- Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Mr. Bickey Sharma Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:
	(Seal)	(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Ms. Decha Kumari Signature:		

(College round seal in all pages)

6.9. Course Description

Course Code	23ECNMDC101
Course Title	Microfinance
Credits	3
Total Hours	45
Hours per Week	3
Course Type	MDC
Semester	I
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	The students who haven't studied economics in their higher secondary level and do not have economics as their major or minor papers.
Regulation	2023
Course Overview	This course: a. Provides a comprehensive understanding of microfinance as a powerful tool for economic development. It explores the concept, history, and significance of microfinance in global and Indian contexts. Examine its impact on poverty alleviation and community development. b. Delves into the diverse microfinance models implemented in India, including Self-Help Groups (SHGs), the Grameen Model, ROSCA Model, Chit Funds, Village-Based Model, Intermediary Model, Cooperative Model, and Community Banking Model. c. Focuses on the intersection of financial inclusion and microfinance. Students will explore the relevance of financial inclusion for overall development, the importance of financial literacy, and the essential components of financial counselling d. Provides an in-depth examination of prominent financial inclusion schemes in India, including Pradhan Mantri Jan Dhan Yojana (PMJDY), Atal Pension Yojana (APY), Pradhan Mantri Mudra Yojana (PMMY), Sukanya Samridhi Yojana (SSY), and Pradhan Mantri Suraksha Yojana (PMSY).
Prerequisite	Students should possess proficiency in the English language and effective communication skills.
Course Objectives	A student will be able to: a. Understand the concept of microfinance and its role in fostering economic development.

	b. Understand the various microfinance models and their distinctive features. c. Emphasize the significance of financial inclusion in promoting economic development. d. Know the important financial inclusion schemes implemented by the Indian government.			
Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Understand the fundamental principles and objectives of microfinance.	R		
CO2	Gain an in-depth understanding of multiple microfinance models and their operational mechanisms.	U		
CO3	Identify the key components of financial literacy and their role in enhancing financial access	A1 & A2		
CO4	Understand the objectives and features of major financial inclusion schemes in India.	E & C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	a. Microfinance as a tool for development, b. Evolution of microfinance in India, c. Microfinance products and services, d. Intermediation and Regulations of Microfinance, Microfinance, and Livelihood options.	9	CO1	R U A1 A2 E C
Unit II	a. Microfinance models in India: SHGs, Grameen Model, ROSCA model or Chit Funds. b. Village Based Model, Intermediary Model, Co-operative Model,	12	CO2	R U A1 A2 E C

	Community Banking Model. c. Differences Between SHG and JLG Model. d. Indian SHG: Problems and Issues. e. SHG-Bank Linkages programmed in India			
Unit III	a. Financial inclusion and rural credit: b. Rural credit– concept, need. c. Characteristics and sources of rural credit. d. Institutional and non-institutional rural credit–money lenders, cooperatives. Regional Rural Banks, Commercial Banks, NABARD	12	CO3	R U A1 A2 E C
Unit IV	a. Financial Inclusions Schemes in India: Pradhan Mantri Jan Dhan Yojana (PMJDY). b. Atal Pension Yojana (APY). c. Pradhan Mantri Mudra Yojana (PMMY). d. Sukanya Samridhi Yojana (SSY). e. Pradhan Mantri Suraksha Yojana (PMSY).	12	CO4	R U A1 A2 E C
Learning Resources • Bhaskaran, R. Microfinance: Perspectives and Operations. Macmillan Education. • Bhatnagar, A. Rural Microfinance and Microenterprise: Informal Revolution. Concept Publishing Company. • Carol Realini. Financial Inclusion at the Bottom of the Pyramid. FriesenPress. • Chakrabarty, K. C. Financial Inclusion and Banks: Issues and Perspectives. RBI Bulletin • Debadutta K. Panda. Understanding Microfinance. Wiley India. • Gangadharan, K. Financial Inclusion and Inclusive Growth: Scope and Dimension. Reference Press. • Indian Institute of Banking & Finance. Micro-Finance: Perspectives and Operations. Taxmann Publications.				

- Matthaus-Maier, I., & Von Pischke, J. D. Microfinance Investment Funds: Leveraging Private Capital for Economic Growth and Poverty Reduction. Springer.
- Karmakar, K. G., Banerjee, G. D., & Mohapatra, N. P. Towards Financial Inclusion in India.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

6.9.1. Assessment

ii. **Formative Assessment:** 50 marks as per Assessment & Evaluation Framework Document of Salesian College

iii. **Summative Assessment:** 50 marks (Time: 2 hours)

Marks distribution as follows:

- a. Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of RBT. $2 \times 5 = 10$.
 - b. Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
- d. Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Mr. Palzor Dukpa Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:
	(Seal)	(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Ms. Decha Kumari Signature:		

6.10. Course Description

Course Code	23ECNMDC102	
Course Title	Public economics and policy analysis	
Credits	3	
Total Hours	45	
Hours per Week	3	
Course Type	MDC	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	The students who haven’t studied economics in their higher secondary level and do not have economics as their major or minor papers.	
Regulation	2023	
Course Overview	This course: a. Introduces students to the principles of public economics and the analysis of government policies. b. Covers topics such as taxation, public spending, fiscal policies, public policy evaluation, and implementation. c. Provides students with a foundation for understanding how governments allocate resources and make policy decisions.	
Prerequisite	Students should possess proficiency in the English language and effective communication skills.	
Course Objectives	A student will be able to: a. Understand the scope and significance of public economics in the context of economics as a whole. b. Understand the tax system, revenue and policies. c. Know about the tax incidence, tax efficiency and resource allocation. d. Understand the public policy evaluation and implementation	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping

CO1	Define public economics and explain the role of government in market efficiency.	R		
CO2	Explain the different types of taxes and policies of the governments.	U		
CO3	Apply the principles of taxation and analyze their relevance in designing an efficient tax system	A1 & A2		
CO4	Evaluate economic rationalism behind public spending in areas such as education, healthcare, and infrastructure and suggest a effective measures of implication.	E & C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Introduction to Public Economics a. Overview of public economics b. Role of government in the economy c. Market failures and public goods	9	CO1	R U A1 A2 E C
Unit II	Taxation, Public Revenue, and Fiscal Policies a. Types of taxes (income, sales, property, etc.) b. Tax incidence and efficiency c. Principles of taxation d. Fiscal policy tools and objectives	12	CO2	R U A1 A2 E C
Unit III	Public Spending and Resource Allocation a. Government expenditure categories b. Budgeting and resource allocation c. Public goods provision	12	CO3	R U A1 A2 E C
Unit IV	Public Policy Evaluation and Implementation a. Policy analysis and evaluation techniques	12	CO4	R U A1 A2

	b. Cost-benefit analysis c. Policy implementation challenges d. Case studies of policy success and failure			E C
Learning Resources: • Gruber, J. <i>Public Finance and Public Policy</i>. • Stiglitz, J. E., & Rosengard, J. K. <i>Public Economics</i> • Rosen, H. S., & Gayer, T. <i>Public Finance</i> • Pratt, J. W., & Kulsrud, W. N. <i>Taxation: Policy and Practice</i> • Hirsch, A. M. R. <i>Public Economics and the Quality of Life</i> • Tresch, R. W. <i>Public Finance</i>. • Weimer, D. L., & Vining, A. R. <i>Policy Analysis: Concepts and Practice</i> • Clark, S. G., & Elliott, R. J. R. <i>The Policy Process: A Practical Guide for Natural Resources Professionals</i>				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

6.10.1 Assessment

i. *Formative Assessment*: 50 marks as per Assessment & Evaluation Framework Document of Salesian College

ii. *Summative Assessment*: 50 marks (Time: 2 hours)

Marks distribution as follows:

a. Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of RBT. $2 \times 5 = 10$.

b. Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.

a. Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Mr. Palzor Dukpa Signature:	Mr. Bickey Sharma Signature:	Mr. Subhajit Paul Signature:
	(Seal)	(Seal)

External Subject Expert	External Subject Expert	Industry Expert
Prof Jeta Sankrityayana Signature:	Dr. Shanti Chhetry Signature:	Mr. Swaraj Kumar Banerjee Signature:
Alumni		
Signature:		

Course Code	23MCJVAC100
Course Title	Desktop Publishing
Credits	1
Lecture Hours	30
Sessions	15
Hours/Week	2
Category	Value Added Course (VAC-1)
Semester	I
Regulation	2023
Course Overview: This course – • Introduces students to the fundamental concepts in Desktop Publishing, • Explains the basic of software used in desktop publishing like Microsoft Word. • Explores basics of report writing and publishing.	
Prerequisites and/or Note(s): • Basic understanding of technological progress made in the field of Media and Communication	
Course Objectives: The course is designed to help learners to: • Understand the concept and industry of desktop publishing. • Develop essential skills and knowledge on how to use the essential software. • Create an design professional print productions. • Nurture a creative mind-set essential to design. • Familiarize the learners about the latest computing technologies required in the field.	

Course Outcomes:

The course is designed to help learners to:

1. Critically examine various newspaper and magazine formats, print production materials.
2. Learn and demonstrate and create using different industry standard software.
3. Understand basics of desktop publishing and develop their own designing aesthetic.
4. Apply different theories and elements to while designing.
5. Create meaningful industry standard print publications and showcasing them online.

COURSE CONTENT

SESSION	CONTENT	HOURS
1	Introductory session about the course and the tools to be used Students will be asked about any experiences in design during their school tenure like use of Microsoft Word and Corel Draw.	2
2	Introduction to basics of windows and MS Word How to access MS Word.	2
3	Work Space Essentials of MS Word - 1 Basics of MS Word interface.	2
4	Work Space Essentials of MS Word - 2 Introduction to different panels in MS Word.	2
5	Page Set-up in MS Word Setting up page in MS Word.	2
6	Typing in MS Word Fundamentals of typing in MS Word.	2
7	Saving a Document in MS Word Essentials of Saving a Document	2
8	Working with Photos and Graphics in MS Word Using photos and graphics to enhance a Document Quality.	2
9	Working with Tables in MS word Table creation and drawing in MS Word.	2
10	Creation of a Report Using MS Word Students will be asked to make a report using MS Word	2
11	Creation of a CV Using MS Word Students will be asked to make a CV using MS Word	2
12	Creation of an Invoice Slip Using MS Word Students will be asked to make an Invoice Slip using MS Word	2
13	Creation of a Poster Using MS Word Students will be asked to make a poster using MS Word.	2

14	Creation of a formal and informal letter Using MS Word Students will be asked to make a formal and informal letter using MS Word	2
15	Newsletter production Learn to create a newsletter. Students will be asked to design a newsletter	2

Assessment:

Formative Assessment: 10 internal +5 attendances.

Summative Assessment: Assignment submission 30 marks.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Signature:	Name: Signature:	Name: Signature:
(Seal)	(Seal)	

Course Description:

Course Code	23EDUOE101	
Course Title	EARLY CHILDHOOD CARE AND EDUCATION	
Credits	03	
Total Hours	45	
Hours per Week	03	
Course Type	Multidisciplinary Course (MDC)	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed	Human Values	
Course Offered to	Education	
Regulation	2023	
Course Overview	This course: • Recognizes the need to emphasize 0-6 years as the age of early learning with insights into the demographic and developmental perspective. • Describes the principles of growth and development and applies the same to understand the process of early care and early learning. • Identifies the significant domains of development and recognizes their interrelatedness in the development of young children. • Understands how education imparted at an early age can be the precursor of a productive adulthood.	
Prerequisite	Basic knowledge of human growth and development with special emphasis on the early years.	
Course Objectives	A student will be able to: • Describe the historical foundations of ECCE in India from conventional to contemporary philosophy. • Discuss the theoretical foundations and their implications for learning and development in the early years. • Discover the concept of play, its characteristics importance, and types. • Analyze the practicality of the theories of play and use the theories in planning the curriculum. • Integrate the various concepts and theories of ECCE with their practical implementation for learning and development in the early years.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the development of ECCE in India.	R

	State the objectives and principles of ECCE.	
CO2	Discuss the ECCE concerns. Explain the theoretical foundations and their implications for learning and development in the early years.	U
CO3	Implement the concept and types of play in ECCE.	A1
CO4	Analyze the curriculum of the play-way approach.	A2
CO5	Evaluate the curriculum of the play-way approach.	E
CO6	Design a strategy for teaching early literacy and numeracy skills using the play-way approach.	C

Course Content

Units	Content	Lecture Hours	COs	RB T
Unit I	Introduction to ECCE a) ECCE in India. b) Objectives and Principles of ECCE. c) ECCE concerns.	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C
Unit II	Theoretical Foundations and Their Implications in ECCE a) Behaviourism and Social Learning. b) Piaget's Cognitive developmental theory. c) Ecological and Socio-cultural perspective	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C
Unit III	Play in ECCE a) Concept, meaning, and benefits of play. b) Types of play and its values. c) Curriculum of play way approach- supporting communication skills, early literacy, numeracy, and reading skills.	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C

Learning Resources:

Text Books -

1. Aggarwal, J.C. (2010). Psychological, Philosophical and Sociological Foundations of Education (1st Edition). Shirpa Publication House Pvt. Ltd., New Delhi.

2. Berk, L. E. (2018). Child Development. Pearson India Education Services, Tamil Nadu.
3. Mangal, S. K. (2009). Essentials of Educational Psychology. PHI Learning Private Publication House Pvt. Ltd., New Delhi.

Suggested readings-

1. Kaul, V. (2009). Early Childhood Education Programme. National Council of Educational Research and Training, New Delhi.
2. Santrock, J. W. (2018). Educational Psychology (6th Edition). McGraw-Hill Education, New York.

Open Online Resources-

1. <https://ncert.nic.in/dee/pdf/deethemebased.pdf>
2. <https://ncert.nic.in/dee/pdf/Earlychildhood.pdf>

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Assessment:

- i. **Formative Assessment:** 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. **Summative Assessment:** 50 marks
 - a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
 - b) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks). Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Priya Topno Signature:	Name: Vivechana Dewan Signature:	Name: Ranita Chakraborty Signature:



**(Autonomous)
Sonada – Siliguri**

National Education Policy (NEP) 2020 Curriculum Framework

For

Bachelor of Arts in English

Department of English

Curriculum Document (2023 - 2024)

Vision:

The Department of English, Salesian College (Autonomous) envisages empowering the students to develop and build knowledge of the content and methods of literary studies, academic, professional, creative and critical reading/ writing, thereby championing in undergraduate/ postgraduate research, knowledge creation, and reaching to the marginalized.

Mission:

1. To provide appropriate pedagogies in keeping with the signs of the time
2. To help students develop criticality of the text by way of presenting/writing research papers for (inter)national symposia, conferences etc
3. To give students a sense of themselves as citizens of a larger community by encouraging participation in service learning
4. To assure that students encounter creativity crucial to English studies through theatre productions, readings by professional writers, and their own creative and critical production and presentation.
5. To balance the needs of general education – communication, diversity, global perspectives, inter(trans)disciplinary studies
6. 6. To value faculty scholarship and service through greater support for and participation in activities of the profession.

1. Programme Overview

Bachelor of Arts in English is a four-year degree programme with the possibility of completing the fourth year with research if a particular student secures 75% CGPA in the previous exams.

2. Programme Objectives and Outcomes (POs)

After completion of the programme, a student will be able to:	
Knowledge	PO01: Acquaint oneself with the history of English literature and understand its social, political, and historical context(s).
	PO02: Gain understanding of the growth of diverse literatures and the English language.
	PO03: Relate one's understanding to explore identity, values, manners, and morals through different engagements
	PO04: Grasp literary forms, types, literary theory and gain an alternate understanding of the contemporary issues of the modern world.
Skills	PO05: Demonstrate his/her critical understanding of texts and issues through presenting/writing research papers for (inter)national symposia, conferences etc.
	PO06: Construct writing projects like essays, short-stories, poems
	PO07: Develop presentation skills with discussions, debates, public-speaking, and integrating ICT.
	PO08: Acquaint oneself with the diverse current issues like environmental crisis, climate change, gender discrimination, marginality, and politics through reading of relevant literature.
Competence	PO09: Explore new/revised understanding of issues through the application of literary and cultural theories.
	PO10: Initiate self-sufficiency, sincerity, independent thinking as research and education is a lifelong process for empowering the student to face all challenges in their future endeavours, and develop new ideas and new understanding.
	PO11: Develop concern for the society and nation through understanding of regional and vernacular literatures and comparing our literary content, themes, and usage of language with that of literatures of other developing countries.

3. Programme Specific Objectives & Outcomes (PSOs)

Knowledge	PSO1: A student develops a clear idea about the details of the history, development and growth of English language.
	PSO2: A student gathers knowledge about the content, context, and nature of the subject
	PSO3: A student develops knowledge about the detailed history of English literature from Old English Period to 20 th century
	PSO3: A student develops knowledge about the social, political, historical and economical movements that helped shaped literature, and also trace the development of human civilization and culture under these fields.
	PSO4: A student develops knowledge about the interconnections and interrelations across disciplines and cultures by studying world literatures including Indian writing in English.

	PSO5: A student develops knowledge about the gendered aspect of writing and gain awareness about the issues and concerns of women writers and women's writing as a separate genre.
	PSO6: A student develops understanding of different concepts like Modern/Modernity/Modernism amongst others.
	PSO7: A student develops understanding of critical literary and cultural theories to interpret and analyse texts.
Skills	PSO1: A student will develop the skills required for Creative Writing.
	PSO2: A student will develop presentation skills with discussions, debates, publicspeaking, and integrating ICT.
	PSO3: A student will exhibit and awareness with the diverse current issues like environmental crisis, climate change, gender discrimination, marginality, and politics through reading of relevant literature.
	PSO4: A student will develop critical aptitude to write research papers and present them in conferences of different levels.
	PSO5: A student will develop the ability to interpret older texts from contemporary point of view.
	PSO6: A student will gain awareness of connection between literary and political movements impacting different literary eras and movements.
	PSO7: A student will develop critical thinking skills through various literary and cultural theories.
Competence	PSO1: A student will be able to apply critical literary theory to formulate arguments about literary and other critical texts as well as contemporary cultural practices.
	PSO2: A student will be able to re-interpret society and culture through the theoretical lens developed by philosophers and literary theorists.
	PSO3: A student will be able to question the problems of identity through text.
	PSO4: A student will be able to locate and represent subaltern voices through their own writings.
	PSO5: A student will envision a society where diverse people irrespective of gender, caste, religion and sexuality, coming from various backgrounds enjoy equal and equitable rights and opportunities.
	PSO6: A student will be able to demonstrate his/her critical understanding of texts and social issues through presenting/writing research papers and designing research proposals.
	PSO7: A student will analyse the contemporary trends in literature both English and vernacular.

4. Programme Matrix

Semester	Course Code	Course Type	Title of the Course (40 characters including space)	Credit	Lecture Tutorial Practical (L+T+P)	Total Hours	Total Marks
I	23ENGMAJ101	Major	History of English Literature	4	4+0+0	60	100

	23ENGMAJ102	Major	Literary Types & Growth of the Language	4	4+0+0	60	100
	23ENGMIN101	Minor	Selections from Indian Literature	4	4+0+0	60	100
	23ENGMD101	MDC	Business English	3	3+0+0	45	75
	23ENGAECE101	AEC	Compulsory English	2	2+0+0		50

	23ENGSEC101	SEC	English Phonetics & Pronunciation	3	2+0+1	45	75
	23ENGVED101	VED	Value Education	1			25
	23SCSVAC1/ 23ENGVAC101	VAC	Theatre and Theatrics/ Remedial Grammar	1			25
	Total			22			
Semester	Course Code	Course Type	Title of the Course (40 characters including space)	Credit	Lecture Tutorial Practical (L+T+P)	Total Hours	Total Marks
II	23ENGMAJ103	Major	Chaucer to Shakespeare	4	4+0+0	60	100
	23ENGMAJ104	Major	Indian Literature in English	4	4+0+0	60	100
	23ENGMIN102	Minor	Selections from British Literature	4	4+0+0	60	100
	23ENGMD102	MDC	Writing and Reading Skills	3	3+0+0	45	75
	23ENGAECE102	AEC	Alternative English	2	2+0+0		50
	23ENGSEC102	SEC	Aspects of Editing	3	2+0+1	45	75
	23ENGVED101	VED	Value Education	1			25
	23SCSVAC1/ 23ENGVAC102	VAC	Theatre and Theatrics/Writing Skills	1			25
	Total			22			

Semester	Course Code	Course Type	Title of the Course (40 characters including space)	Credit	Lecture Tutorial Practical (L+T+P)	Total Hours	Total Marks
III	23ENGMAJ201	Major	British Literature: 17th century and 18th Century	4	4+0+0	60	100
	23ENGMAJ202	Major	Genre Literature: Popular Fiction	4	4+0+0	60	100
	23ENGMIN201	Minor	British Literature	4	4+0+0	60	100
	23ENGMD201	MDC	Writings From the Northeast	3	3+0+0	45	75
	23GEOAEC201	AEC	EVS1	2	2+0+0		50

	23ENGSEC201	SEC	Technical Writing	3	2+0+1	45	75
	23SCSVED201	VED	Value Education	1			25
	23ENGVAC201/ 23BIBVAC201	VAC	Writing in Practice/ Bible Studies	1			25
	Total			22			
Semester	Course Code	Course Type	Title of the Course (40 characters including space)	Credit	Lecture Tutorial Practical (L+T+P)	Total Hours	Total Marks
IV	23ENGMAJ203	Major	British Literature: Pre-Romantics and Romantics	4	4+0+0	60	100
	23ENGMAJ204	Major	American Literature	4	4+0+0	60	100
	23ENGMAJ205	Major	British Literature: Victorian Literature	4	4+0+0	60	100
	23ENGMIN201	Minor	Genre Fiction II (Science Fiction)	4	4+0+0	60	100

	23GEOAEC202	AEC	EVS2	2	2+0+0		50
	23SCSVED202	VED	Value Education	1			25
	23ENGVAC202/ 23BIBVAC202	VAC	Communicative English/ Bible Studies	1			25
	Total			22			

SEMESTER 3:

MAJOR 1 : Course Description

Course Code	23ENGMAJ201
Course Title	British Literature 17th and 18th Century
Credits	4
Lecture Hours	60
Hours/Week	4
Category	Major
Semester	3
Regulation	2024
Course Overview: This course will a. Offer a broad introduction to British Literature and to the distinctive characteristics of texts and the literary techniques employed by them. b. Cover major works of fiction, non-fiction, poetry, and drama. c. Introduce students to the historical context, author's influence, and literary impact of the works.	
Course Objectives: Students will be able to a. Critically analyse British literary texts across genres and times. b. Identify key ideas and characteristic perspectives or attitudes as expressed in British Literature c. Compare/contrast literary works through an analysis of genre, theme, character, and other literary devices.	

Prerequisites: Students must have a proficiency in English Language and an interest in English literature.

Course Outcomes (COs) and Cognitive Level Mapping

At the end of the course the students will be able to

Cos	Statements	Cognitive Level Mapping
CO1	Identify key ideas and characteristic perspectives or attitudes as expressed in literary text.	R
CO2	Explain concepts and theories expressed in the texts.	U
CO3	Relate literary works through a comparison and contrast of genre, theme, character, and other literary devices.	A1
CO4	Analyse literary works through an analysis of genre, theme, character, and other literary devices.	A2
CO5	Evaluate British literary texts across genres and times.	E
CO6	Develop critical thinking skills along with writing and reading skills.	C

Syllabus

Units	Contents	Hours	COs	RBT	Methods Used
Unit 1	Poetry: a. Andrew Marvell: To His Coy Mistress. b. Samuel Johnson: "London" c. John Milton: "Paradise Lost, Book1"	20	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C	Lectures, PPTs, Writing exercises, Peer Teaching, Debate, G.D.
Unit 2	Drama: a. John Dryden: All for Love b. Oliver Goldsmith: She Stoops to Conquer or c. William Congreve: The Way of the World	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C	DO

Unit 3	Essay: a. Samuel Johnson: Preface to Shakespeare. b. Francis Bacon: Of Studies, Of Travel	10	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C	DO
Unit 4	Novel: a. Samuel Richardson: Pamela b. Daniel Defoe: Robinson Crusoe c. Voltaire: Candide	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C	DO

Suggested Readings:

1. *The Norton Anthology of English Literature*, edited by Stephen Greenblatt et al., 10th ed., vol. B, Norton, 2018.
2. *The Norton Anthology of English Literature: The Restoration and the Eighteenth Century.* Edited by Stephen Greenblatt et al., 10th ed., vol. C, Norton, 2018.
3. Milton, John. *Paradise Lost*. Edited by John Leonard, Oxford UP, 2008.
4. Johnson, Samuel. "Preface to Shakespeare." *The Norton Anthology of English Literature*, edited by Stephen Greenblatt et al., 10th ed., vol. B, Norton, 2018, pp. 313-330.
5. Congreve, William. *The Way of the World*. Edited by Tiffany Stern, Oxford UP, 2007.
6. Dryden, John. *All for Love*. Edited by John Sargeant, Oxford UP, 1970.
7. Goldsmith, Oliver. *She Stoops to Conquer*. Edited by Tony Lumpkin, Penguin Classics, 2008.
8. Defoe, Daniel. *Robinson Crusoe*. Edited by Thomas Keymer, Oxford UP, 2008.
9. Richardson, Samuel. *Pamela*. Penguin UK, 2000.
10. Poplawski, Paul. *English Literature in Context*. 2nd ed., Cambridge University Press, 2017.
11. Nayar, Pramod K. *A Short History of English Literature*. Amity University Press, 2018.

2. Assessment

i. **Formative Assessment: 50 marks** as per Assessment & Evaluation Framework Document of Salesian College

ii. **Summative Assessment: 50 marks**

a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)

b) Three Long Questions to be answered out of six set from higher order of RBT –(30 Marks).

Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty

(Prepared by)

Name: Ms Rinchen Sherpa

Signature:

Head of the Department

(Checked and verified by)

Name: Ms Pratibha Soni

Signature:

Dean

(Approved by)

Name: Mr Ravi Bhushan

Singh

Signature:

MAJOR 2 : Course Description

Course Code	23ENGMAJ202
Course Title	Genre Literature: Popular Fiction
Credits	4
Lecture Hours	60
Hours per Week	4
Course Type	Major Core
Semester	III
Regulation	2024
Intended Level	Certificate

Issue(s)Addressed	N/A
Course Offered to	English
Regulation	2024
Course Overview:	This course will: - Provide with an overview of Genre Literatures. - Help the students understand the nature and notions of genre literatures.
Prerequisite	Basic understanding and appreciation of genres in literature is needed before taking this course.
Course Objectives:	A student will be able to: - Understand Genre Fiction. - Read and appreciate writings in different genres. - Understand the nature, types and content of genre literatures. - Appreciate fiction and critical essays by various authors in the domain.

Course Content

Units	Contents	Lecture Hours	Cos	RBT	
Unit I	Overview - Leslie Fiedler, “Towards a Definition of Popular Literature”, in <i>Superculture: American Popular Culture and Europe</i>. - Introduction to Forms of Popular Fiction - Christopher Pawling, “Popular Fiction: Ideology or Utopia?”, in <i>Popular Fiction and Social Change</i>.	15	CO 1C O2	R,U, E, A,C	

Unit II	Novels: 4. Selections: “Danger in Darjeeling” and “Trouble in Gangtok,” Satyajit Ray, <i>The Complete Adventures of Feluda</i>. OR 5. Agatha Christie, <i>The Murder of Roger Ackroyd</i>.		15	CO2	R,U,E, A,C
Unit III	SHORT STORIES: 6. Philip K. Dick, “Minority Report” in <i>The Complete Stories of Philip K. Dick Vol. 4: The Minority Report and Other Classic Stories</i> (Citadel Books: New York, 1987) pp. 62-90 OR 7. Vandana Singh, “The Woman Who Thought She Was a Planet” from <i>The Woman Who Thought She Was a Planet and Other Stories</i>.		10	CO3	R,U, E, A, C

Unit IV	NOVEL: 8. Neil Gaiman, <i>The Sandman, Vol. 2: The Doll's House.</i> OR 9. Antoine de Saint-Exupéry, <i>The Little Prince.</i> OR 10. The Fault in Our Stars: John Green		20	CO 3C O4	R,U, E, A,C

Course Outcomes (COs) and Cognitive Level Mapping At the end of the course a student will be able to:		
Cos	Statements	RBT
CO1	Understand Popular Literature	R,U,E,A,C
CO2	Understand the key aspects of Popular Literature	R,U,E,A,C
CO3	Understand the nature of Popular Literature.	R,U,E,A,C
CO4	Analyse critical essays, novels and short stories written by various major/minor authors.	R,U,E,A,C

2. Assessment

i. **Formative Assessment: 50 marks** as per Assessment & Evaluation Framework Document of Salesian College

ii. **Summative Assessment: 50 marks**

- a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
- b) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks). Summative Assessment Time: 2 Hours for pen and paper test

Faculty Member (Course prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Anik Sarkar Signature:	Name: Pratibha Soni Signature:	Name: Mr Ravi Bhushan Singh Signature:

MINOR: Course Description

Course Code	23ENGMIN201	
Course Title	Selections from British Literature	
Credits	4	
Total Hours	60	
Hours per Week	4	
Course Type	Minor	
Semester	3	
Intended Level	Certificate	
Issue(s) Addressed	N/A	
Course Offered to	Other than English	
Regulation	2024	
Course Overview	This course will: a. Offer a broad introduction to British Literature and to the distinctive characteristics of texts and the literary techniques employed by them. b. Cover major works of fiction, non-fiction, poetry, and drama. c. Introduce students to the historical context, author’s influence, and literary impact of the works.	
Prerequisite	Students must have a proficiency in English Language and an interest in English literature.	
Course Objectives	Students will be able to: a. Critically analyse British literary texts across genres and times. b. Identify key ideas and characteristic perspectives or attitudes as expressed in British Literature c. Compare/contrast literary works through an analysis of genre, theme, character, and other literary devices.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping

CO1	Identify key ideas and characteristic perspectives or attitudes as expressed in literary text.	R
CO2	Explain concepts and theories expressed in the texts.	U

CO3	Relate literary works through a comparison and contrast of genre, theme, character, and other literary devices.	A1		
CO4	Analyse literary works through an analysis of genre, theme, character, and other literary devices.	A2		
CO5	Evaluate British literary texts across genres and times.	E		
CO6	Develop critical thinking skills along with writing and reading skills.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Poetry: 1 a. William Shakespeare: Sonnets 18, 65 b. William Wordsworth: Daffodils	10	CO1 CO2 CO4 CO5 CO6	R U A1 A2 E C
Unit II	Poetry: 2 a. John Keats: Ode to Autumn b. William Blake: The Chimney Sweeper c. Robert Browning: The Last Duchess	15	CO1 CO2 CO4 CO5 CO6	R U A1 A2 E C
Unit III	Short Stories: a. Virginia Woolf: The Duchess and the Jeweller. b. George Orwell: Shooting an Elephant c. Charles Dickens : The signalman d. O.Henry: The Last Leaf	15	CO1 CO2 CO3 CO4 CO6	R U A1 A2 E C
Unit IV	Drama: G. B. Shaw: Arms and the Man / Pygmalion	20	CO1 CO2 CO4 CO6	R U A1 A2 E C

SUGGESTED READING:

Ahlawatelal, Menka(2019). *Selections from British Literature: Poems and Short Stories.* Worldview.

Jack,Ian(1973) *Browning's Major Poetry.* Clarendon Press: Oxford

Abrams,M.H.(Ed)(1975). *English Romantic Poets: Modern Essays in Criticism.*Oxford University Press.

Ford, Borris(ed) (1075). *From Blake to Byron. The Pelican Guide to English Literature.*Vol5.

2. Assessment

- i. *Formative Assessment:* 50 marks as per Assessment & Evaluation Framework Document of Salesian College**
- ii. *Summative Assessment:* 50 marks**
 - a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)**
 - b) Three Long Questions to be answered out of six set from higher order of RBT –(30 Marks). Summative Assessment Time: 2 Hours for pen and paper test**

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Ms. Pratibha Soni	Name: Ms Pratibha Soni	Name: Mr Ravi Bhushan Singh
Signature:	Signature:	Signature:

MDC: COURSE DESCRIPTION

Course Code	23ENGMDC201	
Course Title	Writings from the NorthEast.	
Credits	3	
Total Hours	45	
Hours per Week	3	
Course Type	Multi-Disciplinary Course	
Semester	III	
Intended Level	Certificate	
Issue(s)Addressed	Identity, insurgency, gender issues and Nature, works in translation.	
Course Offered to	Various Disciplines.	
Regulation	2024	
Course Overview	This course: a. Provides fundamental understanding of the regional literature from the North East. b. Focuses on issues related to identity, nature and gender issues. c. Builds awareness about the current trends in emerging literature from the North East.	
Prerequisite	Understanding of the genre of poetry and short stories.	
Course Objectives	A student will be able to: a. To understand the current themes, issues in North East literature. b. Provide them with understanding of the oral tradition present in North Eastern writings. c. Help the students appreciate the different genres used in writings from the North East.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Recognise the important voices in Northeastern. Selection of writers and poets from different states of the North East to show diversity in their writing.	R,U
CO2	Analyse the key issues in poetry and short stories from Northeast.	A1,A2,C

CO3	Understand the cultural and political context of writings from the Northeast.	U,C

Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Poems - Irom Chanu Sharmila “In the Glory of the Monarch of diseases”, “The value of songs” - Brucellisha K Sangma “A pair of spectacles ”; "I believe" - Mamang Dai “No dreams”, “I am going back to old”. - Hiren Bhattacharya “Autumnal Landscape, "Quest".	15	CO1 CO3	R U A1 A2 E C
Unit II	Short stories - The Pot Maker or The Jungle Mayor by Temsula Ao. - Pinyar, the widow or A homecoming by Mamang Dai. - A Waterfall of Horses or The Discovery of Flight by Janice Pariat	30	CO2 CO3	R U A1 A2 E C
Learning Resources: - Misra, Tilottoma. <i>The Oxford Anthology of writings from Northeast India</i>: OUP India, December, 2010, Print. - Ch Zama, Margaret. <i>Emerging literatures from Northeast India the dynamics of culture, society and identity</i>: SAGE India, March 1900 ,1st edition, Print. - Kakoti, Priyanka. <i>English writings from Northeast India: Of Inclusions, Exclusions and Beyond</i>, Cambridge Scholars Publishing, September, 2021, Print.				

2. Assessment

- Formative Assessment: 50 marks** as per Assessment & Evaluation Framework Document of Salesian College
- Summative Assessment: 50 marks**
 - Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
 - Three Long Questions to be answered out of six set from higher order of RBT –(30 Marks).
Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Verified By)	Dean (Approved By)
Name: Mimansa Subedi. Signature:	Name: Pratibha Soni Signature:	Name: Ravi Bhushan Singh Signature:

VAC: Course Description

Course Code	23SCSVAC2	
Course Title	Writing in Practice 1	
Credits	1	
Total Hours	30	
Hours per Week	2	
Course Type	Value Added Course	
Semester	3	
Intended Level	Certificate	
Issue(s)Addressed	Reading and Writing	
Course Offered to	English and Others	
Regulation	2024	
Course Overview	This course: a. Provides the students the basic technical and stylistic skills necessary to write creative prose b. Aims at acquainting the students with the basics of the major prose genres c. Focuses on the craft of writing and the art of evoking reader response	
Prerequisite	Good Grammar Skills	
Course Objectives	A student will be able to: a. understand the nuances of literary tropes. b. develop her critical thinking. c. clarify her thoughts and emotions into a logical process. d. expand her vocabulary as she explores new ways of expressing herself.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
Cos	Statements	Cognitive Level Mapping
CO1	Understand the stylistic and technical nuances of prose writing.	R, U, A1, E

CO2	Train her mind to think logically for clear and concise writing.	R, U, A1, A2, C
CO3	Boost her memory and imagination.	R, A1, C

Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Prose Genres - Short Stories (“The Tell-Tale Heart”) - Essay (“New Year’s Eve”/Diary (<i>A Book of Disquiet</i>, No. 7) - Vignette (<i>Invisible Cities</i>, “Cities & Names 5”) - Journalistic Writing (Editorials, Columns, Review)	10	CO1 CO3	R U A1 A2 E C
Unit II	Theoretical Reading - Reader Response and Reception Theory : Wolfgang Iser - Practical Criticism: Analysis of Fiction	10	CO1 CO2	R U A1 A2 E C
Unit III	Practice - Writing for the Media - Diary Entries - Critical Analysis	10	CO1 CO2 CO3	R U A 2 C

Suggested Readings:

Habib, M.A.R. *A History of Literary Criticism: From Plato to the Present*. Blackwell, 2005.

James, Neill. *Writing at Work: How to Write Clearly, Effectively and Professionally*. Allen&Unwin, 2007.

King, Stephen. *On Writing: A Memoir of the Craft*. Scribner, New York, 2000.

Seturaman, V.S., et al, editors. *Practical Criticism*. Macmillan Publishers India, 2000.

Strunk, William Jr. and E.B. White. *The Elements of Style*. Pearson, 1999.

2. Assessment

- Formative Assessment: 50 marks** as per Assessment & Evaluation Framework Document of Salesian College

ii. Summative Assessment: 50 marks

- a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
b) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks).

Summative Assessment Time: 2 Hours for pen and paper test.

Course Faculty (Course Prepared by)	H.O.D. (Checked and verified by)	Dean (Approved by)
Name: Ms. Jyotismita Sarkar Signature:	Name: Ms. Pratibha Soni Signature:	Name: Mr Ravi Bhushan Singh Signature:

SEC: Course Description

Course Code	23ENGSEC201
Course Title	Literature in Social Spaces
Credits	3
Total Hours	45
Hours per Week	2
Course Type	Skill Enhancement Course
Semester	III
Intended Level	Certificate
Issue(s)Addressed	NA
Course Offered to	English
Regulation	2024
Course Overview	• This course draws attention to the link between critical thinking skills developed by studying the Humanities, especially Literature, and other skills that are often termed, ‘soft skills’. • The course focuses on the empathy building capacity of Literature and the application of critical thinking and problem solving skills employed in literary analysis to develop an understanding of the value of literature in social and professional spaces. • Literary readings will provide the foundation for developing skills such as better communication and empathy, understanding the value of teamwork, the need for adaptability, and the role of leadership and mentoring.

Prerequisite	Basic knowledge of communication, writing skills and technical writing	
Course Objectives	• Students will be familiarised with the link between the Humanities and, ‘soft skills’ • They will be encouraged to focus on the value of literature as an empathy-building experience. • They will learn to apply critical thinking and problem solving skills developed by the study of literature to personal social and professional situations. • Students will be encouraged to enhance their teamwork skills by working in groups and to understand the processes of leadership and mentoring. • Students will work on their presentation skills and build on the idea of, ‘narratives’, to better communicate with target audiences.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
Cos	Statements	Cognitive Level Mapping
CO1	Understanding basics of technical writing and writing skills	R,U
CO2	Apply the knowledge of technical writing in the development of thesis.	A2
CO3	Understand the distinct features of speech and Writing	U

Course Content				
Units	Content	Lecture Hours	Cos	RBT
Unit 1	Humanities and Soft skills: a) ‘Creative and Arts Graduates have the Soft Skills needed to make them Work- Ready’, by Mark Harman in The Independent 22 June 2016 (https://www.independent.co.uk/student/career-planning/creative-arts-graduates-soft-skills-graduate-employment-university-subjects-work-ready-a7095311.html) b) ‘Leadership in Literature’, by Diane Coutu in The Harvard Business Review March 2006 (https://hbr.org/2006/03/leadership-in-literature) c) ‘How Literature informs Notions of Leadership’, by Gregory L. Eastwood in Journal of Leadership, education Vol 9 Issue 1 2010 (http://journalofleadershiped.org/attachments/article/161/JOLE_9_1_Eastwood.pdf)	15	CO1 CO2 CO3	R, U A2 U
Unit II	Emotional Intelligence Adaptability and Mental Health: a) Daniel Goleman., ‘Don’t let a bully boss affect your mental health’, http://www.danielgoleman.info/dont-let-a-bully-boss-affect-your-mental-health/ b) William Blake, ‘The Chimney Sweeper’, from Songs of Innocence and Songs of Experience (both versions - 2 poems) c) W. Somerset Maugham, ‘The Verger’, (short story)	15	CO1 CO2 CO3	R, U A2 U
Unit III	Critical Thinking and Problem Solving: a) ‘On the Writers Philosophy of Life’, by Jack London in The, editor October 1899	15	CO1 C O2C	R,U A2 U

	(essay) b) Nicholas Bentley, 'The Lookout Man', (short story) in S. P. Dhanvel's English and Soft Skills (Delhi: Orient Blackswan 2010). c) J. K. Rowling., 'The Fringe Benefits of Failure and the Importance of Imagination', (extract from her speech at Harvard 2008) https://news.harvard.edu/gazette/story/2008/06/text-of-j-k-rowling-speech/		O3	
unit IV	Leadership and Mentoring: a) 'If', by Rudyard Kipling (poem) b) 'Are you my Mentor?', by Sheryl Sandberg in Lean in: Women Work and the Will to Lead (London: Penguin Random House 2015).			

Suggested readings:

This is a literature-based course, and students will be examined on all the prescribed readings in Units 1 through 4. Therefore, all those texts are to be considered essential reading.

2. Assessment

i. Formative Assessment: 50 marks **as per Assessment & Evaluation Framework Document of Salesian College**

ii. Summative Assessment: 50 marks

a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)

b) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks). Summative Assessment Time: 2 Hours for pen and paper test.

Course Faculty (Prepared by)	Head of the Department	Dean
Name: Sharon Lepcha Signature:	Name: Ashwini Tamang Signature:	Name: Signature:

1. MAJOR1: Course Description

Course Code	23ENGMAJ203	
Course Title	British Literature: Pre-Romantics and Romantics	
Credits	4	
Total Hours	60	
Hours per Week	4	
Course Type	Major	
Semester	IV	
Intended Level	Certificate	
Issue(s)Addressed	NA	
Course Offered to	English	
Regulation	2024	
Course Overview	This course will: a. Provide a fundamental understanding of the Romantic Age. b.Help the students have an idea of the major Romantic authors and their works.	
Prerequisite	Understanding and appreciating major literary figures and their works of the Romantic Age.	
Course Objectives	A student will be able to: a. Explore a wide variety of literature from a period characterised by radical ideas and rebellion against tradition. b. Appreciate prose/short stories and plays written by various major/minor Romantic poets and authors. c. Analyse Romantic literature as a domain of art and theory.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
Cos	Statements	Cognitive Level Mapping
CO1	Understand comprehensively the history of Romantic Literature.	R, U
CO2	Remember major literary and philosophical schools of the Romantic age.	R, U
CO3	Analyse situations in real life by gaining an understanding of these texts.	A2

CO4	Evaluate the major Romantic authors and their texts.	E

Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Pre- Romantics a. Thomas Gray: ‘Elegy Written in a Country Churchyard’ b. Robert Blair: ‘The Grave’ c. William Cowper: ‘Light Shining out of Darkness’	15	CO1 CO2 CO3 CO4	R U A2 E
Unit II	The Romantics a. William Wordsworth- ‘Composed upon Westminster Bridge’ b. Samuel Taylor Coleridge: ‘Rime of the Ancient Mariner’ c. William Blake: ‘Songs of Innocence’	15	CO1 CO2C O3 CO4	R U A2 E
Unit III	Second Generation a. John Keats- ‘Ode to a Nightingale’ b. Lord Byron: ‘She Walks in Beauty’ c. P.B. Shelley- ‘Ode to the West Wind’ d. Wil	15	CO1 CO2 CO3 CO4	R U A2 E
Unit IV	Novels a. Jane Austen- ‘Sense and Sensibility’ b. Mary Shelley: ‘Frankenstein’ c. Walter Scott: ‘Ivanhoe’	15	CO1 CO2 CO3 CO4	R U A2 E

2. Assessment

- i. ***Formative Assessment* 50 marks as per Assessment & Evaluation Framework Document of Salesian College**
- ii. ***Summative Assessment*: 50 marks**
 - a) **Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)**
 - b) **Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks). Summative Assessment Time: 2 Hours for pen and paper test**

Course Faculty (Prepared by)	Head of the Department	Dean
Name: Vasudeva Naidu Ashwini Tamang Signature:	Name: Ashwini Tamang Signature:	Name: Signature:

MAJOR 2: Course Description

Course Code	23ENGMAJ204	
Course Title	American Literature	
Credits	4	
Total Hours	60	
Hours per Week	4	
Course Type	Major	
Semester	4	
Intended Level	Certificate	
Issue(s)Addressed	N/A	
Course Offered to	English	
Regulation	2024	
Course Overview	This course: a. Provides an understanding of literature produced in the United States and colonies preceding it. b. Aims at acquainting the students with the basics of the major genres. c. Introduces and engages with the historical, socio-political aspects of the country and its people.	
Prerequisite	Basic understanding and appreciation of genres in literature is needed before taking this course.	
Course Objectives	A student will be able to: d. Understand the nuances of literary tropes. e. Develop critical thinking. f. Engage and interpret texts in consonance with aspects related to race, class and colonialism	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
Cos	Statements	Cognitive Level Mapping
CO1	Understand the stylistic and technical nuances of prose writing.	R, U, A1, E
CO2	Train her mind to think logically for clear and concise writing.	R, U, A1, A2, C

CO3	Boost her memory and imagination.	R, A1, C

Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Poetry - Walt Whitman: 'O Captain! My Captain', 'Song of Myself' - Emily Dickinson: 'Hope is the thing with feathers', 'Success is counted sweetest'. - T.S. Eliot: The Waste Land - Langston Hughes: 'Harlem', 'I Look at the World' - Mary Oliver: 'The Summer Day', 'Wild Geese'	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C
Unit II	Drama - Arthur Miller: 'All my Sons', 'Death of a Salesman' - Tennessee Williams: 'A Streetcar Named Desire', 'Cat on a Hot Tin Roof' - Edward Albee: 'Who is Afraid of Virginia Woolf?',	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C
Unit III	Short Stories and Essays - Jack London: 'To Build a Fire', 'The Law of Life' - Henry James: 'The Turn of the Screw' - Ursula K Le. Guin: 'The ones who walk away from the Omelas' - James Baldwin: 'Notes of a Native Son' - Susan Sontag: 'Notes on 'Camp'', 1964 - David Foster Wallace: 'Consider the Lobster', 2004	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A 2 C
Unit IV	Novels - Harper Lee: 'To Kill a Mockingbird' - John Steinbeck: 'Of Mice and Men' - Mark Twain: 'The Adventures of Tom Sawyer' - Ernest Hemingway: 'The Old Man and the Sea'	15	CO1 CO2 CO3 CO4 CO5 CO6	

Suggested Readings:

1. Bercovitch, Sacvan, ed. (1994–2005). *The Cambridge History of American Literature*. Vol. 1–8. Cambridge: Cambridge University Press.
2. Bloom, Harold: *How to Read and Why*. Touchstone Press, 2000.
3. Trent, W. P.; Erskine, J.; Sherman, S. P.; Van Doren, C., eds. (1917–1921). *The Cambridge History of American Literature*. Vol. 1–4. Cambridge; New York: Cambridge University Press; G. P. Putnam's Sons.
4. Woodberry, George Edward (1911). "American Literature" . In Chisholm, Hugh (ed.). *Encyclopædia Britannica*. Vol. 1 (11th ed.). Cambridge University Press.
5. Mailer, Norman. "The white negro." *On Bohemia*. Routledge, 2017. 185-194.
6. *American Literature: The Makers and the Making*, 2 vol. (1973)

2. Assessment

i. **Formative Assessment: 50 marks** as per Assessment & Evaluation Framework Document of Salesian College

ii. **Summative Assessment: 50 marks**

- a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
- b) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks). Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty

(Prepared by)

Name: Mr Vasudeva Naidu

Signature:

Head of the Department

(Checked and verified by)

Name: Ms Pratibha Soni

Signature:

Dean

(Approved by)

Name: Mr Ravi Bhushan

Singh

Signature:

MAJOR 3: Course Description

Course code	23ENGMAJ205
Course title	Victorian literature
Credits	4
Total hours	60
Hours per week	4
Course type	Major
Semester	IV

Intended level	Certificate
Issue(s) Addressed	N/A
Course offered to	English
Regulation	2023
Course overview	This course will: a) Provide an introduction to Victorian literature. b) Give an overview of the major novelists and poets of the age. c) Give an understanding of the Victorian norms and values of the society.
Prerequisite	Understanding and appreciating major literary figures and their works of Victorian literature.
Course objectives	a. To offer students a fundamental understanding of how nineteenth-century developments in England around industrialization, colonization and gender relations foreshadow later thinking on the subject. b. To offer students a basic sense of the deep-rooted nature of contemporary social and cultural challenges as having their origins in earlier times. c. The literature, culture and thought of the period help us understand ‘modernity’ in all its complexity. This course will introduce students to some significant literary and non-literary texts of the period.

Course outcomes based on RBT and Cognitive Level Mapping.

At the end of the course, a student will be able to:

Cos	STATEMENTS	COGNITIVE LEVEL MAPPING
CO1	To understand the writings of Victorian age	R,U,E,A,C
CO2	Students’ imagination will be kindled to the way in which a range of genres speak to the spirit of an era.	R,U,E,A,C

CO3	Understand the idea of marriage, sexuality and its effects on society	R,U,E,A,C
CO4	Understand the impact of women writers in Victorian literature and the characteristics of the Victorian society.	R,U,E,A,C

COURSE CONTENT

UNITS	CONTENT	LECTURE HOURS	Cos	RBT
UNIT I	NOVELS a. Emily Bronte- Wuthering Heights B. Charles Dickens- The Great Expectations C. Frederick Marriet: The Children of the New Forest	15	CO1,CO2, CO4	R,U,E,A, C
UNIT II	POETRY a. Alfred Tennyson- The Lotus Eaters, In Memoriam A.H.H b. Robert Browning- Pophyria's Lover, My Last Duchess. c. Mathew Arnold- Dover Beach, The Scholar Gypsy	15	CO1,CO2	R,U,A1,A2,E,C
UNIT III	ESSAYS a. Harriet Taylor: 'The Enfranchisement of Women', 1841 b. Mathew Arnold: 'The Study of Poetry'	15	CO1,CO2, CO4, CO5	R,U,E,A,C
UNIT IV	DRAMA a. Oscar Wilde: 'The Importance of Being Earnest' b. Bernard Shaw: 'Pygmalion'	15	CO1,CO2, CO4, CO5	R,U,E,A,C

Learning Resources: Latest edition books listed on APA style: seventh edition

Suggested Readings:

1. Charles Darwin, 'Natural Selection and Sexual Selection', in The Descent of Man in The Norton Anthology of English literature. 8th edn,.vol.2, ed. Stephen Greenblatt, New York: Northon ,2006.pp 1545-9
2. Karl Marx and Friedrich Engels, 'Mode of Production: The Basis of Social Life', 'The Social Nature of Consciousness', and 'Classes and Ideology', in A Reader in Marxist Philosophy, ed. Howard Selsam and Harry Martel (New York: International Publishers,1963) pp. 186–8, 190–1,199–201)
3. John Stuart Mill, The Subjection of Women in Norton Anthology of English Literature, 8th edn, vol. 2, ed. Stephen Greenblatt (New York: Norton, 2006) chap.1,pp. 1061–9.

Video links

[NPTEL Video Course English Language and Literature](http://www.digimat.in/nptel/courses/video/109106124/L54.html)
Lecture 54 - The Age of Tennyson: Victorian Era

<http://www.digimat.in/nptel/courses/video/109106124/L54.html>

2. ASSESSMENT

- i. **Formative Assessment: 50** marks as per Assessment & Evaluation Framework document of Salesian College.
- ii. **Summative Assessment:50 marks**
 - a. Four short questions to be answered out of eight given from lower order of RBT-(20 Marks)
 - b. Three long questions to be answered out of six set from higher order of RBT- (30 marks). Summative Assessment Time : 2 hours for pen and paper test.

Course faculty (prepared by)	Head of the department	Dean
Name: Ms. Shenaz Naznin Vasudeva Naidu	Name: Ms. Ashwini Tamang	Name: Mr. Ravi.B.Singh
Signature:	Signature:	Signature:

MINOR: Course Description

Course Code	23ENGMIN201	
Course Title	Selections from British Literature	
Credits	4	
Total Hours	60	
Hours per Week	4	
Course Type	Minor	
Semester	3	
Intended Level	Certificate	
Issue(s) Addressed	N/A	
Course Offered to	Other than English	
Regulation	2024	
Course Overview	This course will: d. Offer a broad introduction to British Literature and to the distinctive characteristics of texts and the literary techniques employed by them. e. Cover major works of fiction, non-fiction, poetry, and drama. f. Introduce students to the historical context, author’s influence, and literary impact of the works.	
Prerequisite	Students must have a proficiency in English Language and an interest in English literature.	
Course Objectives	Students will be able to: d. Critically analyse British literary texts across genres and times. e. Identify key ideas and characteristic perspectives or attitudes as expressed in British Literature f. Compare/contrast literary works through an analysis of genre, theme, character, and other literary devices.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping

CO1	Identify key ideas and characteristic perspectives or attitudes as expressed in literary text.	R
CO2	Explain concepts and theories expressed in the texts.	U

CO3	Relate literary works through a comparison and contrast of genre, theme, character, and other literary devices.	A1		
CO4	Analyse literary works through an analysis of genre, theme, character, and other literary devices.	A2		
CO5	Evaluate British literary texts across genres and times.	E		
CO6	Develop critical thinking skills along with writing and reading skills.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Poetry: 1 c. William Shakespeare: Sonnets 18, 65 d. William Wordsworth: Daffodil	10	CO1 CO2 CO4 CO5 CO6	RU A1 A2 E C
Unit II	Poetry: 2 d. John Keats: Ode to Autumn e. William Blake: The Chimney Sweeper f. Robert Browning: The Last Duchess	15	CO1 CO2 CO4 CO5 CO6	RU A1 A2 E C

Unit III	Short Stories: e. Virginia Woolf: The Duchess and the Jeweler. f. George Orwell: Shooting an Elephant g. Charles Dickens: The signalman h. O.Henry : The Last Leaf	15	CO1 CO2 CO3 CO4 CO6	R U A1 A2 E C
Unit IV	Drama: G. B. Shaw: Arms and the Man / Pygmalion	20	CO1 CO2 CO4 CO6	R U A1 A2 E C

SUGGESTED READING:

Ahlawatelal, Menka(2019). *Selections from British Literature: Poems and Short Stories*. Worldview.

Jack,Ian(1973).*Browning's Major Poetry*. Clarendon Press: Oxford.

Abrams,M.H.(Ed)(1975). *English Romantic Poets: Modern Essays in Criticism*.Oxford University Press.

Ford, Borris(ed) (1075). *From Blake to Byron. The Pelican Guide to English Literature*.Vol5.

3. Assessment

- iii. **Formative Assessment: 50 marks as per Assessment & Evaluation Framework Document of Salesian College**
- iv. **Summative Assessment: 50 marks**
 - c) **Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)**
 - d) **Three Long Questions to be answered out of six set from higher order of RBT –(30 Marks). Summative Assessment Time: 2 Hours for pen and paper test**

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Ms. Pratibha Soni Signature:	Name: Ms Pratibha Soni Signature:	Name: Mr Ravi Bhushan Singh Signature:

VAC: Course Description

Course Code	23SCSVAC2
Course Title	Writing in Practice-2
Credits	1
Total Hours	30
Hours per Week	2

Course Type	Value Added Course	
Semester	4	
Intended Level	Certificate	
Issue(s)Addressed	Reading and Writing	
Course Offered to	English and Others	
Regulation	2024	
Course Overview	This course: d. Provides the students the basic technical and stylistic skills necessary to write creative prose e. Aims at acquainting the students with the basics of the major prose genres f. Focuses on the craft of writing and the art of evoking reader response	
Prerequisite	Good Grammar Skills	
Course Objectives	A student will be able to: e. understand the nuances of literary tropes. f. develop her critical thinking. g. clarify her thoughts and emotions into a logical process. h. expand her vocabulary as she explores new ways of expressing herself.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
Cos	Statements	Cognitive Level Mapping
CO1	Understand the stylistic and technical nuances of prose writing.	R, U, A1, E
CO2	Train her mind to think logically for clear and concise writing.	R, U, A1, A2, C
CO3	Boost her memory and imagination.	R, A1, C

Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Prose Genres e. Short Stories (“Barn Burning”) f. Essay (“Echoes of the Jazz Age”) g. Autobiography/Diary (<i>A Book of Disquiet</i>, No. 8) h. Vignette (<i>Invisible Cities</i>, “Cities & The Sky”) i. Journalistic Writing (Editorials, Columns, Review)	10	CO1 CO3	R U A1 A2 E C
Unit II	Theoretical Reading c. Reader Response and Reception Theory : Stanley Fish d. Practical Criticism: Analysis of Fiction	10	CO1 CO2	R U A1 A2 E C
Unit III	Practice a. Writing for the Media b. Diary Entries c. Critical Analysis	10	CO1 CO2 CO3	R U A 2 C

Suggested Readings:

Habib, M.A.R. *A History of Literary Criticism: From Plato to the Present*. Blackwell, 2005.

James, Neill. *Writing at Work: How to Write Clearly, Effectively and Professionally*. Allen&Unwin, 2007.

King, Stephen. *On Writing: A Memoir of the Craft*. Scribner, New York, 2000.

Seturaman, V.S., et al, editors. *Practical Criticism*. Macmillan Publishers India, 2000.

Strunk, William Jr. and E.B. White. *The Elements of Style*. Pearson, 1999.

3. Assessment

iii. Formative Assessment: 50 marks as per Assessment & Evaluation Framework Document of

Salesian College

iv. Summative Assessment: 50 marks

- c) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
- d) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks).

Summative Assessment Time: 2 Hours for pen and paper test.

Course Faculty (Course Prepared by)	H.O.D. (Checked and verified by)	Dean (Approved by)
Name: Ms. Jyotismita Sarkar Signature:	Name: Ms. Pratibha Soni Signature:	Name: Mr Ravi Bhushan Singh Signature:

Semester 5

Major

MC 10: Modern and Postmodern Literature

MC 11: Literature & Marginality (Disability, Queer, Dalit)

MC 12: Literature & Science (Plant Studies, Zoological Studies, Chemical Literature, Technology and Literature)

Minor

MN 5: American Literature

Semester 6

Major

MC 13: European & South Asian Classical Literature

MC 14: Postcolonial Literature

MC 15: Literary Theory & Criticism I

Minor

MN 6: Contemporary Literature

4th Year with Research Semester 7

MC 16: Research Methodology

MC 17: Himalayan Literature

MC 18: Posthumanism & Anthropocene

Semester 8

Major

MC 19: Translation Studies

MC 20: Dissertation (12 Credits)

4th Year without Research Semester 7

MC 16: Himalayan Literature

MC 17: Posthumanism & Anthropocene

MC 18: Translation Studies

MC 19: Diaspora Literature

Semester 8

MC 20: Art History; Aesthetics & Literature

MC 21: Women's Writings

MC 22: Cinema & Literature

MC 23: Literary Theory & Criticism II

Signatures:

Dean:

Head:

External Expert/Experts:

Alumni Member:

Course Code 23	23 GEOSEC101 -Th
Course Title	Laboratory Techniques in Physical Geography
Credits	2
Total Hours	30
Category	SEC
Semester	Certificate
Intended Level	
Issue(s) Addressed	Geography
Course Offered to	I
Regulation	2023

Course Overview:

This Course –

- Covers the presentation of Geographical data.
- Helps students recognise the materials and techniques used in Geographical data representation.
- Explains the importance and uses of different maps and diagrams in physical geography.

Prerequisites: Basic knowledge of physical geography and statistical diagrams.

Course Objectives:

The objective of the course is –

1. To understand the fundamental of Geographical Data Presentation.
2. To discuss the importance and forms of graphical data presentation.
3. To inculcate the ability to objectively use the different methods and techniques used in the lab.
4. To identify and create appropriate maps and diagrams in studies related to physical geography.

Course Outcomes based on RBT and Cognitive Level Mapping

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Understand the fundamental of Geographical Data Presentation.	U, A1, A2, R
CO2	Discuss the importance and forms of graphical data presentation.	U, R, A1, A2, C, R
CO3	Inculcate the ability to objectively use the different methods and techniques used in the lab.	U, A1, C, R
CO4	Identify and create appropriate maps and diagrams in studies related to physical geography.	U, R, A1, A2, C, R

Course Content

UNITS	CONTENT	HOURS	COs	RBT
UNIT I	Presentation of Geographical data 1. Importance 2. Forms of Graphical Data Representation	5	CO1 CO2	R U A1 A2
UNIT II	Materials and Techniques 1. Drawing Instruments Pencils; Scribes; Inks and Colours; Drawing Media. 2. Map Compilation 3. Scales and Scale lines; Frames and panel Margins 4. Shading and stipples; Colour; Lettering. 1. Map Reduction and Enlargement, Duplication and reproduction, Map Generalisation	15	CO3	R U A1 A2 E C
UNIT III	Relief Maps and Diagrams 1. Depiction of Relief: Different types of height; Layer shading and tinting; Hachures; Physiographic division map. 2. Gradient and slope 3. Landscape drawing and Field sketching from topographical maps.	10	CO3 CO4	R U A1 A2 E

PRACTIAL

Course Overview:

This Course will –

- Cover the concept of stream ordering
- Explain the different morphometric and fluviometric indices.
- Help to construct altimetric frequency curve and hypsometric curve of a particular place.
- Identify the soil texture of a particular geographical area.

Course Objective-

The objective of the course is –

1. To understand the different order of streams, present in a particular area.
2. To attain the ability of explaining the geometric properties of the land surface and drainage.
3. To acquire detailed usage of altimetric frequency curve and hypsometric curve.
4. To gain knowledge on the soil textures in different location.

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	understand the different order of streams present in a particular area.	
CO2	attain the ability of explaining the geometric properties of the land surface and drainage.	
CO3	acquire detailed usage of altimetric frequency curve and hypsometric curve.	
CO4	To gain knowledge on the soil textures in different location.	

Course Content

Preparation of Lab note Book with the following:

- 1) Stream Ordering (Horton and Strahler)
- 2) Morphometric Indices: Dissection Index, Ruggedness Index
- 3) Hypsometric Curve and Altimetric Curve
- 4) Fluviometric Indices: Drainage Density and Drainage Texture
- 5) Ternary Graph/ Diagram (Soil Textural Triangle)

Suggested Readings

1. Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
2. Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London
3. Richards K. S., 1982: Rivers: Form and Processes in Alluvial Channels, Methuen, London.
4. Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
5. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
6. Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
7. Sarkar, A. (2015) Practical Geography: A Systematic Approach. Orient Black Swan Private Ltd., New Delhi

ASSESSMENT SCHEME**Formative Assessment**

50 marks as per the Assessment & Evaluation Framework Document of Salesian College

- 10 (CIA I) +25 (Mid-term) +10 (CIA 2) +5 (Attendance)

Summative assessment

Combined theory and practical papers:

1. *Theory paper* of 50 marks scaled down to 25 marks.

Rubrics:

- i. Six questions of 5 marks each, out of ten questions. Remembering and Understanding levels of RBT. $6 \times 5 = 30$
- j. Two questions of 10 marks each, out of four questions. Analysis, and Applying levels of RBT.

$$10 \times 2 = 20$$

2. Practical paper of 50 marks, scaled down to 25 marks. Marks distribution as follows:

- x. Lab report: 10 marks
- xi. Viva- voce: 10 marks
- xii. Practical Exam: 30 marks

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: SRASHTA CHOWDHURY Signature: 	Name: Dr. BIPUL CHHETRI Signature: 	Name: Signature: 

Course Code	24GEOMDC102
Course Title	Understanding Climatic Data Analysis
Credits	3
Total Hours	45
Category	MDC
Intended Level	Certificate
Issue(s) Addressed	
Course offered to	Others
Semester	II
Regulation	2023

Course Overview:

This Course –

- Covers the different types of data that are used in the climatic field
- Covers the hands-on use of different climatic instruments
- Explains the different techniques of presenting data and analyzing real weather data of India

Prerequisites: Basic knowledge of temperature, rainfall, cloud, wind and humidity

Course Objectives:

The objectives of the course are-

1. To compare and describe the different types of data and mapping of different data
2. To understand and develop ideas of different minor weather instruments and analyze different data collected by them
3. To apply the knowledge of weather data in real weather map of India and analyze them

Course outcomes are based on RBT and Cognitive Level Mapping

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Compare and describe the different types of data and mapping of different data	U, R
CO2	Understand and develop ideas for different minor weather instruments and analyze different data collected by them	U, C, A1
CO3	Apply the knowledge of weather data in real weather map of India and analyze them	A1, A2

COURSE CONTENT

UNITS	CONTENT	HOURS	COs	REVISED BLOOM'S TAXONOMY
Unit I	Climatic Data: Temperature, Rainfall, Wind, Cloud, Humidity. Isopleth mapping: Isotherm, and Isobar	10	CO1	UR
Unit II	Recording of maximum and minimum thermometer, Hygrometer, Fortin's Barometer. Diagrammatic data presentation: Climograph (after Griffith Taylor), Hythergraph (after Griffith Taylor)	10	CO2	U C A1
Unit III	Interpretation of Indian daily weather reports	25	CO3	A1A2

Reading List

4. Sarkar, A. (2015): Practical Geography: A systematic approach, Orient Black Swan Private Limited, New Delhi.
5. Monkhouse, F.J. and Wilkinson, H.R. (1971): Maps and Diagrams, Their Compilation and Construction, Alphanumeric, Kolkata.
6. Basu, P. (2021): Advanced Practical Geography, Books & Allied Pvt. Ltd. Kolkata.

ASSESSMENT SCHEME

Formative Assessment

50 marks as per the Assessment & Evaluation Framework Document of Salesian College

- 20 (FA 1) + 50 (FA2) + 20 (FA3) + 10 (Attendance) = 100 marks scaled down to 50

- (Attendance) Summative assessment

1. Theory paper of 50 marks.

Rubrics:

- a. Five questions of 2 marks each, out of eight questions. Remembering and Understanding Levels of RBT. $2 \times 5 = 10$
- b. Four questions of 5 marks each, out of six questions. Remembering and Understanding levels of RBT. $4 \times 5 = 20$
- c. Two questions of 10 marks each, out of four questions. Analysis, and Applying levels of RBT.

$10 \times 2 = 20$

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: ~~ARJUN~~ ARJUN JANA Signature: <i>Arjun Jana</i> 04/06/24	Name: SRITANA SINHA Signature: <i>Sritana Sinha</i> 04/06/2024	Name: Signature: <i>[Signature]</i>

Department of Geography
Salesian College (Autonomous)
Siliguri

DEAN
Arts & Humanities
Salesian College (Autonomous)
Sonada & Siliguri

Course Code	23 GEOMDC101
Course Title	Basics of GIS and Remote Sensing
Credits	3
Total Hours	45
Category	MDC
Intended Level	Certificate
Issue(s) Addressed	
Course offered to	Others
Semester	I
Regulation	2023

Course Overview:

This Course –

1. Covers the basics of remote sensing, its different types and different satellites with sensors
2. Explains the concepts of geographic information system, its different data types
3. Covers the hands on activity of GIS software to produce maps

Prerequisites: Basic knowledge of light, satellites, object identification and basics of computer handling

Course Objectives:

The objectives of the course are-

1. To understand the basics of remote sensing, its working principle and different types of satellites and sensors
2. To explain the basic of geographic information system and its different data types and also its application in selected field
3. To make different types of maps by using GIS software

Course outcomes are based on RBT and Cognitive Level Mapping

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Understand the basics of remote sensing and also know the different types of satellite and sensors	U, R
CO2	Understand the basics of GIS and can define and make difference between different data types	U, R, C
CO3	Apply and analyze the theoretical knowledge of GIS in practically for making maps	A1, A2

COURSE CONTENT

UNITS	CONTENT	HOURS	COs	REVISED BLOOM'S TAXONOMY
Unit I	Remote Sensing: Definition and Development, Platforms and Types, Principles of Remote Sensing, Satellites (Landsat and IRS), Sensors, Visual Satellite Image Interpretation	10	CO1	U R
Unit II	Geographical Information System (GIS): Definition and Components, GIS Data Structures, Types (Spatial and Non-Spatial), Raster and Vector Data Structure, Application of Remote Sensing and GIS in Land Use and Land Cover mapping, Urban Sprawl Analysis	10	CO2	U R C
Unit III	Geo-referencing, Editing and Output (Using any software from the following, Mapinfo / Global Mapper / QGIS / ArcMap)	25	CO3	A1 A2

Reading List

1. Bhatta B. (2008): Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Lillesand T. M., Kiefer R.W. and Chapman J.W. (2004): Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition)
3. Mukherjee, S. (2004): Textbook of Environmental Remote Sensing, Macmillan, Delhi.
4. Nag, P. and Kudra, M. (1998): Digital Remote Sensing, Concept, New Delhi.

5. Sarkar, A. (2015): Practical Geography: A systematic approach, Orient Black Swan Private Limited, New Delhi.

ASSESSMENT SCHEME

Formative Assessment

50 marks as per the Assessment & Evaluation Framework Document of Salesian College

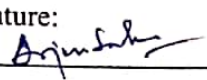
- 10 (CIA I) +25 (Mid-term) +10 (CIA 2) +5 (Attendance)

Summative assessment

1. *Theory paper* of 50 marks scaled down to 25 marks.

Rubrics:

- g. Six questions of 5 marks each, out of ten questions. Remembering and Understanding levels of RBT. $6 \times 5 = 30$
- h. Two questions of 10 marks each, out of four questions. Analysis, and Applying levels of RBT. $10 \times 2 = 20$

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: ARJUN SAHA Signature: 	Name: Dr. BIPUL CHHETRI Signature: 	Name: Signature: 

Course Code 23	23 GEOSEC102 -Th	
Course Title	Laboratory Techniques in Human Geography	
Credits	2	
Total Hours	30	
Category	SEC	
Semester	Certificate	
Intended Level		
Issue(s) Addressed	Geography	
Course Offered to	I	
Regulation	2023	
Course Overview: This Course – - Covers the definition of maps, features of good maps and visual variables of symbolisation - Helps students classify the different types of maps. - Explains the importance and uses of different maps and diagrams in human geography.		
Prerequisites: Basic knowledge of physical geography and statistical diagrams.		
Course Objectives: The objective of the course is – - To understand the basic concepts of map, features of good maps. - To discuss the visual variables of symbolisation in maps. - To inculcate the ability to objectively use the different methods and techniques of data representation in Human Geography. - Identify and create appropriate maps and diagrams in studies related to human geography.		
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of the course, the students will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Understand the basic concepts of map, features of good maps.	U, A1, A2, R
CO2	Discuss the visual variables of symbolisation in maps.	U, R, A1, A2, C, R
CO3	Inculcate the ability to objectively use the different methods and techniques of data representation in Human Geography.	U, A1, C, R
CO4	Identify and create appropriate maps and diagrams in studies related to physical geography.	U, R, A1, A2, C, R

Course Content				
UNITS	CONTENT	HOURS	COs	RBT
UNIT I	Maps and Diagrams - Definition of maps, Features of good map. - Visual Variables for Symbolisation	5	CO1	R U A1 A2
UNIT II	Classification of Maps - Classification of maps based on scale. - Classification of maps based on the Nature of data and Symbolisation Techniques	15	CO2	R U A1 A2 E C
UNIT III	Representation of data in Human Geography - Non – quantitative maps and qualitative symbols. - Diagrammatic Presentation of Data: 1 – dimensional, 2 – dimensional , 3 – dimensional and spacial . - Graphical Presentation of geographical data	10	CO3 CO4	R U A1 A2 E

PRACTIAL Paper Code: 23GEOSEC102 Credit: 1		
Course Overview: This Course – - Covers the construction of different kind of maps based on Nature of Data and Symbolisation - Helps students understand the aspect of graphs in Human Geography. - Explains the construction of different maps and diagrams in human geography.		
Prerequisites: Basic knowledge of physical geography and statistical diagrams.		
Course Objectives: The objective of the course is – - To understand the different types of maps based on nature of data and symbolisation. - To discuss and apply the aspect of graphs in Human Geography. - To inculcate the ability to objectively use the different maps and graphs for data representation in Human Geography.		
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of the course, the students will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Understand the different types of maps based on nature of data and symbolisation.	U, A1, A2, R
CO2	Discuss and apply the aspect of graphs in Human Geography.	U, R, A1, A2, C, R
CO3	Inculcate the ability to objectively use the different maps and graphs for data representation in Human Geography.	U, A1, C, R
CO4	Identify and create appropriate maps and diagrams in studies related to physical geography.	U, R, A1, A2, C, R

Course Content
Preparation of Lab note Book with the following: - Chorochromatic Map - Choroschematic Map - Qualitative and quantitative dot map - Open Line Graphs - Flow Line
Suggested Readings - Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London. - Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi. - Sarkar, A. (2015) Practical Geography: A Systematic Approach. Orient Black Swan Private Ltd., New Delhi

Course Code	23 GEOMDC102
Course Title	Techniques of Climatic Data Analysis
Credits	3
Total Hours	45
Category	MDC
Intended Level	Certificate
Issue(s) Addressed	
Course offered to	Others
Semester	II
Regulation	2023

Course Overview:

This Course –

1. Covers the different types of data that use in climatic field
2. Covers the hands on use of different climatic instruments
3. Explains the different techniques of presenting data and analyses real weather data of India

Prerequisites: Basic knowledge of temperature, rainfall, cloud, wind and humidity

Course Objectives:

The objectives of the course are-

1. To compare and describe about the different types of data and mapping of different data
2. To understand and develop ideas of different minor weather instruments and analyze different data collected by them
3. To apply the knowledge of weather data in real weather map of India and analyze them

Course outcomes are based on RBT and Cognitive Level Mapping

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Compare and describe about the different types of data and mapping of different data	U, R
CO2	Understand and develop ideas of different minor weather instruments and analyze different data collected by them	U, C, A1
CO3	Apply the knowledge of weather data in real weather map of India and analyze them	A1, A2

COURSE CONTENT

UNITS	CONTENT	HOURS	COs	REVISED BLOOM'S TAXONOMY
Unit I	Climatic Data: Temperature, Rainfall, Wind, Cloud, Humidity. Isopleth mapping: Isotherm, Isohyet and Isobar	10	CO1	U R
Unit II	Recording of maximum and minimum thermometer, Hygrometer, Fortin's Barometer. Diagrammatic data presentation: Ergograph, Climograph (after Griffith Taylor), Hythergraph (after Griffith Taylor)	10	CO2	U C A1
Unit III	Interpretation of Indian daily weather reports (Summer and Winter case)	25	CO3	A1 A2
Reading List 1. Sarkar, A. (2015): Practical Geography: A systematic approach, Orient Black Swan Private Limited, New Delhi. 2. Monkhouse, F.J. and Wikinson, H.R. (1971): Maps and Diagrams, Their Compilation and Construction, Alphanumera, Kolkata. 3. Basu, P. (2021): Advanced Practical Geography, Books & Allied Pvt. Ltd. Kolkata.				

Signature:	Signature:	Signature:
Expert I	Expert II	Alumni Representative
Name:	Name:	Name:
Signature:	Signature:	Signature:

Course Code	23 GEOMDC102
Course Title	Techniques of Climatic Data Analysis
Credits	3
Total Hours	45
Category	MDC
Intended Level	Certificate
Issue(s) Addressed	
Course offered to	Others
Semester	II
Regulation	2023

Course Overview:

This Course –

1. Covers the different types of data that use in climatic field
2. Covers the hands on use of different climatic instruments
3. Explains the different techniques of presenting data and analyses real weather data of India

Prerequisites: Basic knowledge of temperature, rainfall, cloud, wind and humidity

Course Objectives:

The objectives of the course are-

1. To compare and describe about the different types of data and mapping of different data
2. To understand and develop ideas of different minor weather instruments and analyze different data collected by them
3. To apply the knowledge of weather data in real weather map of India and analyze them

Course outcomes are based on RBT and Cognitive Level Mapping

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Compare and describe about the different types of data and mapping of different data	U, R
CO2	Understand and develop ideas of different minor weather instruments and analyze different data collected by them	U, C, A1
CO3	Apply the knowledge of weather data in real weather map of India and analyze them	A1, A2

COURSE CONTENT

UNITS	CONTENT	HOURS	COs	REVISED BLOOM'S TAXONOMY
Unit I	Climatic Data: Temperature, Rainfall, Wind, Cloud, Humidity. Isoleth mapping: Isotherm, Isohyet and Isobar	10	CO1	U R
Unit II	Recording of maximum and minimum thermometer, Hygrometer, Fortin's Barometer. Diagrammatic data presentation: Ergograph, Climograph (after Griffith Taylor), Hythergraph (after Griffith Taylor)	10	CO2	U C A1
Unit III	Interpretation of Indian daily weather reports (Summer and Winter case)	25	CO3	A1 A2

Reading List

1. Sarkar, A. (2015): Practical Geography: A systematic approach, Orient Black Swan Private Limited, New Delhi.
2. Monkhouse, F.J. and Wikinson, H.R. (1971): Maps and Diagrams, Their Compilation and Construction, Alphanumera, Kolkata.

Course Code	23GEOMAJ202-TH
Course Title	Quantitative Techniques in Geography
Credits	3
Lecture Hours	45
Category	Major Core – Theory
Semester	III
Intended Level	Diploma
Issue(s) Addressed	
Courses Offered to	Geography
Regulation	2023

Course Overview:

This Course –

- Recognize the importance and application of Statistics in Geography.
- Interpret statistical data for a holistic understanding of geographical phenomena.

Course Objectives:

This Course enables –

1. To learn the significance of statistics in geography.
2. Understand the importance of use of data in geography.
3. Identify different types of sampling and its purpose.
4. Generate idea about theoretical distribution, regression and correlation.

Prerequisites: Basic knowledge about average and graphs.

Course Outcomes based on RBT and Cognitive Level Mapping

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Understand the significance of statistics in Geography.	R, U, A1
CO2	Understand the importance of use of data in geography, interpret statistical data for a holistic understanding of geographical phenomenon.	R, U, A1
CO3	Know about the purpose and different types of sampling.	R, U, A1, E, C
CO4	Develop an idea about theoretical distribution and gain knowledge about regression and correlation.	R, U, A1, E, C

Syllabus

UNITS	CONTENT	HOURS	COs	RBT
UNIT I	Introduction Quantitative Techniques: Definition, Meaning and types of Statistics (Descriptive and Inferential); Significance of Statistics in Geography.	9	CO1	R U A1 C
UNIT II	Data Handling Types; Sources of data, Techniques of data collection; Scales of Measurement.	10	CO2	R U A1 C
UNIT III	Sampling Techniques Purpose of Sampling; Types of Sampling (purposive, random, systematic and stratified)	12	CO3	R U A1 C
UNIT IV	Associations of Variables: Probability and Normal Distribution; Types of Variables, Correlation and Regression Analysis;	14	CO4	R U A1 C

Course Overview:

This Course –

- To understand the ways to handle the collected data through classification, tabulation and presentations.
- To compute relations, associations and impacts among the data series.

Course Objectives:

This Course enables –

1. To know the nature of various data, different sources, and methods of data collection.
2. To classify, summarize and produce various types of data tabulations.
3. To present data through graphical and diagrammatic formats.

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Tabulate and calculate data using various measures of statistical tools.	
CO2	Compute relations, associations and impacts among the data series.	

Syllabus

UNITS	CONTENT	HOURS	COs	RBT
UNIT I	Uses of Geographical Data: Tabulation of Data; Frequency Distribution: Class Group, Class Interval. Descriptive Statistics: Measure of Central Tendency; Measure of Dispersion, Relative and Absolute Measures (Standard Deviation, Mean Deviation, Variance & Co-efficient of Variation), Quartile Deviation	10	CO1 CO2 CO3	
UNIT II	Rank Correlation, Simple Linear Regression, Chi Square Test	5	CO4	

Reading list

1. Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
2. Barry R. G. and Corley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
3. Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi
4. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
5. Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
6. Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw-Hill.
7. Berry B. J. L. and Marble D. F. (eds.): Spatial Analysis – A Reader in Geography
8. Ebdon D., 1977: Statistics in Geography: A Practical Approach.
9. Hammond P. and McCullough P. S., 1978: Quantitative Techniques in Geography: An Introduction, Oxford University Press
10. King L. S., 1969: Statistical Analysis in Geography, Prentice-Hall.
5. Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept.
11. Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
12. Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
13. Silk J., 1979: Statistical Concepts in Geography, Allen and Unwin, London.
14. Spiegel M. R.: Statistics, Schaum's Outline Series.
15. Yeates M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.

Course Code	23GEOMDC201-TH
Course Title	Geographical Data Representation
Credits	3
Lecture Hours	45
Category	Multi-Disciplinary Course
Semester	III
Intended Level	Diploma
Issue(s) Addressed	
Courses Offered to	Geography
Regulation	2023

Course Overview:

This Course –

- Covers the basic concept of geographical data, its types and uses.
- Presents different types of graphs to represent geographical data.
- Covers different methods for thematic mapping.

Course Objectives:

This Course –

1. To understand different types of symbols that are used to present geographical data
2. To gain knowledge about the use of different symbols
3. To get an idea about different types of cartograms
4. To understand different types of graphs to represent geographical data
5. To acquire knowledge about the use of different graphs with different types of data
6. To understand the knowledge about different techniques of thematic mapping

Course Outcomes based on RBT and Cognitive Level Mapping

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	understand different types of symbols that use to present geographical data	U, R
CO2	gain knowledge about the use of different symbols	R, A1, A2, E, C
CO3	get the idea about different types of cartograms	U, R, A1
CO4	understand different types of graphs to represent geographical data	U, R, A1
CO5	acquire knowledge about the use of different graphs with different types of data	R, A1, A2, E, C
CO6	understand the knowledge about different techniques of thematic mapping	U, R, A1

Syllabus

UNITS	CONTENT	HOURS	COs	RBT
UNIT I	General Concept of Geographical Data a. Symbolization of Geographical Data (Point Symbol, Line Symbol and Area Symbol) b. Concept and Types of Cartograms,	8	CO1 CO2 CO3	U R A1 A2 E C
UNIT II	Diagrammatic Representation of Data a. Properties, Uses, and Limitations b. Line Graph (Simple) c. Bar graph (Simple) d. Circles (Proportional Circle, and Pie Graph)	19	CO4 CO5	U R A1 A2 E C
UNIT III	Thematic Mapping Techniques	18	CO5	U

a. Properties, Uses, and Limitations b. Proportional Cube, and Sphere.		CO6	R A1 A2 E C

Reading List:

1. Monkhouse, F.J. & Wilkinson, F.J. (1985). Maps and Diagrams. Methuen, London
2. Robinson, Arthur H. et al. (2010): Elements of Cartography, 6th edition, Wiley India, New Delhi
3. Saha, Pijush Kanti and Basu, Partha (2014): Advanced Practical Geography, Books and Allied (P) Ltd., Kolkata
4. Sarkar, Ashis (2015): Practical Geography –A Systematic Approach, Orient Black Swan, New Delhi.
5. Singh, R. L. & Singh, Rana PB (1993). Elements of Practical Geography, Kalyani Publishers, New Delhi

Formative Assessment (MDC)

50 marks as per the Assessment & Evaluation Framework Document of Salesian College

- 10 (CIA 1) + 25 (Mid-term) + 10 (CIA 2) + 5 (Attendance)

Summative assessment

L. Theory paper of 50 marks scaled down to 25 marks.

Rubrics:

- Six questions of 5 marks each, out of ten questions. Remembering and Understanding levels of RBT. $6 \times 5 = 30$
- Two questions of 10 marks each, out of four questions. Analysis, and Applying levels of RBT.
 $10 \times 2 = 20$

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: <u>Arjun Saha</u> Signature: <u>[Signature]</u> 28/02/24	Name: <u>Dr. Bipul Kumar</u> Signature: <u>[Signature]</u> 28.02.24	Name: <u>[Signature]</u> Signature: <u>[Signature]</u> 28/02/24

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Course Code	24GEOMDC103-TII
Course Title	Geographical Data Representation
Credits	3
Lecture Hours	45
Category	Multi-Disciplinary Course
Semester	III
Intended Level	Certificate
Issue(s) Addressed	
Courses Offered to	Geography
Regulation	2024

Course Overview:

This Course –

1. Covers the basic concept of geographical data, its types and uses.
2. Presents different types of graphs to represent geographical data.
3. Covers different methods for thematic mapping.

Prerequisites: Basic knowledge and properties of symbols, line, bar, and circle

Course Objectives:

The objectives of the course are-

1. To understand different types of symbols that use to present geographical data.
2. To gain knowledge about the use of different symbols.
3. To get the idea about different types of cartograms.
4. To understand different types of graphs to represent geographical data.
5. To acquire knowledge about the use of different graphs with different types of data.
6. To understand the knowledge about different techniques of thematic mapping.

Course outcomes are based on RBT and Cognitive Level Mapping

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level
CO1	understand different types of symbols that use to present geographical data	U, R
CO2	gain knowledge about the use of different symbols	R, A1, A2, E, C
CO3	get the idea about different types of cartograms	U, R, A1
CO4	understand different types of graphs to represent geographical data	U, R, A1
CO5	acquire knowledge about the use of different graphs with different types of data	R, A1, A2, E, C
CO6	understand the knowledge about different techniques of thematic mapping	U, R, A1

COURSE CONTENT

UNITS	CONTENT	HOURS	COs	REVISED BLOOM'S TAXONOMY
UNIT I	General Concept of Geographical Data a. Symbolization of Geographical Data (Point Symbol, Line Symbol and Area Symbol) b. Use and Choice of Symbols, Concept and Types of Cartograms,	8	CO1 CO2 CO3	U R A1 A2 E C
UNIT II	Diagrammatic Representation of Data a. Properties, Uses, and Limitations b. Line Graph (Simple, and Multiple) c. Bar graph (Simple, Compound and Composite) Circles (Proportional Circle, and Pie Graph)	19	CO4 CO5	U R A1 A2 E C

UNIT III	Thematic Mapping Techniques a. Properties, Uses, and Limitations b. Proportional Cubes, Dot and Sphere Choropleth, and Chorochromatic	18	CO5 CO6	U R A1 A2 E C

Suggested Readings

1. Monkhouse, F.J. & Wilkinson, F.J. (1985). Maps and Diagrams. Methuen, London
2. Robinson, Arthur H. et al. (2010): Elements of Cartography, 6th edition, Wiley India, New Delhi
3. Saha, Pijush Kanti and Basu, Partha (2014): Advanced Practical Geography, Books and Allied (P) Ltd., Kolkata
4. Sarkar, Ashis (2015): Practical Geography – A Systematic Approach, Orient Black Swan, New Delhi.
5. Singh, R. L. & Singh, Rana PB (1993). Elements of Practical Geography, Kalyani Publishers, New Delhi

ASSESSMENT SCHEME

Formative Assessment

50 marks as per the Assessment & Evaluation Framework Document of Salesian College

- 20 (FA 1) + 50 (FA2) + 20 (FA3) + 10 (Attendance) = 100 marks scaled down to 50

Summative assessment

1. *Theory paper* of 50 marks.

Rubrics:

- a. Five questions of 2 marks each, out of eight questions. Remembering and Understanding Levels of RBT.
2X5=10
- b. Four questions of 5 marks each, out of six questions. Remembering and Understanding levels of RBT. 4X 5 = 20
- c. Two questions of 10 marks each, out of four questions. Analysis, and Applying levels of RBT.
10X 2 = 20

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: ARJUN SAHA	Name: SRITANA SINHA	Name:
Signature: <i>Arjun Saha</i> 4/12/24	Signature: <i>Sritana Sinha</i> 4/12/24	Signature:

HEAD
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Course Code	24GEOSSEC101 -Th
Course Title	Basics of Computer Application
Credits	2
Total Hours	30
Category	SEC
Semester	Certificate
Intended Level	
Issue(s) Addressed	Geography
Course Offered to	1
Regulation	2024

Course Overview:

This Course –

- Aims at providing exposure to students in skill development towards basic office applications.

Prerequisites: Basic knowledge of computers and handling a computer.

Course Objectives:

The course enables –

- To demonstrate a basic understanding of computer hardware and software.
- To apply skills and concepts for basic use of a computer.
- To identify appropriate tools of MS Office to prepare basic documents, charts, spreadsheets and presentations.

Course Outcomes based on RBT and Cognitive Level Mapping

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level
CO1	Demonstrate a basic understanding of computer hardware and software.	U, A1, A2, R
CO2	Apply skills and concepts for the basic use of a computer.	U, R, A1, A2, C, R
CO3	Identify appropriate tools of MS Office to prepare basic documents, charts, spreadsheets, and presentations.	U, A1, C, R

Course Content

UNITS	CONTENT	HOURS	COs	RBT
UNIT I	1. Basics of Computers a. Characteristics of computers, Application of computers. b. I/O devices, hardware, software c. Memories: Primary, Auxiliary, and Cache Memory. 2. MS Windows	5	CO1	R U A1 A2
UNIT II	MS – Word a. Features of MS Word b. MS Word Window Component: Creating, Editing, Formatting, and Printing Documents; Headers and Footers; Insert/ Draw Tables, Table Auto Format; Page Border, Page number and Shading; Inserting Symbols, Shapes, Word Art, Page Numbers, Mail Merge	15	CO2	R U A1 A2 E C
UNIT III	MS – Excel and MS - PowerPoint a. Overview of Excel Features: Creating New Worksheet; Selecting Cells; Entering and editing Text and Numbers. b. Inserting Rows/ Columns; Changing column width and row heights c. Creating a presentation.	10	CO3 CO4	R U A1 A2 E

PRACTICAL		
Paper Code: 24GE0SEC101		Credit: 1
Course Overview: This Course – Aims at providing exposure to students in skill development towards basic office applications.		
Prerequisites: Basic knowledge of computers and handling a computer.		
Course Objectives: The objective of the course is – - To demonstrate a basic understanding of computer hardware and software. - To create personal, academic, and professional documents using MS – Office. - To create spreadsheets and charts.		
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of the course, the students will be able to:		
COs	Statements	Cognitive Level
CO1	Demonstrate a basic understanding of computer hardware and software.	
CO2	Create personal, academic, and professional documents using MS – Office.	
CO3	Create spreadsheets and charts.	
Syllabus		
Course Content	Hours	COs
Preparation of Lab note Book with the following: 1) The different parts of a computer; types of computer; different hardware and software (images) 2) The different components of MS – Word. 3) Overview of Excel and PowerPoint Features	10 5 15	CO1 CO2 CO3
Suggested Readings 1. Ron Mansfield () Working on Microsoft Office. TMh Publications. 2. Saxena Sanjay () MS Office 2007 in a Nutshell. Vikas Publishing House 3. Price Michael () Excel 2020 in easy steps. TMH publications		

ASSESSMENT SCHEME

Formative Assessment

50 marks as per the Assessment & Evaluation Framework Document of Salesian College

- 20 (FA 1) + 50 (FA2) + 20 (FA3) + 10 (Attendance) = 100 marks scaled down to 50

Summative assessment

Combined theory and practical papers:

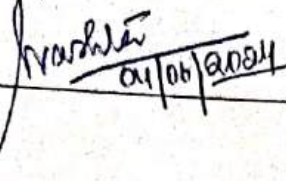
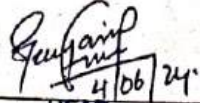
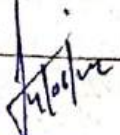
- Theory paper of 50 marks scaled down to 25 marks.

Rubrics:

- Five questions of 2 marks each, out of eight questions. Remembering and Understanding Levels of RBT.
2X5=10
- Four questions of 5 marks each, out of six questions. Remembering and Understanding levels of RBT.
4X 5 = 20
- Two questions of 10 marks each, out of four questions. Analysis, and Applying levels of RBT.
10X 2 = 20

- Practical paper of 50 marks, scaled down to 25 marks. Marks distribution as follows:

- Lab report: 5marks
- Viva- voce: 5 marks
- Practical Exam: 40 marks

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: DR. SRASHTA CHOWDHURY	Name: SRITANA SINHA	Name:
Signature:  01/06/2024	Signature:  4/06/24	Signature: 

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Course Code	23GEOSEC201-TH
Course Title	Basics of Computer Application
Credits	2
Lecture Hours	45
Category	Skill Enhancement Course - Theory
Semester	III
Intended Level	Diploma
Issue(s) Addressed	
Courses Offered to	Geography
Regulation	2023

Course Overview:

This Course –

- Aim at providing exposure to students in skill development towards basic office applications.

Course Objectives:

This Course enables –

1. To demonstrate a basic understanding of computer hardware and software.
2. To apply skills and concepts for the basic use of a computer.
3. To identify appropriate tools of MS Office to prepare basic documents, charts, spreadsheets and presentations.

Prerequisite: Basic knowledge of what is a computer.

At the end of the course, the students will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Demonstrate a basic understanding of computer hardware and software.	U
CO2	Apply skills and concepts for basic use of a computer.	R, A1, A2
CO3	Identify appropriate tool of MS office to prepare basic documents, charts, spreadsheet and presentations.	U, R, A1, E, C, A2

Syllabus

UNITS	CONTENT	HOURS	COs	RBT
UNIT I	1. Basics of Computers a. Characteristics of computers, Application of computers. b. I/O devices, hardware, software c. Memories: Primary, Auxiliary and Cache Memory. 2. MS Windows	7	CO1 CO2	R U A1 A2 C
UNIT II	1. MS – Word a. Features of MS Word b. MS Word Window Component: Creating, Editing, Formatting and Printing Documents; Headers and Footers; Insert/ Draw Tables, Table Auto Format; Page Border, Page number and Shading; Inserting Symbols, Shapes, Word Art, Page Numbers, Mail Merge	15	CO1 CO2	R U A1 A2 E C
UNIT III	1. MS – Excel a. Overview of Excel Features: Creating New Worksheet; Selecting Cells; Entering and editing Text, Numbers. b. Inserting Rows/ Columns; Changing column width and row heights. c. Formulae; Referencing cells; Changing font	15	CO3 CO4	R U A1 A2 E C

	sizes and colours; Insertion of charts; Auto fill; Sort.			
NIT IV	1. MS – Power point a. Features of Powerpoint: Creating a presentation; b. Inserting and Deleting Slides in Presentation c. Adding Clip Art/ Pictures; Inserting other objects, audio, video d. Resizing and scaling of an Object; Slide Transition; Custom Animation.	8	CO4	R, U, A1, A2, E, C
PRACTICAL 23GE0SEC201-PR Credit: 1				
Course Overview: This Course – Aims at providing exposure to students in skill development towards basic office applications.				
Course Objectives: This Course enables – - To demonstrate basic understanding of computer hardware and software. - To create personal, academic, and professional documents using MS – Office. - To create spreadsheets and charts. - To create power point presentation.				
At the end of the course, the students will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Demonstrate basic understanding of computer hardware and software.			
CO2	Create personal, academic, and professional documents using MS – Office.			
CO3	Create spreadsheets and charts.			
CO4	Create power point presentation.			
Syllabus				
UNITS	CONTENT	HOURS	COs	RBT
UNIT I	Preparation of Lab note Book with the following: - The different parts of a computer; types of computer; different hardwares and softwares (images) - Academic, professional and personal documents created by students using MS Word. - Spreadsheets and charts created by students using MS Excel. - Presentation created by student using MS Powerpoint	10	CO1 CO2 CO3 CO4	
Suggested Readings - Ron Mansfield Working on Microsoft Office. TMh Publications. - Saxena Sanjay MS Office 2007 in a Nutshell. Vikas Publishing House - Price Michael Excel 2020 in easy steps. TMH publications				

Formative Assessment (SEC)

50 marks as per the Assessment & Evaluation Framework Document of Salesian College
10 (CIA I) + 25 (Mid-term) + 10 (CIA 2) + 5 (Attendance)

Summative assessment

Combined theory and practical papers:

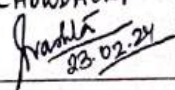
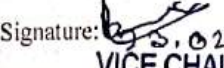
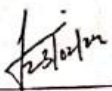
1. Theory paper of 50 marks scaled down to 25 marks.

Rubrics:

- a. Six questions of 5 marks each, out of ten questions. Remembering and Understanding levels of RBT. $6 \times 5 = 30$
- b. Two questions of 10 marks each, out of four questions. Analysis, and Applying levels of RBT.
 $10 \times 2 = 20$

2. Practical paper of 50 marks, scaled down to 25 marks. Marks distribution as follows:

- i. Lab report: 5 marks
- ii. Viva- voce: 5 marks
- iii. Practical Exam: 40 marks

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: DR. SRASHTA CHOWDHURY Signature: 	Name: Dr. Bipin Chandra Signature:  VICE CHAIRPERSON	Name: Signature: 

Board of Studies
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CHAIRPERSON
Board of Studies
Department of Geography
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CBCS
Skill Enhancement Course
Semester III

SEC 1 Radio Production

Course contents:

Unit I- Broadcast Production Techniques

Working of a Production Control Room & Studio:

Types and functions, acoustics, input and output chain, studio console: recording and mixing.

Personnel in Production process – Role and Responsibilities

Unit II- Stages of Radio Production

Pre-Production – (Idea, research, Radio script)

Production–Creative use of Sound; Listening, Recording, using archived sounds,
(execution, requisite, challenges)

Editing, Creative use of Sound Editing.

Unit III - Broadcast Formats

Group A

Radio magazine

Interview

Talk Show

Discussion

Feature

Documentary

Radio Drama

Group B

Public Service Advertisements

Jingles

Suggested Exercise-

Producing any one Radio format mentioned in Group A which should include Public Service Advertisement and/or Jingle mentioned in Group B of Unit III . (Duration-5 minutes).

Internal Assignment:

a. Class Test

Suggested reading list-

1. Aspinall, R. (1971)Radio Production, Paris: UNESCO.
2. Flemming, C. (2002) The Radio Handbook, London: Routledge.
3. Keith, M. (1990) Radio Production, Art & Science, London: Focal Press.
4. McLeish, R. (1988) Techniques of Radio Production, London: Focal Press.
5. Nisbett, A. (1994)Using Microphones, London: Focal Press.
6. Reese, D.E. & Gross, L.S. (1977) Radio Production Work, London: Focal Press.
5. Siegel, E.H. (1992) Creative Radio Production, London: Focal Press

CBCS
Skill Enhancement Course
Semester IV

SEC 2 Documentary / Short Film Production

Course contents:

Unit 1: Understanding Audio-Visual Production

Introduction to Documentary / Short Film

Introduction to Shooting styles

Introduction to Editing styles

Structure and scripting the documentary

Unit 2- Stages of Production

Pre-Production, Production, Post Production

Research: Library, Archives, location, life stories, ethnography

Writing a concept: telling a story

Treatment

Writing a proposal and budgeting

Suggested Practical Exercise-

Shooting a Documentary / Short Film (Duration 10 - 15 minutes) and Editing the same.

1. Readings: Erik Barnow and Krishnaswamy Documentary
2. Charles Musser "Documentary" in Geoffrey Nowell Smith ed The Oxford History of World Cinema Oxford University Press: 1996, 322-333
3. Michael Renov "The Truth about Non Fiction" and "Towards a Poetics of Documentary" in Michael Renov ed. Theorizing Documentary AFI Film Readers, New York and London: Routledge: 1993, 1-36
4. Trisha Das How to Write a Documentary Double Take by PSBT

Internal Assignment:

a. Class Test

Suggested Screenings

1. Michael Moore: Roger and Me
2. Nanook of the North by Robert J Flaherty
3. Nightmail by Basil Wright
4. Bombay Our City by AnandPatwardhan
5. Black Audio Collective
6. City of Photos by Nishtha Jain
7. Films by PSBT

Course Code	23MCJSEC101	
Course Title	Basic Communication Skills	
Credits	03	
Lecture Hours	75	
Hours/Week	4	
Category	Skill Enhancement Course	
Semester	I	
Regulation	2023	
Course Overview: This course – - Provides basic communication skills, which will help them to gain critical communication life skills. - Aids in the knowledge of the various designing tools		
Prerequisites and/or Note(s): Basic knowledge of English language		
Course Objectives: 1. To understand the role of verbal and nonverbal communication 2. To improve Communication skills critical to human well-being and progress. 3. To develop basic skills of composition in designing		
COs	Statements	Dave’s Taxonomy
CO 1	Follow instructions for behavioural change and technological knowledge	I
CO 2	Implement the knowledge of various designing tools and communication skills	M
CO 3	Demonstrate the designing tools and communication skills to another student	P

CO 4	Adaptation of technical knowledge and enhance communication skills	A
CO 5	Create and design a logo and a visiting card	N

COURSE CONTENT

UNITS	CONTENT	HOURS	COs	DAVE'S TAXONOMY
UNIT – I	Non-Verbal Communication Language and nonverbal behaviour as organizers of social systems; behavioural aspects of interactions; acquisition of communicative behaviour, theoretical approaches to human interaction.	20	CO1 CO2 CO3 CO4	I M P A
UNIT – II	Verbal Communication Verbal Arts and their forms – oral and written; the role of the reader/audience/spectator; arrangement, style, and delivery (with examples from news reading, talk show, interview, dialogues, recitation):	20	CO1 CO2 CO3 CO4	I M P A
Unit III	Typography History of writing and typography; outline of typography – type, typeface; hierarchy using positions, size, weight, colour; type as image, rastering of a type; the rule of three type-faces; using the right type; invisible typography, rivers of space; using justified type, flush-left, centred, asymmetrical and flush-right type, multicolumn text grid; typographic 'furniture'; margins and gutters and floating in space.	22	CO1 CO2 CO3 CO4 CO5	I M P A N

Unit IV	Aesthetics of Image (still and moving) Figure/ground, balance, emphasis, proportion, rhythm, unity, motifs, meaning and mood of colour; colour principles, learning from nature; Understanding colour in different media; the concept of RGB and CMYK.	13	CO1 CO2 CO3 CO4 CO5	I M P A N

Assessment:

Practical Exam:

- i. *Formative Assessment:* 25 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. *Summative Assessment:* 50 marks
 - PowerPoint presentation
 - Design the following
 - (1) A 'replacement' logo for a renowned business firm. For example, a 'replacement' logo for TATA
 - (2) Design a visiting card
 - (3) Design a poster for a campaign or an organisation
 - (4) Design a brochure for a service or a product of a company

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name:	Name:	Name:
Signature:	Signature:	Signature:

(Seal)

(Seal)

Course Code	23MCJVAC100
Course Title	Desktop Publishing
Credits	1
Lecture Hours	30
Sessions	15
Hours/Week	2
Category	Value Added Course (VAC-1)
Semester	I
Regulation	2023
Course Overview: This course – • Introduces students to the fundamental concepts in Desktop Publishing, • Explains the basic of software used in desktop publishing like Microsoft Word. • Explores basics of report writing and publishing.	
Prerequisites and/or Note(s): • Basic understanding of technological progress made in the field of Media and Communication	
Course Objectives: The course is designed to help learners to: • Understand the concept and industry of desktop publishing. • Develop essential skills and knowledge on how to use the essential software. • Create an design professional print productions. • Nurture a creative mind-set essential to design. • Familiarize the learners about the latest computing technologies required in the field.	

Course Outcomes:

The course is designed to help learners to:

1. Critically examine various newspaper and magazine formats, print production materials.
2. Learn and demonstrate and create using different industry standard software.
3. Understand basics of desktop publishing and develop their own designing aesthetic.
4. Apply different theories and elements to while designing.
5. Create meaningful industry standard print publications and showcasing them online.

COURSE CONTENT

SESSION	CONTENT	HOURS
1	Introductory session about the course and the tools to be used Students will be asked about any experiences in design during their school tenure like use of Microsoft Word and Corel Draw.	2
2	Introduction to basics of windows and MS Word How to access MS Word.	2
3	Work Space Essentials of MS Word - 1 Basics of MS Word interface.	2
4	Work Space Essentials of MS Word - 2 Introduction to different panels in MS Word.	2
5	Page Set-up in MS Word Setting up page in MS Word.	2
6	Typing in MS Word Fundamentals of typing in MS Word.	2
7	Saving a Document in MS Word Essentials of Saving a Document	2
8	Working with Photos and Graphics in MS Word Using photos and graphics to enhance a Document Quality.	2
9	Working with Tables in MS word Table creation and drawing in MS Word.	2
10	Creation of a Report Using MS Word Students will be asked to make a report using MS Word	2
11	Creation of a CV Using MS Word Students will be asked to make a CV using MS Word	2
12	Creation of an Invoice Slip Using MS Word Students will be asked to make an Invoice Slip using MS Word	2
13	Creation of a Poster Using MS Word Students will be asked to make a poster using MS Word.	2

14	Creation of a formal and informal letter Using MS Word Students will be asked to make a formal and informal letter using MS Word	2
15	Newsletter production Learn to create a newsletter. Students will be asked to design a newsletter	2

Assessment:

Formative Assessment: 10 internal +5 attendances.

Summative Assessment: Assignment submission 30 marks.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Signature:	Name: Signature:	Name: Signature:
(Seal)	(Seal)	

Course Code	23MCJSEC102	
Course Title	Newspaper Production	
Credits	03	
Lecture Hours	75	
Hours/Week	4	
Category	Skill Enhancement Course	
Semester	II	
Regulation	2023	
Course Overview: This course – Has been designed for students to get a theoretical understanding and practical training in producing an in-house newspaper.		
Prerequisites and/or Note(s): • Basic knowledge of report writing • Basic computer knowledge		
Course Objectives: 1. To define various elements of a newspaper 2. To understand basics of the various newspaper formats and design 3. To implement various technological process involved in the production of a newspaper 4. To produce a newspaper		
Course Outcomes (COs) and Cognitive Level Mapping At the end of this course, the students will be able to-		
COs	Statement	Dave’s Taxonomy
CO1	Follow the instructor to create a newspaper layout	I

CO2	Execute the knowledge of newspaper designing	M
CO3	Demonstrate the various aspects of newspaper designing and photo editing	P
CO4	Formulate layout design of a dummy newspaper	A
CO5	Create a four page dummy newspaper comprising of an Op- Ed and six reports	N

COURSE ONTENT

UNITS	CONTENT	HOURS	COs	DAVE'S TAXONOMY
UNIT – I	Newspaper Designing Terminology Dateline, credit line, print line, editorial and Op-Ed page, columns, cartoons, jumpy copies, marriage of copies; Types of headlines – Stepped, tombstone, flush left, centered, pyramid, reverse pyramid, waist, reverse waist.	12	CO 1 CO 2 CO 3	I M P
UNIT – II	Principles of Newspaper Designing I Designing, different types of newspaper layouts, eye movement, The Z Pattern - Measuring in Design, Determining Type Readability, Marking up Reporter's Copy, Determining Copy Depth, Using a Copy Log, Determining Headline Size, Determining Headline Depth, Scaling Artwork, Dummying with Symbols	18	CO 1 CO 2 CO 3 CO 4	I M P A

Unit III	Principles of Newspaper Designing II Horizontal Page Design, the Quadrant Page Design, the Modular Page Design, the Single Theme Page, the Editorial Page, the Sports Page, the Single-Page Feature, the Photo Features Page, Dealing with Ads, and Introduction to Adobe InDesign	15	CO 1 CO 2 CO 3 CO 4 CO 5	I M P A N
Unit IV	Photo Editing Photo Editing -The Single Image and the Photo-story - The paradox of the photo-story, word, image, caption writing, photographs in newspapers. The Production process - the photo-story, the equipment, the fieldwork, return to the editorial desk, editing and final touch-offs, and the photo desk; Introduction to Adobe Photoshop	15	CO 1 CO 2 CO 3 CO 4 CO 5	I M P A N
Unit V	Designing and Production Design and produce a 4-page newspaper comprising of an Op-Ed page. Include six news reports from the following news beats: a. Political Reporting b. Entertainment Reporting c. Education Reporting d. Health Reporting e. Sports Reporting f. Human Interest Reporting	15	CO 1 CO 2 CO 3 CO 4 CO 5	I M P A N

Learning Resources:

Kamath, M.V. (2009). *The Journalist's Handbook*. New Delhi: Vikas Publishing House Pvt. Limited

Gupta, V. S. (2003). *Handbook of Reporting and*

Communication

Skills. India: Concept Publishing Company

Roy, B. (2004). *Modern Student Journalism*. India:

Pointer Publishers. Aggarwal, V.B. (2006)

Essentials of Practical Journalism, Concept

Publishing Company

Smith, J. (2007) *Essential Reporting*, Sage publications

Suggested Reading:

Baker, J. (2021). *Essential Journalism: The NCTJ*

Guide for Trainee Journalists. United Kingdom:

Taylor & Francis

Hasan, S. (2020). *Mass Communication: Principles and*

Concepts. India: CBS Publishers & Distributors.

Horst, M., Viet, K. (2017). *Journalism Basics: An*

Introduction to Print Journalism. Poland: Create

Space Independent Publishing Platform Saltz, I.

(2019). *Typography Essentials Revised and Updated:*

100 Design Principles for Working with Type. United

States: Rockport Publishers.

Assessment:**Practical Exam:**

- i. *Formative Assessment*: 25 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. *Summative Assessment*: 50 marks
 - Design the following:
 - Design a Tabloid newspaper
 - Design a Cover page of a magazine

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Signature:	Name: Signature:	Name: Signature:

(Seal)

(Seal)

Course Code	23MCJVAC 101
Course Title	Desktop Publishing (Adobe Indesign)
Credits	1
Lecture Hours	30
Sessions	15
Hours/Week	2
Category	Value Added Course (vac-II)
Semester	II
Regulation	2024
Course Overview: This course – • Introduces students to the fundamental concepts of Desktop Publishing • Explains the basics of software used in desktop publishing, Especially Adobe Indesign 2021+ • Explores different elements of graphics and Layout designing	
Prerequisites and/or Note(s): Basic understanding of using a Windows PC and Word processing softwares	
Course Objectives: The course is designed to help learners to- • Understand the concept and industry of desktop publishing • Develop essential skills and knowledge about using the desktop publishing software • Create professional print productions • Nurture a creative mindset essential to design • Familiarize the learners about the latest computing technologies required in the field	
Course Outcomes: The course is designed to help learners to: 1. Critically examine various newspaper and magazine formats, print production materials 2. Learn, demonstrate and create using different industry standard software 3. Understand the basics of desktop publishing and develop their own designing aesthetic 4. Apply different theories and elements while designing 5. Create meaningful industry standard print publications and showcasing them online in a portfolio	

Course Content

Session	Content	Hours
1	Introductory session about the course, Syllabus and Adobe Indesign Students will be asked about any experiences in graphics design and layout during their school tenure and will shown the basics of Software	2
2	Introduction to the Adobe Indesign Interface I Essentials of Adobe Indesign Workspace Toolbar, Control Bar, Layer bar, Color bar	2
3	Introduction to the Adobe Indesign Interface II Customizing the workspace according to the need, display options, effects, locking the selections, Color	2
4	Essentials of Adobe Indesign Toolbar I Working with Adobe Indesign Tools, Drawing and Typing with Adobe Indesign	2

5	Essentials of Adobe Indesign Toolbar II Placing images and managing images with Adobe Indesign	2
6	Essentials of Adobe Indesign Toolbar III Alignment, Paragraph, Page Information, Page Set Up	2
7	Essentials of PNG Placement and Wrap Placing PNG images in Adobe Indesign, Working with Royalty free websites	2
8	Essentials of Typography Working with different typefaces and Typography composition	2
9	Essentials of Typography II Downloading external typefaces and working with them	2
10	Essentials of Poster Design Principles of Poster designing	2
11	Essentials of Poster Design II Designing a poster using Adobe Indesign	2
12	Essentials of Newspaper Designing Principles of newspaper designing	2
13	Essentials of Newspaper Designing II Elements of a newspaper	2
14	Essentials of Newspaper Designing III Designing a College newspaper using adobe Indesign	2
15	Creation of Final Copy of the Newspaper	2

Assessment:

Formative Assessment: 10 internal +5 attendances.

Summative Assessment: Assignment submission 30 marks.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Signature:	Name: Signature:	Name: Signature:

(Seal)

(Seal)



SALESIAN COLLEGE
(AUTONOMOUS) | SONADA
SILIGURI

Curriculum Document

under

National Education Policy (NEP) 2020 Curriculum
Framework

for

DEPARTMENTS OF MATHEMATICS

and

STATISTICS (MINOR)

SEMESTERS: I – IV

Regulation Year: 2023

Approved by: _____
(Subhajit Paul, Chairperson, BoS of Mathematics & Statistics.)

Date: _____

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PREAMBLE

This culminated document contains the complete curriculum framework with course objectives & outcomes and assessment rubrics for the first two semesters designed by the Dept of Mathematics for its students of four-year undergraduate programmes (FYUGP) with Honours in Mathematics as the single Major and Statistics as one of the Minor subjects. This design aligns with the layout suggested by the UGC published in the document “Curriculum and Credit Framework for Undergraduate Programmes” in 2022¹, and the regulations of Salesian College (Autonomous), Sonada & Siliguri.

1.1 Vision & Mission Statements

Vision: The Department of Mathematics, Salesian College envisages empowering the students with the ability to think critically and rationally along the lines of the robustness of Mathematical logic and to prepare them for the quest for higher knowledge and experiences in the fields of both Academia and Industry with a mindset to collaborate with interdisciplinary fields for a holistic betterment of the society.

Mission: To exercise relevant pedagogies to provide in-depth analysis and the sense of appreciation of Mathematical concepts while fostering scientific temper and encouraging rational thinking.

1.2 Graduate Attributes

1.2.1 Generic outcomes

1. **Complex problem-solving:** The graduates should be able to demonstrate the capability to solve different kinds of problems in familiar and non-familiar contexts and apply the learning to real-life situations.
2. **Critical thinking:** The graduates should be able to demonstrate the capability to
 - apply analytic thought to a body of knowledge, including the analysis and evaluation of policies, and practices, as well as evidence, arguments, claims, beliefs, and the reliability and relevance of evidence,

¹available at https://www.ugc.gov.in/pdfnews/7193743_FYUGP.pdf.

- identify relevant assumptions or implications; and formulate coherent arguments,
 - identify logical flaws and holes in the arguments of others,
 - analyse and synthesize data from a variety of sources and draw valid conclusions and support them with evidence and examples.
- 3. Creativity:** The graduates should be able to demonstrate the ability to
- create, perform, or think in different and diverse ways about the same objects or scenarios,
 - deal with problems and situations that do not have simple solutions,
 - innovate and perform tasks in a better manner,
 - view a problem or a situation from multiple perspectives,
 - think ‘out of the box’ and generate solutions to complex problems in unfamiliar contexts,
 - adopt innovative, imaginative, lateral thinking, interpersonal skills and emotional intelligence.
- 4. Communication Skills:** The graduates should be able to demonstrate the skills that enable them to
- listen carefully, read texts and research papers analytically and present complex information in a clear and concise manner to different groups/audiences,
 - express thoughts and ideas effectively in writing and orally and communicate with others using appropriate media,
 - confidently share views and express herself/himself,
 - construct logical arguments using correct technical language related to a field of learning, work/vocation, or an area of professional practice, and convey ideas, thoughts, and arguments using language that is respectful and sensitive to gender and other minority groups.
- 5. Analytical reasoning/thinking:** The graduates should be able to demonstrate the capability to
- evaluate the reliability and relevance of evidence;
 - identify logical flaws in the arguments of others;
 - analyse and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and address opposing viewpoints.
- 6. Research-related skills:** The graduates should be able to demonstrate
- a keen sense of observation, inquiry, and capability for asking relevant/appropriate questions,
 - the ability to problematize, synthesize, and articulate issues and design research proposals,
 - the ability to define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships,
 - the capacity to develop appropriate methodology and tools for data collection,

- the appropriate use of statistical and other analytical tools and techniques,
 - the ability to plan, execute and report the results of an experiment or investigation,
 - the ability to acquire the understanding of basic research ethics and skills in practising/doing ethics in the field/personal research work, regardless of the funding authority or field of study.
- 7. Coordination/Collaboration:** The graduates should be able to demonstrate the ability to
- work effectively and respectfully with diverse teams,
 - facilitate cooperative or coordinated effort on the part of a group,
 - act together as a group or a team in the interests of a common cause and work efficiently as a member of a team.
- 8. Leadership qualities:** The graduates should be able to demonstrate the capability for
- mapping out the tasks of a team or an organization and setting direction.
 - formulating an inspiring vision and building a team that can help achieve the vision, motivating and inspiring team members to engage with that vision.
 - using management skills to guide people to the right destination.
- 9. Lifelong learning of skills:** The graduates should be able to demonstrate the ability to
- acquire new knowledge and skills, including ‘learning how to learn skills, that are necessary for pursuing learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social, and cultural objectives, and adapting to changing trades and demands of the workplace, including adapting to the changes in work processes in the context of the fourth industrial revolution, through knowledge/ skill development/reskilling,
 - work independently, identify appropriate resources required for further learning,
 - acquire organizational skills and time management to set self-defined goals and targets with timelines.
 - inculcate a healthy attitude to be a lifelong learner.
- 10. Digital and technological skills:** The graduates should be able to demonstrate the capability to
- use ICT in a variety of learning and work situations,
 - access, evaluate, and use a variety of relevant information sources, and use appropriate software for analysis of data.
- 11. Multicultural competence and inclusive spirit:** The graduates should be able to demonstrate
- the acquisition of knowledge of the values and beliefs of multiple cultures and a global perspective to honour diversity,
 - capability to effectively engage in a multicultural group/society and interact respectfully with diverse groups,

- capability to lead a diverse team to accomplish common group tasks and goals.
- gender sensitivity and adopting a gender-neutral approach, as also empathy for the less advantaged and the differently-abled including those with learning disabilities.

12. Value inculcation: The graduates should be able to demonstrate the acquisition of knowledge and attitude that are required to

- embrace and practice constitutional, humanistic, ethical, and moral values in life, including universal human values of truth, righteous conduct, peace, love, non violence, scientific temper, citizenship values,
- practice responsible global citizenship required for responding to contemporary global challenges, enabling learners to become aware of and understand global issues and to become active promoters of more peaceful, tolerant, inclusive, secure, and sustainable societies,
- formulate a position/argument about an ethical issue from multiple perspectives,
- identify ethical issues related to work, and follow ethical practices, including avoiding unethical behaviour such as fabrication, falsification or misrepresentation of data, or committing plagiarism, and adhering to intellectual property rights,
- recognise environmental and sustainability issues, and participate in actions to promote sustainable development.
- adopt an objective, unbiased, and truthful actions in all aspects of work,
- instil integrity and identify ethical issues related to work, and follow ethical practices.

13. Autonomy, responsibility, and accountability: The graduates should be able to demonstrate the ability to

- apply knowledge, understanding, and/or skills with an appropriate degree of independence relevant to the level of the qualification,
- work independently, identify appropriate resources required for a project, and manage a project through to completion,
- exercise responsibility and demonstrate accountability in applying knowledge and/or skills in work and/or learning contexts appropriate for the level of the qualification, including ensuring safety and security at workplaces.

14. Environmental awareness and action: The graduates should be able to demonstrate the acquisition of and ability to apply the knowledge, skills, attitudes, and values required to take appropriate actions for

- mitigating the effects of environmental degradation, climate change, and pollution,
- effective waste management, conservation of biological diversity, management of biological resources and biodiversity, forest and wildlife conservation, and sustainable development and living.

15. Community engagement and service: The graduates should be able to demonstrate the capability to participate in community-engaged services/activities for promoting the well- being of society.

- 16. Empathy:** The graduates should be able to demonstrate the ability to identify with or understand the perspective, experiences, or points of view of another individual or group, and to identify and understand other people's emotions.

1.2.2 Programme specific outcomes

After completion of the 4 year programme with Honours in Mathematics, a student should be able to

- (a) demonstrate fundamental systematic knowledge of mathematics and its applications in engineering, science, technology and mathematical sciences;
- (b) demonstrate educational skills in areas of analysis, geometry, algebra, mechanics, differential equations, etc;
- (c) apply knowledge, understanding, and skills to identify the difficult/ unsolved problems in mathematics and to collect the required information in possible range of sources and try to analyse and evaluate these problems using appropriate methodologies;
- (d) fulfil learning requirements in mathematics, drawing from a range of contemporary research works and their applications in diverse areas of mathematical sciences;
- (e) apply disciplinary knowledge and skills in mathematics in newer domains and uncharted areas;
- (f) identify challenging problems in mathematics and obtain well-defined solutions;
- (g) exhibit subject-specific transferable knowledge in mathematics relevant to job trends and employment opportunities.

1.3 Programme Structure

The honours programme in Mathematics at Salesian College (Autonomous) Siliguri spans across eight semesters over four years. Following table shows the total number of courses to be taken by a student in this entire period of study.

Course type	# Courses	Credit/ course	Total credits
Major courses	24	4	96
Minor courses	8	4	32
Multidisciplinary courses	3	3	9
Skill enhancement courses	3	3	9
Ability enhancement courses	4	2	8
Value added courses	10	1	10
Internship	1	4	4
Total	53		168

Table 1.1: Cumulative course structure for Bachelor Degree programme with Honours with Major in Mathematics

1.3.1 Distribution of courses offered by Dept of Mathematics

Sem	Course code	Course title	Credits
MAJOR COURSES			
I	23MATMAJ101	Classical Algebra & Two-dimensional Geometry	4
	23MATMAJ102	ODE I and Application of Calculus	4
II	23MATMAJ103	Real Analysis I	4
	23MATMAJ104	Abstract Algebra I	4
III	23MATMAJ201	Linear Algebra I	4
	23MATMAJ202	Real Analysis II	4
IV	23MATMAJ203	Abstract Algebra II	4
	23MATMAJ204	Real Analysis III	4
	23MATMAJ205	ODE II and Three-dimensional Geometry	4
V	23MATMAJ301	Numerical Analysis	4
	23MATMAJ302	Multivariate Calculus	4
	23MATMAJ303	Probability Theory	4
	23MATMAJ304	Operations Research	4
VI	23MATMAJ305	Integral Calculus	4
	23MATMAJ306	Complex Analysis	4
	23MATMAJ307	Abstract Algebra III	4
VII	23MATMAJ401	Partial Differential Equations	4
	23MATMAJ402	Metric Spaces	4
	23MATMAJ403	Linear Algebra II	4
	23MATMAJ404	Number Theory <i>or</i> Vector Analysis	4
VIII	23MATMAJ405	General Topology	4
	23MATMAJ406	Measure Theory	4
	23MATMAJ407	Differential Geometry <i>or</i> Integral Transform	4
	23MATMAJ408	Functional Analysis <i>or</i> Graph Theory	4
MINOR COURSES			
I	23MATMIN101	Linear Algebra and Differential Equations	4
	23STAMIN101	Statistical Methods	4
III	23MATMIN201	Discrete Mathematics	4

Sem	Course code	Course title	Credits
	23STAMIN201	Fundamentals of Probability	4
V	23MATMIN301	Numerical Analysis <i>or</i> Advanced Calculus	4
	23STAMIN301		4
VII	23MATMIN401	Optimisation Techniques <i>or</i> Algebra	4
	23STAMIN401		4
SKILL ENHANCEMENT COURSES (SEC)			
I	23MATSEC101	Typesetting in $\text{\LaTeX}$	3
II	23MATSEC102	Graph Theory	3
III	23MATSEC201	Mathematical Modelling	3
VALUE ADDED COURSES (VAC)			
I	23MATVAC101	Introduction to Number Systems	1
II	23MATVAC102	Prerequisites to Linear Algebra	1
III	23MATVAC201	Graphing using GeoGebra	1
IV	23MATVAC202	Poster Presentation	1
V	23MATVAC301	Problem solving techniques	1
VI	23MATVAC302	Students' Seminar	1
MULTI-DISCIPLINARY COURSES (MDC)			
I	23MATMDC101	Basic Mathematics	3
II	23MATMDC102	Mathematics for Competitive Examinations	3

1.3.2 Course matrix for Mathematics Major students (Sem I – IV)

Course code	Type	Course title	Credits (L+T+P) ²	Classes/ week
SEMESTER I				
23MATMAJ101	Major	Classical Algebra & 2-D Geometry	4 + 0 + 0	4
23MATMAJ102	Major	ODE I & Application of Calculus	4 + 0 + 0	4
23STAMIN101	Minor	Statistical Methods	3 + 0 + 1	5
23MATSEC101	SEC	Typesetting in $\text{\LaTeX}$	1 + 0 + 2	5
23MATVAC101	VAC	Introduction to Number Systems	0 + 0 + 1	2

²L: Lecture, T: Tutorial, P: Practical / Field work.

Course code	Type	Course title	Credits (L+T+P)	Classes/ week
23ENGAEC101	AEC	Compulsory English I	2 + 0 + 0	2
23***MDC101	MDC	Multi-disciplinary course	3 + 0 + 0	3
23SCSVED101	VAC	Value Education	1 + 0 + 0	1
Total			22	26
SEMESTER II				
23MATMAJ103	Major	Real Analysis I	4 + 0 + 0	4
23MATMAJ104	Major	Abstract Algebra I	4 + 0 + 0	4
23CSCMIN101	Minor	C Programming	3 + 0 + 1	5
23MATSEC102	SEC	Graph Theory	3 + 0 + 0	3
23MATVAC102	VAC	Prerequisites to Linear Algebra	0 + 0 + 1	2
23ENGAEC102	AEC	Compulsory English II	2 + 0 + 0	2
23***MDC101	MDC	Multi-disciplinary course	3 + 0 + 0	3
23SCSVED102	VAC	Value Education	1 + 0 + 0	1
Total			22	24
SEMESTER III				
23MATMAJ201	Major	Linear Algebra I	4 + 0 + 0	4
23MATMAJ202	Major	Real Analysis II	4 + 0 + 0	4
23STAMIN201	Minor	Fundamentals of Probability	3 + 0 + 1	5
23MATSEC201	SEC	Mathematical Modelling	3 + 0 + 0	3
23MATVAC201	VAC	Graphing using GeoGebra	0 + 0 + 1	2
23ENGAEC201	AEC	Environmental Sciences I	2 + 0 + 0	2
23***MDC201	MDC	Multi-disciplinary course	3 + 0 + 0	3
23SCSVED201	VAC	Value Education	1 + 0 + 0	1
Total			22	24
SEMESTER IV				
23MATMAJ203	Major	Abstract Algebra II	4 + 0 + 0	4
23MATMAJ204	Major	Real Analysis III	4 + 0 + 0	4
23MATMAJ205	Major	ODE II and 3-D Geometry	4 + 0 + 0	4
23CSCMIN201	Minor	Digital Electronics	4 + 0 + 0	4
23MATVAC201	VAC	Poster presentation	0 + 0 + 1	2

Programme Structure

Course code	Type	Course title	Credits (L+T+P)	Classes/ week
23ENGAEC201	AEC	Environmental Sciences I	2 + 0 + 0	2
23SCSVED201	VAC	Value Education	1 + 0 + 0	1
Total			20	21

SYLLABI FOR MAJOR COURSES

2.1 23MATMAJ101: Classical Algebra & Two-dimensional Geometry

2.1.1 Course description

<i>Course code:</i> 23MATMAJ101				
<i>Course category:</i> Major				
<i>Title of the course:</i> Classical Algebra & Two-dimensional Geometry				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
I	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- basic algebraic operations with real variables;
- binomial theorem with a positive integer index;
- solution of quadratic equations;
- evaluation of determinants up to order 3.

Objectives

At the end of the course, the students should be able to

MAJ101-Ob1	Familiarise themselves with estimation processes using inequalities.
MAJ101-Ob2	Develop an understanding of the argand plane and the complex numbers as vectors.
MAJ101-Ob3	Solve a polynomial equation up to degree 4 and investigate other equations of particular types.
MAJ101-Ob4	Develop an understanding of the conic sections.

Corresponding outcomes

The outcome corresponding to the learning objective [MAJ101-Ob1](#), is

MAJ101-CO1: Remember the important inequalities and apply the appropriate inequality for specific problems.

The outcome corresponding to the learning objective [MAJ101-Ob2](#), is

MAJ101-CO2: Understand basic structure of Argand plane and perform algebra thereat.

The outcomes corresponding to the learning objective [MAJ101-Ob3](#), are

MAJ101-CO3: Solve cubic, biquadratic, reciprocal and binomial equations, demonstrating proficiency in identifying and manipulating these specific equation types.

MAJ101-CO4: Locate positions of roots and exhibit relations of roots and coefficients.

The outcome corresponding to the learning objective [MAJ101-Ob4](#), is

MAJ101-CO5: Analyse geometric objects, employ coordinate systems, derive equations, and apply geometric concepts to solve problems.

Content

Unit: 1	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ101-Ob1 and MAJ101-Ob2	Cognitive levels achieved through outcomes: Remembering: MAJ101-CO1 Understanding: MAJ101-CO2 Applying: MAJ101-CO1 and MAJ101-CO2	
INEQUALITIES: $AM \geq GM \geq HM$; Theorem of weighted means. Statements only and applications of m^{th} power theorem, Cauchy-Schwartz inequality, Holder's inequality, Minkowski's inequality.		
COMPLEX NUMBERS: Polar representation. De Moivre's theorem for rational indices and its applications. Trigonometric, logarithm, exponential and hyperbolic functions of complex variable.		

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ101-Ob3	Cognitive levels achieved through outcomes:	
	Remembering:	MAJ101-CO3 and MAJ101-CO4
	Understanding:	MAJ101-CO3 and MAJ101-CO4
	Applying:	MAJ101-CO3 and MAJ101-CO4
THEORY OF EQUATIONS: Polynomials and their properties. Relation between roots and coefficients. Transformation of equations. Cubic and biquadratic equations. Cardan's and Ferrari's method. Solutions of reciprocal and binomial equations. Symmetric functions of roots. Location of roots.		

Unit: 3	Credits: 2	Lecture hours: 30
Objectives mapped: MAJ101-Ob4	Cognitive levels achieved through outcomes:	
	Remembering:	MAJ101-CO5
	Understanding:	MAJ101-CO5
	Applying:	MAJ101-CO5
2-DIMENSIONAL GEOMETRY: Transformation of axes. Pair of straight lines. Reduction of general equation of second degree into canonical forms. Tangents and normals. Pole and polars. Polar equations.		

Suggested readings

1. Mapa, S K, *Higher Algebra: Classical*, Sarat Book House.
2. Khan, R M, *Algebra [Classical, Modern, Linear and Boolean]*, New Central Book Agency.
3. Chakravorty, J G, and Ghosh P R, *Advanced Analytical Geometry*, U N Dhur & Sons Pvt Ltd.
4. Khan, R M, *Analytical Geometry of Two and Three Dimensions and Vector Analysis*, New Central Book Agency.

Reference books

1. Andreescu, T, and Andrica, D, *Complex Numbers from A to Z*, Birkhäuser.
2. Burnside, W S, and Panton, A W, *The Theory of Equations*, Wentworth Press.
3. Bej, N K, and Mukherjee, A, *Analytical Geometry Of Two & Three Dimensions (Advanced Level)*, Book & Allied Pvt Ltd.

2.1.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

2.2 23MATMAJ102: Ordinary Differential Equations I and Applications of Calculus

2.2.1 Course description

<i>Course code:</i> 23MATMAJ102 <i>Course category:</i> Major <i>Title of the course:</i> Ordinary Differential Equations I and Applications of Calculus				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
I	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- computational processes in calculus like evaluating limits, investigating continuity, etc.;
- different differentiation techniques, including rules for differentiation, chain rule, product rule, and quotient rule;
- different techniques of integration, such as substitution, integration by parts, partial fractions, etc.

Objectives

At the end of the course, the students should be able to

MAJ102-Ob1 Develop a solid understanding of the basic concepts related to ordinary differential equations (ODEs) including order, linearity, and solutions (particular solutions, general solutions, and initial value problems) and also learn to classify different types of ODEs based on their order, linearity, and degree.

MAJ102-Ob2 Learn various methods and techniques to solve different types of ODEs. These may include first order, second order linear, higher order, special types and system of ODEs.

MAJ102-Ob3 Investigate several properties of a curve and classify them.

MAJ102-Ob4 Calculate length of a curve, area bounded by a curve, and volume of a surface generated by a curve.

Corresponding outcomes

The outcome corresponding to the learning objective **MAJ102-Ob1** is

MAJ102-CO1: Identify different types of ODEs.

The outcomes corresponding to the learning objective **MAJ102-Ob2**, are

MAJ102-CO2: Solve first order ODEs utilising the standard techniques for separable, exact, linear, homogeneous or Bernoulli cases.

MAJ102-CO3: Compute exact solutions of solvable first order ODEs and linear ODEs of higher order using various methods.

MAJ102-CO4: Describe the concepts of general solution and particular integral of a linear ODE of an arbitrary order, and also to obtain them using prescribed methods.

The outcomes corresponding to the learning objective **MAJ102-Ob3**, are

MAJ102-CO5: Remember the formulæ of various attributes and trace a given curve by calculating them.

MAJ102-CO6: Calculate the higher order derivatives and limits of indeterminate forms.

The outcome corresponding to the learning objective **MAJ102-Ob4**, is

MAJ102-CO7: Calculate length of a curve, area bounded by a curve, and volume of a surface generated by a curve.

Content

Unit: 1	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ102-Ob1 and MAJ102-Ob2	Cognitive levels achieved through outcomes: Remembering: MAJ102-CO1 Understanding: MAJ102-CO1 and MAJ102-CO4 Applying: MAJ102-CO2 to MAJ102-CO4	
Definition and examples of Ordinary Differential equations (ODEs). Formulation of ODE by eliminating parameters. General, particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equation and Bernoulli equations, special integrating factors and transformations.		

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ102-Ob2	Cognitive levels achieved through outcomes: Remembering: MAJ102-CO4 Understanding: MAJ102-CO3	
General solution of homogeneous equation of second order, principle of super position for homogeneous equation, Wronskian: its properties and applications, Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation, method of undetermined coefficients, method of variation of parameters.		

Unit: 3	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ102-Ob3	Cognitive levels achieved through outcomes: Remembering: MAJ102-CO5 Understanding: MAJ102-CO5 Applying: MAJ102-CO5 and MAJ102-CO6	

APPLICATION OF DIFFERENTIAL CALCULUS: Successive differentiation, Leibnitz theorem. Curvature, convexity and concavity. Asymptotes. Envelope & evolutes. Nature of a singular point. Curve tracing.

Unit: 4	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ102-Ob4	Cognitive levels achieved through outcomes:	
	Remembering:	MAJ102-CO7
	Understanding:	MAJ102-CO7
	Applying:	MAJ102-CO7
APPLICATION OF INTEGRAL CALCULUS: Derivations and illustrations of reduction formulæ of the type $\int \sin^n x \, dx$, $\int \cos^n x \, dx$, $\int \sec^n x \, dx$, $\int \tan^n x \, dx$, $\int (\log x)^n \, dx$, $\int \sin nx \cos mx \, dx$ etc. Arc length of a curve, arc length of parametric curves, area enclosed by a curve, area between two curves, area and volume of revolution.		

Suggested readings

1. Ghosh, R K, and Maity K C, *An Introduction to Differential Equations*, New Central Book Agency.
2. Raisinghania, M D, *Ordinary and Partial Differential Equation*, S Chand Publishing.
3. Ross, S L, *Differential Equations*, Wiley.
4. Ghosh, R K, and Maity, K C, *An Introduction to Analysis: Differential Calculus: Part I*, New Central Book Agency.
5. Ghosh, R K, and Maity, K C, *An Introduction to Analysis: Integral Calculus*, New Central Book Agency.

2.2.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

2.3 23MATMAJ103: Real Analysis I

2.3.1 Course description

<i>Course code:</i> 23MATMAJ103				
<i>Course category:</i> Major				
<i>Title of the course:</i> Real Analysis I				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
II	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- basic algebraic operations with real variables;
- special algebraic operations and functions like indices, logarithms, exponentiations, factorials, etc.;
- sets, relations and mappings;
- statements of common inequalities and manipulating them.

Objectives

At the end of the course, the students should be able to

MAJ103-Ob1 Narrate the definition of real numbers and apply its intrinsic properties.

MAJ103-Ob2 Understand the topology of real numbers.

MAJ103-Ob3 Manipulate and investigate sequences and series of real numbers.

Corresponding outcomes

The outcomes corresponding to the learning objective **MAJ103-Ob1**, are

MAJ103-CO1: Know the axiomatic construction of real numbers and apply Archimedean property to various sums.

MAJ103-CO2: Distinguish between countable and uncountable sets.

The outcome corresponding to the learning objective **MAJ103-Ob2**, is

MAJ103-CO3: Remember and use the results about open and closed sets, limit points, adherent points.

The outcomes corresponding to the learning objective **MAJ103-Ob3**, are

MAJ103-CO4: Know and investigate the definitions and key properties of sequences and series of real numbers and calculate their limits.

MAJ103-CO5: Explain the difference and relation between a Cauchy sequence and a convergent sequence.

Content

Unit: 1	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ103-Ob1	Cognitive levels achieved through outcomes:	
	Remembering:	MAJ103-CO1 and MAJ103-CO2
	Understanding:	MAJ103-CO1 and MAJ103-CO2
	Applying:	MAJ103-CO1 and MAJ103-CO2
REVIEW OF THE SET OF REAL NUMBERS: Algebraic, Order and Completeness axioms. Archimedean property. Density property of rational numbers. Nested interval theorem. Decimal representation of real numbers. Cardinality of sets. Uncountability of $\mathbb{R}$.		

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ103-Ob2	Cognitive levels achieved through outcomes:	
	Remembering:	MAJ103-CO3
	Understanding:	MAJ103-CO3
	Applying:	MAJ103-CO3
SUBSETS OF $\mathbb{R}$: Interior points, Open sets, Closed sets, Limit points, Derived sets, Bolzano-Weierstrass' theorem, Closure of a Set.		

Unit: 3	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ103-Ob3	Cognitive levels achieved through outcomes: Remembering: MAJ103-CO4 Understanding: MAJ103-CO4 and MAJ103-CO5 Applying: MAJ103-CO4 and MAJ103-CO5	
SEQUENCES OF REAL NUMBERS: Bounded sequence. Convergent and limit of a sequence. Limit theorems. Monotone sequences, monotone convergence theorem. Subsequences, Bolzano-Weierstrass' theorem for sequences, limit superior and limit inferior, monotone subsequence theorem (statement only). Cauchy sequence, Cauchy's convergence criterion.		

Unit: 4	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ103-Ob3	Cognitive levels achieved through outcomes: Remembering: MAJ103-CO4 Understanding: MAJ103-CO4 Applying: MAJ103-CO4	
INFINITE SERIES OF REAL NUMBERS: Convergence and divergence, Cauchy criterion. Tests for convergence (statements only): Comparison test (first and second kind), Ratio test, Root test, Condensation test, Raabe's test, Logarithmic test, Gauss's test. Alternating series, Leibniz test, absolute and conditional convergence, Riemann's rearrangement theorem (statement only). (Only) Applications of Abel's test and Dirichlet's test.		

Suggested readings

1. Mapa, S K, *Introduction to Real Analysis*, Sarat Book House.
2. Bartle, R G, and Sherbert, D R, *Introduction to Real Analysis*, Wiley India Edition, Wiley India Pvt Ltd.

Reference books

1. Goldberg, R R, *Methods of Real Analysis*, Oxford & IBH Publishing.
2. Apostol, T M, *Mathematical Analysis*, Narosa Publications.
3. Rudin, W, *Principles of Mathematical Analysis*, Tata McGraw Hill Education.
4. Tao, T, *Analysis I*, TRIM Series, Hindustan Book Agency.
5. Lang, S, *Undergraduate Analysis*, Undergraduate Texts in Mathematics Series, Springer.
6. Abbott, S, *Understanding Analysis*, Undergraduate Texts in Mathematics Series, Springer.

2.3.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

2.4 23MATMAJ104: Abstract Algebra I

2.4.1 Course description

<i>Course code:</i> 23MATMAJ104 <i>Course category:</i> Major <i>Title of the course:</i> Abstract Algebra I				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
II	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- basic properties of addition and multiplication of real numbers, complex numbers, matrices;;
- basic congruence arithmetic;
- composition of functions.

Objectives

At the end of the course, the students should be able to

MAJ104-Ob1	Describe and provide examples (with justifications) of groups from different domains of mathematics.
MAJ104-Ob2	Investigate whether a given subset of a group is a subgroup.
MAJ104-Ob3	Illustrate power of an element, order of an element and order of a group.
MAJ104-Ob4	Demonstrate a coset of a subgroup and prove Lagrange's theorem for a finite group.

Corresponding outcomes

The outcomes corresponding to the learning objectives [MAJ104-Ob1](#), are

MAJ104-CO1: Remember the postulates of a group and verify them for a given non-empty set with a binary composition.

MAJ104-CO2: Apply various results to construct a group from an algebraic structure satisfying an incomplete set of postulates.

The outcome corresponding to the learning objective [MAJ104-Ob2](#), is

MAJ104-CO3: Prove the necessary and sufficient condition for a subset to be a subgroup, and apply it in various examples.

The outcome corresponding to the learning objective [MAJ104-Ob3](#), is

MAJ104-CO4: Prove various results regarding order of an element and order of a group.

The outcome corresponding to the learning objective [MAJ104-Ob4](#), is

MAJ104-CO5: State and prove Lagrange's theorem and apply it in various scenarios.

Content

Unit: 1	Credits: 2	Lecture hours: 30
Objectives mapped: MAJ104-Ob1	Cognitive levels achieved through outcomes: Remembering: MAJ104-CO1 Understanding: MAJ104-CO1 and MAJ104-CO2 Applying: MAJ104-CO1 and MAJ104-CO2	

Groupoid, semigroup, monoid, groups, commutative groups; Elementary properties of groups: finite semigroup with cancellation properties is a group, semigroup containing unique solution of $ax = b$ and $xa = b$ is a group. Particularly, $\mathbb{Z}_n$ group, U_n group, Klein's 4 group, symmetric group S_n , alternating group A_n , matrix group $M_n(\mathbb{R})$, multiplicative group of n^{th} roots of unity, Dihedral group, quaternion group (through matrices) etc.

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ104-Ob2	Cognitive levels achieved through outcomes:	
	Remembering:	MAJ104-CO3
	Understanding:	MAJ104-CO3
	Applying:	MAJ104-CO3
Subgroups and examples of subgroups; Necessary and sufficient conditions for a subset of a group to be a subgroup; Union and intersection of subgroups; Centralizer, normalizer, center of a group, product of two subgroups.		

Unit: 3	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ104-Ob3 and MAJ104-Ob4	Cognitive levels achieved through outcomes: Remembering: MAJ104-CO4 and MAJ104-CO5 Understanding: MAJ104-CO4 and MAJ104-CO5 Applying: MAJ104-CO4 and MAJ104-CO5	
Order of an element and a group; Generators, cyclic group and its properties, necessary and sufficient condition; Cosets, properties of cosets, Lagrange's theorem and consequences including Fermat's Little theorem.		

Suggested readings

1. Mapa, S K, *Higher Algebra: Abstract and Linear*, Sarat Book House.
2. Khan, R M, *Algebra: Classical, Modern, Linear and Boolean*, New Central Book Agency.
3. Herstein, I N, *Topics in Algebra*, Wiley.
4. Dummit, D S and Foote, R M, *Abstract Algebra*, Wiley.

Reference books

1. Chakraborty, A, *Modern Algebra*, Levant Books.
2. Gallian, J A, *Contemporary Abstract Algebra*, Narosa Publishing House.
3. Artin, M, *Abstract Algebra*, Pearson.
4. Rotman, J J, *An Introduction to the Theory of Groups*, Springer Verlag.

2.4.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

2.5 23MATMAJ201: Linear Algebra I

2.5.1 Course description

<i>Course code:</i> 23MATMAJ201				
<i>Course category:</i> Major				
<i>Title of the course:</i> Linear Algebra I				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
III	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- basic properties of addition and multiplication of real numbers, complex numbers, matrices, determinants;
- the course 23MATVAC102.

Objectives

At the end of the course, the students should be able to

MAJ201-Ob1	Define and understand vector space and related concepts.
MAJ201-Ob2	Understand Cayley-Hamilton theorem and compute eigenvalues and eigenvectors.
MAJ201-Ob3	Apply elementary operations to find the rank of a matrix.
MAJ201-Ob4	Analyse properties of a linear transformation and establish its properties.
MAJ201-Ob5	Find the change of basis matrix.

Corresponding outcomes

The outcomes corresponding to the learning objective **MAJ201-Ob1**, are

MAJ201-CO1: Define vector space, subspace, basis, linear transformation,

MAJ201-CO2: State and prove various related theorems.

The outcome corresponding to the learning objective **MAJ201-Ob2**, is

MAJ201-CO3: Prove Cayley-Hamilton theorem and compute eigenvalues and eigenvectors.

The outcomes corresponding to the learning objective **MAJ201-Ob3**, are

MAJ201-CO4: Apply elementary operations to find the rank of a matrix.

MAJ201-CO5: Analyse and solve a system of linear equations using rank of the coefficient matrix.

The outcomes corresponding to the learning objective **MAJ201-Ob4**, are

MAJ201-CO6: Prove various related theorems.

MAJ201-CO7: Find the matrix of a linear transformation and determine properties of the same in terms of the matrix.

The outcome corresponding to the learning objective **MAJ201-Ob5**, is

MAJ201-CO8: Find the change of basis matrix.

Content

Unit: 1	Credits: 2	Lecture hours: 30
Objectives mapped: MAJ201-Ob1	Cognitive levels achieved through outcomes: Remembering: MAJ201-CO1 Understanding: MAJ201-CO1 and MAJ201-CO2	
Vector spaces, subspaces, algebra of subspaces, quotient spaces. Linear combination of vectors, linear span, linear independence, basis and dimension. Deletion, Existence, Extension and Replacement theorems for basis of finite dimensional vector spaces. Ordered basis, coordinatisation of vectors.		

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ201-Ob2 and MAJ201-Ob3	Cognitive levels achieved through outcomes: Understanding: MAJ201-CO2 Applying: MAJ201-CO3 Analysing: MAJ201-CO4	

Rank of a matrix, row and column rank. Determination of rank using elementary operations, echelon matrices, normal form. System of linear equations: homogeneous system, non-homogeneous system. Characteristics polynomial, characteristics equation. Eigenvalues and eigenvectors of a matrix. Cayley-Hamilton Theorem.

Unit: 3	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ201-Ob4 and MAJ201-Ob5	Cognitive levels achieved through outcomes: Understanding: MAJ201-CO6 and MAJ201-CO8 Evaluating: MAJ201-CO7	
Linear transformations (LT): null space, range space, rank and nullity of a LT, Rank-Nullity theorem. Matrix representation of a LT relative to ordered bases. Algebra of LTs, correspondence between LTs and matrices. Properties of LTs in terms of matrices. Change of coordinate matrix.		

Suggested readings

1. Mapa, S K, *Higher Algebra: Abstract and Linear*, Sarat Book House.
2. Khan, R M, *Algebra: Classical, Modern, Linear and Boolean*, New Central Book Agency.
3. Hoffman, K and Kunze, R, A, *Linear Algebra*, Prentice Hall of India Pvt Ltd.

Reference books

1. Friedberg, S H, Insel, A J, and Spence, L A, *Linear Algebra*, 4th Ed, Prentice Hall of India Pvt Ltd, 2004.
2. Lang, S, *Introduction to Linear Algebra*, 2nd Ed, Springer, 2005.
3. Strang, G, *Linear Algebra and its Applications*, Thomson, 2007.
4. Kumaresan, S, *Linear Algebra – A Geometric Approach*, Prentice Hall of India, 1999.
5. Lay, D C, *Linear Algebra and its Applications*, 3rd Ed, Pearson Education Asia, Indian Reprint, 2007.

2.5.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

2.5.3 Approval (23MATMAJ201)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Manoj Ray Bakshi	Subhajit Paul	Subhajit Paul

2.6 23MATMAJ202: Real Analysis II

2.6.1 Course description

<i>Course code:</i> 23MATMAJ202				
<i>Course category:</i> Major				
<i>Title of the course:</i> Real Analysis II				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
III	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- the definition of relations, mappings and related concepts.
- the course 23MATMAJ103.

Objectives

At the end of the course, the students should be able to

- MAJ202-Ob1 Define and compute limit of a function.
- MAJ202-Ob2 Identify the points of continuity and discontinuity of a function.
- MAJ202-Ob3 Understand, prove and apply various properties of continuous functions.
- MAJ202-Ob4 Understand the notion of differentiability of a function.
- MAJ202-Ob5 Evaluate the Taylor series expansion of a given function.

Corresponding outcomes

The outcomes corresponding to the learning objective **MAJ202-Ob1**, are

MAJ202-CO1: Define both-sided and one-sided limits of a function.

MAJ202-CO2: Prove various theorems and apply them to find the limit of a function.

The outcome corresponding to the learning objective [MAJ202-Ob2](#), are

MAJ202-CO3: Define a continuous function.

MAJ202-CO4: Apply various results to determine the continuity of a function.

The outcome corresponding to the learning objective [MAJ202-Ob3](#), are

MAJ202-CO5: Understand, prove and apply various properties of continuous functions.

MAJ202-CO6: Uniformly continuous functions and compact sets.

The outcome corresponding to the learning objective [MAJ202-Ob4](#), are

MAJ202-CO7: Determine whether a function is differentiable at a given point.

MAJ202-CO8: Prove and apply various related results.

The outcome corresponding to the learning objective [MAJ202-Ob5](#), is

MAJ202-CO9: Evaluate the Taylor series expansion of a given function.

Content

Unit: 1	Credits: 1	Lecture hours: 10
Objectives mapped: MAJ202-Ob1	Cognitive levels achieved through outcomes: Remembering: MAJ202-CO1 Understanding: MAJ202-CO2 Applying: MAJ202-CO2	
LIMIT OF A FUNCTION: ϵ - δ definition, sequential criterion for limits, divergence criteria. Limit theorems, one sided limits. Infinite limits and limits at infinity.		

Unit: 2	Credits: 1	Lecture hours: 25
Objectives mapped: MAJ202-Ob2 and MAJ202-Ob3	Cognitive levels achieved through outcomes: Remembering: MAJ202-CO3 Understanding: MAJ202-CO5 Applying: MAJ202-CO4 Analysing: MAJ202-CO6	
CONTINUITY: ϵ-δ definition, sequential criterion for continuity. Algebra of continuous functions. Continuous functions on an interval: Bolzano's theorem, intermediate value theorem, preservation of intervals theorem. Discontinuities, types of discontinuity. Uniform continuity, non-uniform continuity criteria, uniform continuity theorem. Lipschitz condition. Compact sets: Open cover definition. Characterisations of compact sets, Heine-Borel theorem, sequential and Bolzano-Weierstrass compactness. Continuous functions on compact sets.		

Unit: 3	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ202-Ob4	Cognitive levels achieved through outcomes: Understanding: MAJ202-CO7 Applying: MAJ202-CO7 Evaluating: MAJ202-CO8	
DIFFERENTIATION: Differentiability of a function at a point and in an interval, Carathéodory's theorem, algebra of differentiable functions. Intermediate value property of derivatives: Darboux's theorem. Relative extrema, absolute extremum theorem. Mean value theorems (MVT): Rolle's theorem, Lagrange's MVT, Cauchy's MVT. Applications of mean value theorem to inequalities and approximation of polynomials.		

Unit: 4	Credits: 1	Lecture hours: 10
Objectives mapped: MAJ202-Ob5	Cognitive levels achieved through outcomes: Analysing: MAJ202-CO8	
Taylor's theorem with Lagrange's form, Cauchy's form and general form of remainder. Taylor's series and Maclaurin's series expansions of various functions. Application of Taylor's theorem to inequalities.		

Suggested readings

1. Mapa, S K, *Introduction to Real Analysis*, Sarat Book House.
2. Bartle, R G, and Sherbert, D R, *Introduction to Real Analysis*, Wiley India Edition, Wiley India Pvt Ltd.
3. Ghosh, R K, and Maity, K C, *An Introduction to Analysis, Differentail Calculus: Part I*, New Central Book Agency (P) Ltd.
4. Malik, S C, and Arora, S, *Mathematical Analysis*, New Age International Pvt Ltd.

Reference books

1. Goldberg, R R, *Methods of Real Analysis*, Oxford & IBH Publishing.
2. Apostol, T M, *Mathematical Analysis*, Narosa Publications.
3. Rudin, W, *Principles of Mathematical Analysis*, Tata McGraw Hill Education.
4. Tao, T, *Analysis I*, TRIM Series, Hindustan Book Agency.
5. Lang, S, *Undergraduate Analysis*, Undergraduate Texts in Mathematics Series, Springer.
6. Abbott, S, *Understanding Analysis*, Undergraduate Texts in Mathematics Series, Springer.

2.6.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

2.6.3 Approval (23MATMAJ202)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Subhajit Paul	Subhajit Paul	Subhajit Paul

2.7 23MATMAJ203: Abstract Algebra II

2.7.1 Course description

<i>Course code:</i> 23MATMAJ203				
<i>Course category:</i> Major				
<i>Title of the course:</i> Abstract Algebra II				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
IV	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- the course 23MATMAJ104.

Objectives

At the end of the course, the students should be able to

- MAJ203-Ob1** Understand the relation between normal subgroups and group homomorphisms.
- MAJ203-Ob2** Apply the fundamental concepts in ring theory such as of the ideals, quotient rings, integral domains, and fields in further branches of pure and applied Mathematics.
- MAJ203-Ob3** Apply ring homomorphism and isomorphism theorems in the branch of modules, Galois Theory and field extensions.

Corresponding outcomes

The outcome corresponding to the learning objective **MAJ203-Ob1**, is

MAJ203-CO1: Identify and manipulate normal subgroups and corresponding group homomorphisms.

The outcome corresponding to the learning objective **MAJ203-Ob2**, is

MAJ203-CO2: Describe and analyse the fundamental concepts in ring theory such as of the ideals, quotient rings, integral domains, and fields.

The outcomes corresponding to the learning objective **MAJ203-Ob3**, are

MAJ203-CO3: Describe ring homomorphism, kernel and image of a homomorphism.

MAJ203-CO4: Demonstrate three ring isomorphism theorems with examples.

Content

Unit: 1	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ203-Ob1	Cognitive levels achieved through outcomes: Understanding: MAJ203-CO1 Analysing: MAJ203-CO1	
Normal subgroups. Quotient groups. Group homomorphisms. Isomorphism theorems.		

Unit: 2	Credits: 2	Lecture hours: 30
Objectives mapped: MAJ203-Ob1	Cognitive levels achieved through outcomes: Understanding: MAJ203-CO2 Analysing: MAJ203-CO2	
Definition and examples of rings and fields. Properties of rings, subrings, integral domains and fields. Necessary and sufficient conditions for subrings and subfields. Characteristics of a ring. Ideal, ideal generated by a subset of a ring, operations on ideals, prime and maximal ideals. Quotient rings.		

Unit: 3	Credits: 1	Lecture hours: 15

Objectives mapped: MAJ203-Ob2	Cognitive levels achieved through outcomes: Understanding: MAJ203-CO3 Applying: MAJ203-CO4 Analysing: MAJ203-CO4
Ring homomorphisms: properties of ring homomorphisms. Isomorphism theorems I, II and III.	

Suggested readings

1. Mapa, S K, *Higher Algebra: Abstract and Linear*, Sarat Book House.
2. Fraleigh, J B, *A First Course in Abstract Algebra*, 7th Ed, Pearson, 2002.
3. Herstein, I N, *Topics in Algebra*, Wiley.
4. Dummit, D S and Foote, R M, *Abstract Algebra*, Wiley.

Reference books

1. Sen, M K, Ghosh, S, Mukhopadhyay P, Maity S, *Topics in Abstract Algebra*, 4th Ed, Universities Press.
2. Chakraborty, A, *Modern Algebra*, Levant Books.
3. Gallian, J A, *Contemporary Abstract Algebra*, Narosa Publishing House.
4. Artin, M, *Abstract Algebra*, Pearson.
5. Rotman, J J, *An Introduction to the Theory of Groups*, Springer Verlag.

2.7.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

2.7.3 Approval (23MATMAJ203)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Debdut Sengupta	Subhajit Paul	Subhajit Paul

2.8 23MATMAJ204: Real Analysis III

2.8.1 Course description

<i>Course code:</i> 23MATMAJ204				
<i>Course category:</i> Major				
<i>Title of the course:</i> Real Analysis III				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
IV	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- the course 23MATMAJ202.

Objectives

At the end of the course,

- MAJ204-Ob1 Students will be able to articulate the fundamental principles of Riemann integration and apply them to solve problems.
- MAJ204-Ob2 Understanding of sequence and series concepts will enable students to analyse and manipulate functions, providing a strong foundation for advanced mathematical studies.
- MAJ204-Ob3 Application of power series in problem-solving scenarios will enhance students' mathematical modeling skills and analytical thinking.
- MAJ204-Ob4 Students will develop the ability to reason mathematically and construct logical arguments in the context of calculus concepts.
- MAJ204-Ob5 Analyse mathematical structures and understanding the convergence and divergence of functions in various mathematical contexts.

Corresponding outcomes

The outcome corresponding to the learning objective [MAJ204-Ob1](#), is

MAJ204-CO1: Articulate the fundamental principles of Riemann integration and apply them to solve problems.

The outcome corresponding to the learning objective [MAJ204-Ob2](#), is

MAJ204-CO2: Analyse and manipulate functions, providing a strong foundation for advanced mathematical studies.

The outcome corresponding to the learning objective [MAJ204-Ob3](#), is

MAJ204-CO3: Model a given problem in terms of sequences and series of functions and evaluate its various properties.

The outcome corresponding to the learning objective [MAJ204-Ob4](#), is

MAJ204-CO4: Solve various problems in the context of Calculus concepts.

The outcome corresponding to the learning objective [MAJ204-Ob5](#), is

MAJ204-CO5: Analyse mathematical structures and understanding the convergence and divergence of functions in various mathematical contexts.

Content

Unit: 1	Credits: 2	Lecture hours: 30
Objectives mapped: MAJ204-Ob1 and MAJ204-Ob2	Cognitive levels achieved through outcomes: Understanding: MAJ204-CO1 Applying: MAJ204-CO2 Analysing: MAJ204-CO2	
RIEMANN INTEGRATION: Formulation of Riemann integration: partition, lower sum, upper sum, inequalities of lower sum and upper sum. Upper integral and lower integral. Darboux's definition of Riemann integration. Necessary and sufficient conditions for Riemann integration. Riemann sum, Riemann's definition of integration. Integrability of functions: continuous functions, functions with finitely many points of discontinuity, functions with infinitely many points of discontinuity. Riemann integrability of functions of the form: cf , $f \pm g$, fg , $ f $, monotone functions. Intermediate value theorem for integrals; Fundamental theorem of Integral Calculus, Mean value theorems of Integral Calculus: First Mean value theorem, Second Mean value theorem, Bonnet's form & Weierstrass form (Statement only).		

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ204-Ob3 and MAJ204-Ob4	Cognitive levels achieved through outcomes: Understanding: MAJ204-CO3 Applying: MAJ204-CO4 Evaluating: MAJ204-CO3	

SEQUENCE OF FUNCTIONS: Definition, pointwise and uniform convergence, limit function, Cauchy condition for uniform convergence, sup-norm test for uniform convergence, Dini's theorem. Theorems on continuity, derivability and integrability of the limit function of a sequence of functions.

SERIES OF FUNCTIONS: Definition, pointwise and uniform convergence, sum function, Weierstrass M -test for uniform convergence. Theorems on continuity, derivability and integrability of the sum function of a series of functions, Abel's test and Dirichlet's test (statement only).

Unit: 3	Credits: 1	Lecture hours: 15
Objectives mapped: MAJ204-Ob4 and MAJ204-Ob5	Cognitive levels achieved through outcomes: Applying: MAJ204-CO5 Evaluating: MAJ204-CO4	
POWER SERIES: Definition, convergence, radius of convergence, interval of convergence, derivability and integration of sum function, term by term differentiation and integration, equality of power series, Abel’s theorem and Weierstrass approximation theorem (statement only).		

Suggested readings

1. Ghosh, R K, and Maity, K C, *An Introduction to Analysis, Integral Calculus*, New Central Book Agency (P) Ltd.
2. Ghosh, R K, and Maity, K C, *An Introduction to Analysis, Differentail Calculus: Part II*, New Central Book Agency (P) Ltd.
3. Mapa, S K, *Introduction to Real Analysis*, Sarat Book Distributors.

Reference books

1. Bartle, R G, and Sherbert, D R, *Introduction to Real Analysis*, Wiley India Edition, Wiley India Pvt Ltd.
2. Narayan, S, and Mittal, P K, *Integral Calculus*, S Chand & Co Ltd.
3. Apostol, T M, *Calculus, Vol: I*, Willey student edition, Wiley India Pvt Ltd.
4. Ross, K A, *The Theory of Calculus*, Undergraduate Texts in Mathematics, Springer (SIE), Indian Reprint, 2004.

2.8.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.

- (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
- (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

2.8.3 Approval (23MATMAJ204)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Bikiran Das	Subhajit Paul	Subhajit Paul

2.9 23MATMAJ205: Ordinary Differential Equations II & Three-dimensional Geometry

2.9.1 Course description

<i>Course code:</i> 23MATMAJ205 <i>Course category:</i> Major <i>Title of the course:</i> Ordinary Differential Equations II & Three-dimensional Geometry				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
IV	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- the course 23MATMAJ101.
- the course 23MATMAJ102.
- basic concepts of 3-D geometry, such as the equation of a plane, distance between points in 3D, and visualization of 3D objects.

Objectives

At the end of the course, the students should be able to

MAJ205-Ob1	Introduce the concept of power series solutions for solving ordinary differential equations, focusing on their convergence and applications.

- MAJ205-Ob2** Introduce phase plane analysis as a method for visualizing and understanding the behaviour of solutions to first-order systems of ordinary differential equations.
- MAJ205-Ob3** Study stability concepts in the context of phase plane analysis, identifying critical points and classifying them as stable, unstable, or semi-stable.
- MAJ205-Ob4** Understand the geometrical terminologies and have a detailed idea of the planes, straight lines in 3D, Spheres, Cylindrical surfaces, Central Conicoids, Paraboloids, Plane sections of Conicoids along with the tangent and normal of the Conicoids.
- MAJ205-Ob5** Develop an idea of classification of quadrics.
- MAJ205-Ob6** Develop an idea of generating lines.
- MAJ205-Ob7** Be familiar with the illustrations of graphing standard quadric surfaces like cones, Paraboloids, hyperboloids and ellipsoids.

Corresponding outcomes

The outcome corresponding to the learning objective **MAJ205-Ob1**, is

MAJ205-CO1: Apply power series method to find the solution of the ordinary differential equation understanding the convergence and divergence.

The outcome corresponding to the learning objective **MAJ205-Ob2**, is

MAJ205-CO2: Learn and apply phase plane analysis techniques to visualize and interpret solutions to first-order systems of differential equations.

The outcome corresponding to the learning objective **MAJ205-Ob3**, is

MAJ205-CO3: Analyse stability concepts in the context of phase plane analysis, identifying critical points and classifying them as stable, unstable, or semi-stable.

The outcomes corresponding to the learning objective **MAJ205-Ob4**, are

MAJ205-CO4: Acquire a level of proficiency in particular in using equation of plane in terms of its intercepts on axis and the equation of the planes through the given point length of the perpendicular from a given point to a given plane.

MAJ205-CO5: Explore the basic concept of the equation of a line, angle between the line and a plane, and the shortest distance between two lines.

MAJ205-CO6: Develop their knowledge and apply the skills in the study of the sphere.

The outcome corresponding to the learning objectives **MAJ205-Ob5** to **MAJ205-Ob7**, is

MAJ205-CO7: Gain a broader understanding on cones, Paraboloids, ellipsoids, hyperboloids and use the facts, formulas and techniques learned in this course to prove applications of those.

Content

Unit: 1	Credits: 2	Lecture hours: 30
Objectives mapped: MAJ205-Ob1 to MAJ205-Ob3	Cognitive levels achieved through outcomes: Remembering: MAJ205-CO2 Understanding: MAJ205-CO1 Applying: MAJ205-CO1 to MAJ205-CO3	
ORDINARY DIFFERENTIAL EQUATIONS: Singularities and their classifications. Power series solution of a differential equation about an ordinary point, solution about a regular singular point. Equilibrium points, interpretation of the phase plane, critical points and paths of linear systems and non-linear systems.		

Unit: 2	Credits: 2	Lecture hours: 30
Objectives mapped: MAJ205-Ob4 to MAJ205-Ob7	Cognitive levels achieved through outcomes: Remembering: MAJ205-CO4 to MAJ205-CO7 Understanding: MAJ205-CO4 to MAJ205-CO7 Applying: MAJ205-CO4 to MAJ205-CO7	
THREE DIMENSIONAL GEOMETRY: Introduction to coordinate system in three dimension. Straight line, Plane, Spheres, Cylindrical surfaces, Central Conicoids, Paraboloids, Plane sections of Conicoids, Generating lines, Classification of quadrics.		

Suggested readings

1. Chakravorty, J G, and Ghosh, P R, *Advanced Analytical Geometry*, U N Dhur and Sons Pvt Ltd.
2. Khan, R M, *Analytical Geometry of Two and Three Dimensions and Vector Analysis*, New Central Book Agency.
3. Ghosh, R K and Maity, K C, *An Introduction to differential equations*, New Central Book Agency.
4. Raisinghanian, M D, *Ordinary and Partial Differential Equations*, S Chand Publishing.
5. Ross, S L, *Differential Equations*, Wiley.

Reference books

1. Coddington, E A, *An Introduction to Ordinary Differential Equations*, Dover Books on Mathematics Series, Dover Publications Inc.
2. Bej, N K, and Mukherjee, A, *Analytical Geometry of Two & Three Dimensions (Advanced Level)*, Book & Allied Pvt Ltd.

2.9.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.

2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:

- (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
- (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
- (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

2.9.3 Approval (23MATMAJ205)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Snigdha Roy	Subhajit Paul	Subhajit Paul

SYLLABI FOR MATHEMATICS MINOR COURSES

3.1 23MATMIN101: Linear Algebra and Differential Equations

3.1.1 Course description

<i>Course code:</i> 23MATMIN101				
<i>Course category:</i> Major				
<i>Title of the course:</i> Linear Algebra and Differential Equations				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
I	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- basic algebraic manipulations with one or more real variables, matrices, determinants (up to order 3) etc.;
- computational processes in calculus like evaluating limits, investigating continuity, etc.;
- different differentiation techniques, including rules for differentiation, chain rule, product rule, and quotient rule;
- different techniques of integration, such as substitution, integration by parts, partial fractions, etc.

Objectives

At the end of the course, the students should be able to

MIN101-Ob1	Identify an invertible matrix and compute the inverse using elementary operations.
MIN101-Ob2	Investigate a system of linear equations and find the solution(s).
MIN101-Ob3	Compute and analyse the eigenvalues and eigenvectors of a matrix.

MIN101-Ob4 Develop a solid understanding of the basic concepts related to ordinary differential equations (ODEs) including order, linearity, and solutions (particular solutions, general solutions, and initial value problems) and also learn to classify different types of ODEs based on their order, linearity, and degree.

MIN101-Ob5 Learn different techniques to solve first order and higher order ODEs.

Corresponding outcomes

The outcome corresponding to the learning objective **MIN101-Ob1**, is

MIN101-CO1: Use elementary operations to compute rank of a matrix by reducing to echelon or normal forms.

The outcome corresponding to the learning objective **MIN101-Ob2**, is

MIN101-CO2: Identify a solvable system of linear equations and solve it.

The outcomes corresponding to the learning objective **MIN101-Ob3**, are

MIN101-CO3: Compute eigenvalues by solving the characteristic equation and find corresponding eigenvectors,

MIN101-CO4: Use Cayley-Hamilton theorem to find the inverse of a matrix.

The outcome corresponding to the learning objective **MIN101-Ob4**, is

MIN101-CO5: Identify different types of ODEs.

The outcome corresponding to the learning objective **MIN101-Ob5**, are

MIN101-CO6: Apply different techniques to solve first order and higher order ODEs.

Content

Unit: 1	Credits: 2	Lecture hours: 30
Objectives mapped: MIN101-Ob1 to MIN101-Ob3	Cognitive levels achieved through outcomes: Remembering: MIN101-CO1 and MIN101-CO2 Understanding: MIN101-CO1 and MIN101-CO2 Applying: MIN101-CO1 to MIN101-CO4	
LINEAR ALGEBRA: Elementary operations, Row/column reduced echelon matrix, Rank of matrix, Normal forms, Inverse of a matrix. Systems of linear equations: $AX = b$. Solutions, Consistency, Coefficient matrix. Homogeneous and non-homogeneous system of equations. Solutions using elementary operations. Characteristic polynomial and Characteristic equation of a square matrix. Cayley-Hamilton theorem. Computations (only) of eigenvalues and eigenvectors.		

Unit: 2	Credits: 2	Lecture hours: 30
Objectives mapped: MIN101-Ob4 and MIN101-Ob5	Cognitive levels achieved through outcomes: Remembering: MIN101-CO5 and MIN101-CO6 Understanding: MIN101-CO5 and MIN101-CO6 Applying: MIN101-CO5 and MIN101-CO6	
DIFFERENTIAL EQUATIONS: Examples and formulations. General, particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equation and Bernoulli equations, special integrating factors and transformations.		
General solution of homogeneous equation of second order, principle of super position for homogeneous equation, Wronskian: its properties and applications, Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation, method of undetermined coefficients, method of variation of parameters.		

Suggested readings

1. Mapa, S K, *Higher Algebra: Abstract and Linear*, Levant Books.
2. Ghosh, R K, and Maity, K C, *An Introduction to Differential Equations*, New Central Book Agency.
3. Raisinghania, M D, *Ordinary and Partial Differential Equation*, S Chand Publishing.

Reference books

1. Hoffman, K, and Kunze, R, *Linear Algebra*, Prentice Hall India Learning Private Limited.
2. Ross, S L, *Differential Equations*, Wiley.

3.1.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

3.2 23MATMIN201: Discrete Mathematics

3.2.1 Course description

<i>Course code:</i> 23MATMIN201				
<i>Course category:</i> Minor				
<i>Title of the course:</i> Discrete Mathematics				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
III	4	4	60	2023

Prerequisites

Before attending the course, students should be familiar with

- concepts of sets, functions and relations,
- basic concepts of permutations and combinations.

Objectives

At the end of the course, the students should be able to

- MIN201-Ob1 Describe the concepts of mathematical logic.
- MIN201-Ob2 Illustrate the concepts of sets, relations, and functions.
- MIN201-Ob3 Perform the operations associated with sets, functions, and relations.
- MIN201-Ob4 Relate practical examples to the appropriate set, function, or relation model, and interpret the associated operations and terminology in context.

Corresponding outcomes

The outcome corresponding to the learning objective **MIN201-Ob1**, is

MIN201-CO1: Applying mathematical logic to solve problems.

The outcome corresponding to the learning objective **MIN201-Ob2**, is

MIN201-CO2: Understanding sets, relations, functions and discrete structures.

The outcome corresponding to the learning objectives **MIN201-Ob3** and **MIN201-Ob4**, is

MIN201-CO3: Using logical notations to define and reason about fundamental mathematical concepts such as sets relations and functions.

Content

Unit: 1	Credits: 2	Lecture hours: 30
Objectives mapped: MIN201-Ob2 and MIN201-Ob3	Cognitive levels achieved through outcomes: Understanding: MIN201-CO2 Applying: MIN201-CO3	
Set theory, operations and algebra, switching circuits as an application. Relations and their properties, equivalence relations, partial order relations. Functions, domain, codomain, range, the properties of one-to-one and onto, composite and inverse functions.		

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: MIN201-Ob1	Cognitive levels achieved through outcomes: Understanding: MIN201-CO1 Applying: MIN201-CO1	
Introduction to logic, quantifiers and conditional propositions. Truth tables. Tautology and contradiction.		

Unit: 3	Credits: 1	Lecture hours: 15
Objectives mapped: MIN201-Ob1	Cognitive levels achieved through outcomes: Understanding: MIN201-CO1 Applying: MIN201-CO1	
Fundamental Counting Principles: Permutations, Derangements, Combinations, Permutations and Combinations with repetitions, Binomial theorem. Generalised Inclusion Exclusion Principle. Pigeonhole principle.		

Suggested readings

1. Veerarajan, T, *Discrete Mathematics, with Graph Theory and Combinatorics*, McGraw Hill Education.
2. Rosen, K H, *Discrete Mathematics and its Applications*, 7th Ed, McGraw Hill Education (India) Pvt Ltd.
3. Grimaldi, R P, *Discrete and Combinatorial Mathematics*, Pearson.
4. Malik, D S, and Sen, M K, *Discrete Mathematics*, Revised edition, Cengage Learning.
5. Liu, C L, and Mohapatra, D P, *Elements of Discrete Mathematics*, 4th Ed, McGraw Hill Education (India) Private Limited.

3.2.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.

2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:

- (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
- (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
- (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

3.2.3 Approval (23MATMIN201)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Debdut Sengupta	Subhajit Paul	Subhajit Paul

SYLLABI FOR SKILL ENHANCEMENT COURSES

4.1 23MATSEC101: Typesetting in $\text{\LaTeX}$

4.1.1 Course description

<i>Course code:</i> 23MATSEC101				
<i>Course category:</i> Skill Enhancement				
<i>Title of the course:</i> Typesetting in $\text{\LaTeX}$				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
I	1(L)+2(P) = 3	5	75	2023

Prerequisites

To attend this course, the students should have access to a computer with internet facility.

Objectives

At the end of the course, the students should be able to

- SEC101-Ob1 Use the preamble of the `.tex` file to define document class and layout options.
- SEC101-Ob2 Include figures, tables, lists, and mathematical equations in a $\text{\LaTeX}$ document.
- SEC101-Ob3 Draw basic diagrams using `TikZ` package.
- SEC101-Ob4 Refer to different items within the document.
- SEC101-Ob5 Generate a bibliography for a particular document.

Corresponding outcomes

The outcome corresponding to the learning objectives **SEC101-Ob1**, is

SEC101-CO1: Create a $\text{\LaTeX}$ document with chapters, sections, subsections, etc., and also to manage the paper size and margins.

The outcome corresponding to the learning objective **SEC101-Ob2**, is

SEC101-CO2: Include figures, tables, **longtables**, enumerated and itemized lists, and mathematical equations at desired positions in a $\text{\LaTeX}$ document.

The outcome corresponding to the learning objective **SEC101-Ob3**, is

SEC101-CO3: Draw line joining two points, circle, ellipse, parabola, ellipse, and other plane geometry diagrams.

The outcome corresponding to the learning objective **SEC101-Ob4**, is

SEC101-CO4: Refer to different items within the document using **hyperref**, **cleveref**, **varioref** packages.

The outcome corresponding to the learning objective **SEC101-Ob5**, is

SEC101-CO5: Use **BibTeX** to maintain bibliographic information and to generate a bibliography for a particular document.

Content

Unit: 1	Credits: 1	Lecture hours: 25
Objectives mapped: SEC101-Ob1 and SEC101-Ob2	Cognitive levels achieved through outcomes: Remembering: SEC101-CO1 and SEC101-CO2 Understanding: SEC101-CO1 and SEC101-CO2 Applying: SEC101-CO1 and SEC101-CO2	
What is L ^A T _E X. Basics for document structuring, preamble preparation, saving a folder. L ^A T _E X commands for font colour, font size, make title, begin document, new page, sectioning. beamer document class.		
Creating Tables, Inserting figures, enumeration list, itemized list, inserting equations.		

Unit: 2	Credits: 1	Lecture hours: 20
Objectives mapped: SEC101-Ob3	Cognitive levels achieved through outcomes: Remembering: SEC101-CO3 Understanding: SEC101-CO3	
Ti&Kz PACKAGE: Draw line joining two points, circle, ellipse, parabola, ellipse, and other plane geometry diagrams. Use of nodes.		

Unit: 3	Credits: 1	Lecture hours: 30
Objectives mapped: SEC101-Ob4 and SEC101-Ob5	Cognitive levels achieved through outcomes: Remembering: SEC101-CO4 and SEC101-CO5 Understanding: SEC101-CO4 and SEC101-CO5	
REFERENCING: Use of hyperref, cleveref, and varioref packages. Inserting references, Manual reference, Reference using BibTeX, citing reference.		

Suggested readings

1. $\text{\LaTeX}$ for beginners Work book, 5th edition, Document Reference: 3722-2014, March 2014.
2. Kopka, H, and Daly, P W, *Guide to $\text{\LaTeX}$* , Addison-Wesley.

Reference books

1. Griffiths, D F, and Higham, D J, *Learning $\text{\LaTeX}$* , Siam, Philadelphia.
2. Kottwitz, S, *$\text{\LaTeX}$ Beginner's Guide*, Packt Publishing Ltd.

4.1.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, Practical. Rubrics are as follows:
 - (a) Lab report: 10 marks.
 - (b) Viva-voce: 10 marks.
 - (c) Prepare codes for two problems of 15 marks each, pulled from a pool of 10 questions.. $15 \times 2 = 30$.

4.2 23MATSEC102: Graph Theory

4.2.1 Course description

<i>Course code:</i> 23MATSEC102				
<i>Course category:</i> Skill Enhancement				
<i>Title of the course:</i> Graph Theory				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
II	3	3	45	2023

Objectives

At the end of the course, the students should be able to

SEC102-Ob1 Understand and apply the fundamental concepts in graph theory.

SEC102-Ob2 Apply graph theory based tools in solving practical problems.

Corresponding outcomes

The outcomes corresponding to the learning objective **SEC102-Ob1**, are

SEC102-CO1: Understanding relevance of graphs in different context, ranging from puzzles and games to social science/engineering/computer science.

SEC102-CO2: Solving real life problems based on graph theory.

The outcomes corresponding to the learning objective **SEC102-Ob2**, are

SEC102-CO3: Learning algorithms.

SEC102-CO4: knowing applications of Graph Theory.

Content

Unit: 1	Credits: 1	Lecture hours: 15
Objectives mapped: SEC102-Ob1	Cognitive levels achieved through outcomes: Understanding: SEC102-CO1 Applying: SEC102-CO2	
Definition, examples and basic properties of graphs, directed graphs, pseudo graphs, complete graphs, bipartite graphs, isomorphism of graphs. Trees and forests, paths and cycles.		

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: SEC102-Ob1	Cognitive levels achieved through outcomes: Understanding: SEC102-CO1 Applying: SEC102-CO2	
Eulerian circuits, Eulerian graph, semi-Eulerian graph, theorems. Hamiltonian cycles, theorems Representation of a graph by matrix, the adjacency matrix, incidence matrix, weighted graph.		

Unit: 3	Credits: 1	Lecture hours: 15
Objectives mapped: SEC102-Ob2	Cognitive levels achieved through outcomes: Applying: SEC102-CO3 Analysing: SEC102-CO4	

Shortest path. Tree and their properties, spanning tree, Dijkstra's algorithm, Warshall algorithm, Prim's algorithm. Connectivity, matching in bipartite graphs, matching in general graphs.

Suggested readings

1. Ghosh, D N, *Discrete Mathematics*, Academic Publishers.
2. Rosen, K H, *Discrete Mathematics and its Applications*, 7th Ed, McGraw Hill Education (India) Pvt Ltd.
3. Deo, N, *Graph Theory with applications to Engineering and Computer Science*, PHI Learning.
4. West, D B, *Introduction to Graph theory*, 2nd Ed, Pearson Education India.
5. Sharma, J K, *Discrete Mathematics*, 4th Ed, Laxmi Publications.

4.2.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

4.2.3 Approval (23MATSEC102)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Snigdha Roy	Subhajit Paul	Subhajit Paul

4.3 23MATSEC201: Mathematical Modelling

4.3.1 Course description

<i>Course code:</i> 23MATSEC201				
<i>Course category:</i> Skill Enhancement				
<i>Title of the course:</i> Mathematical Modelling				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
III	3	3	45	2023

Prerequisites

Before attending the course, students should be familiar with

- basic Calculus,
- the course 23MATMAJ102.

Objectives

At the end of the course, the students should be able to

- SEC201-Ob1** Develop mathematical models to represent real-world phenomena across various domains such as Physics, Biology, Economics, Engineering, and Social sciences.
- SEC201-Ob2** Enhance problem-solving skills by enabling students to translate real-world problems into mathematical formulations and vice versa, using appropriate modelling techniques.
- SEC201-Ob3** Foster critical thinking skills by analysing the limitations, assumptions, and implications of mathematical models, and evaluating their effectiveness in addressing specific problems.

Corresponding outcomes

The outcome corresponding to the learning objective **SEC201-Ob1**, is

SEC201-CO1: Identifying real-world problems, define relevant variables, and formulate appropriate mathematical models to represent those problems.

The outcome corresponding to the learning objective **SEC201-Ob2**, is

SEC201-CO2: Analysing mathematical models using analytical techniques, numerical methods, and simulation to assess their accuracy, stability, and predictive capacity.

The outcome corresponding to the learning objective **SEC201-Ob3**, is

SEC201-CO3: Demonstrating critical thinking skills by questioning assumptions, exploring alternative modelling approaches, and adapting models to new situations or data.

Content

Unit: 1	Credits: 2	Lecture hours: 30
Objectives mapped: SEC201-Ob1 and SEC201-Ob2	Cognitive levels achieved through outcomes: Remembering: SEC201-CO1 and SEC201-CO2 Understanding: SEC201-CO2 Applying: SEC201-CO3	
Functions, modelling with linear and exponential functions. Average rate of change, linear functions with applications, Piecewise-linear functions with applications. Fitting linear models to data. Exponential growth functions with applications, Growth factors and rates, doubling time. Compound interest, Exponential decay functions with applications. Fitting exponential models to data, Decay factors and rates, Half-life. Modelling with logarithmic and polynomial functions, Logarithmic functions with applications, Fitting logarithmic models to data, Maxima and minima applications.		

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: SEC201-Ob3	Cognitive levels achieved through outcomes: Analysing: SEC201-CO3 Evaluating: SEC201-CO3	
Introduction to continuous time models, limitations and advantages of the discrete-time model, the need for continuous time models. Modelling the growth of microorganisms, chemostat. Stability and linearisation methods for system of ODEs.		

Suggested readings

1. Myint, T, and Debnath, L, *Linear Partial Differential Equation for Scientists and Engineers*, Springer, Indian reprint, 2008.
2. Kapoor, J N, *Mathematical Modelling*, New Age International Pvt Ltd Publishers, 2011.
3. Kamalanand, K, and Jawahar, P M, *Mathematical Modelling of Systems and Analysis*, PHI Learning Pvt Ltd, 2018.
4. Giordano, F R, Fox, W P, and Horton, S B, *A First Course in Mathematical Modelling*, Brooks/Cole Cengage Learning, USA, 2013.

4.3.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.

- (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

4.3.3 Approval (23MATSEC201)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Snigdha Roy	Subhajit Paul	Subhajit Paul

SYLLABI FOR MULTI-DISCIPLINARY COURSES

5.1 23MATMDC101: Basic Mathematics

5.1.1 Course description

<i>Course code:</i> 23MATMDC101				
<i>Course category:</i> Multi-disciplinary				
<i>Title of the course:</i> Basic Mathematics				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
I / III	3	3	45	2023

Prerequisites

Before attending the course, students should be familiar with

- fundamental arithmetic operations like addition, subtraction, multiplication and division.
- derived arithmetic operations like simplifications, squares, square roots, cube and cube roots;
- factorisation of polynomials.

Objectives

At the end of the course, the students should be able to

MDC101-Ob1	Learn the relationship between logarithm and indices and perform basic calculations.
MDC101-Ob2	familiarise themselves with the binomial theorem, including the general formula for expanding the power of a binomial expression.
MDC101-Ob3	Develop the understanding of the fundamental concepts of matrices and determinants, including their definitions, properties, and basic operations among the students.

MDC101-Ob4 Learn various techniques for calculating derivatives, including the addition, product, quotient and chain rules.

MDC101-Ob5 Understand the various techniques for calculating integrals, including basic rules, substitution, integration by parts.

MDC101-Ob6 Calculate area under a curve.

Corresponding outcomes

The outcome corresponding to the learning objective **MDC101-Ob1**, is

MDC101-CO1: Learn and apply the formulæ of logarithm and indices to solve various basic sums.

The outcome corresponding to the learning objective **MDC101-Ob2**, is

MDC101-CO2: Learn and apply binomial theorem to expand a polynomial to a given power.

The outcomes corresponding to the learning objective **MDC101-Ob3**, are

MDC101-CO3: Identify different types of matrices and perform algebra.

MDC101-CO4: Understand the processes to determine adjoint, determinant and inverse (when exists) of a square matrix.

The outcome corresponding to the learning objectives **MDC101-Ob4**, is

MDC101-CO5: Remember and apply various techniques for calculating derivatives, including the addition, product, quotient and chain rules.

The outcome corresponding to the learning objectives **MDC101-Ob5**, is

MDC101-CO6: Remember and apply various techniques for calculating integrals by several techniques such as methods of substitution, by parts, and partial fractions.

The outcome corresponding to the learning objectives **MDC101-Ob6**, is

MDC101-CO7: Apply the Fundamental theorem of Calculus to calculate the area under a curve.

Content

Unit: 1	Credits: 1	Lecture hours: 15
Objectives mapped: MDC101-Ob1 to MDC101-Ob3	Cognitive levels achieved through outcomes: Remembering: MDC101-CO1 to MDC101-CO3 Understanding: MDC101-CO1 to MDC101-CO4 Applying: MDC101-CO1 to MDC101-CO4	

ALGEBRA: Definitions of indices and logarithms. Illustrations of basic relations and properties of indices and logarithms (integer and rational indices only).

Statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, simple applications.

Concept, notation, order, equality of matrices. Types of matrices: zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operations on matrices: Addition and multiplication of matrices; multiplication with a scalar. Non-commutativity of multiplication and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Invertible matrices and proof of the uniqueness of inverse, if it exists; (all matrices will have real entries).

Determinant of a square matrix (up to 3×3 matrices), minors, co-factors, adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

Unit: 2	Credits: 2	Lecture hours: 30
Objectives mapped: MDC101-Ob4 to MDC101-Ob6	Cognitive levels achieved through outcomes: Remembering: MDC101-CO5 and MDC101-CO6 Understanding: MDC101-CO5 and MDC101-CO6 Applying: MDC101-CO5 to MDC101-CO7	
CALCULUS: Differentiation as the instantaneous rate of change. Derivative of sum, difference, product and quotient of functions. Derivatives of polynomials, logarithmic and exponential functions. Chain rule.		
Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals and problems based on them. Statement (only) of Fundamental theorem of Calculus and its application to find the area under a curve.		

Suggested readings

1. Agarwal, R S, *Senior Secondary Mathematics For Class 11*, Bharti Bhawan.
2. Agarwal, R S, *Senior Secondary Mathematics For Class 12*, Bharti Bhawan.

Reference books

1. Sharma, R D, *Mathematics for Class 11 (Vols I & II)*, Dhanpat Rai Publications (P) Ltd.
2. Sharma, R D, *Mathematics for Class 12 (Vols I & II)*, Dhanpat Rai Publications (P) Ltd.
3. *Arihant All in One Mathematics CBSE Class 12*, Modern Publication.

5.1.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

5.2 23MATMDC102: Mathematics for Competitive Examinations

5.2.1 Course description

<i>Course code:</i> 23MATMDC102 <i>Course category:</i> Multi-disciplinary <i>Title of the course:</i> Quantitative Aptitude				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
II	3	3	45	2023

Prerequisites

Before attending the course, students should be familiar with

- different types of number system;
- fundamental arithmetic operations like addition, subtraction, multiplication and division;
- Basic operations like simplifications, squares, square roots, cube and cube roots;
- Terms like time, speed, distance, profit, loss;
- Basic geometric shapes like triangle, quadrilateral, circles.

Objectives

At the end of the course, the students should be able to

MDC102-Ob1	Develop a strong foundation in number systems and fundamental operations enabling students from various disciplines to enhance their mathematical reasoning, problem-solving skills.
MDC102-Ob2	Equip students with the necessary knowledge and techniques to solve a wide range of quantitative problems related to daily life, commonly encountered in competitive exams and real-world scenarios.
MDC102-Ob3	Foster critical thinking and logical reasoning skills by applying mathematical concepts to analyse and interpret numerical data.

Corresponding outcomes

The outcomes corresponding to the learning objective **MDC102-Ob1**, are

MDC102-CO1: Remember and understand the different types of number system and the arithmetic operations on them.

MDC102-CO2: Develop an understanding of the processes to find the squares, square roots, cube, cube roots.

MDC102-CO3: Develop an understanding of permutation and combination and analyse them to solve simple problems.

The outcomes corresponding to the learning objective **MDC102-Ob2**, are

MDC102-CO4: Understand and analyse the concepts of Heights and Distances, Profit and Loss, Discount, Partnership Business, Mixture, Time and distance, Time & Work, Percentage problems, Boats and Streams, Ratio & Proportion, Pipes and Cistern, Problems on Trains, Simple and Compound Interest and use them in solving simple problems thereby enhance performance in competitive exams that include quantitative aptitude.

MDC102-CO5: Remember the different formulae to find the area and volume of simple geometric shapes and apply them in simple problems.

The outcome corresponding to the learning objective **MDC102-Ob3**, is

MDC102-CO6: Understand data interpretation and analyse complex data presented in various forms, such as tables, bar graphs, pie charts, and line graphs.

Content

Unit: 1	Credits: 1	Lecture hours: 15
Objectives mapped: MDC102-Ob1	Cognitive levels achieved through outcomes:	
	Remembering:	MDC102-CO1
	Understanding:	MDC102-CO2 and MDC102-CO3
	Applying:	MDC102-CO2 and MDC102-CO3
Numbers, HCF & LCM of numbers. Decimal fractions. Simplifications. Square & cube roots. Permutations and Combinations. Decimals problems, fractions problems. Numbers and Ages. Surds and Indices. Averages, Odd man out & Series. Calendar. Clocks.		

Unit: 2	Credits: 2	Lecture hours: 30
Objectives mapped: MDC102-Ob2 and MDC102-Ob3	Cognitive levels achieved through outcomes: Remembering: MDC102-CO5 Understanding: MDC102-CO4 and MDC102-CO6 Applying: MDC102-CO4 to MDC102-CO6	

Heights and distances. Profit and loss. Discounts. Partnership business. Mixture. Time and distance. Time & work. Percentage problems. Boats and streams. Ratio & proportion. Pipes and cistern. Problems on trains. Simple and compound interest. Volume & surface areas.

Data interpretation, tabulation, bar graphs, pie charts, line graphs.

Suggested readings

1. Agarwal, R S, *Quantitative Aptitude*, S Chand.
2. Oswal Publishers, *Quantitative Aptitude For Competitive Examinations : IBPS, SSC, SBI, RBI, AFCAT, CDS, UPSC, UPPSC, CAT, MAT, XAT, Railways*, Oswal Printers & Publishers Pvt Ltd.

Reference books

1. Khattar, D, *The Pearson Guide to Quantitative Aptitude for Competitive Examinations*, Pearson.
2. FACE, *Aptipedia: Aptitude Encyclopedia*, Wiley.

5.2.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*: 50 marks, 2 hours. Marks distribution as follows:
 - (a) Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - (b) Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - (c) Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.

SYLLABI FOR VALUE ADDED COURSES

6.1 23MATVAC101: Introduction to Number Systems

6.1.1 Course description

<i>Course code:</i> 23MATVAC101				
<i>Course category:</i> Value added				
<i>Title of the course:</i> Introduction to Number Systems				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
I	1	2	30	2023

Prerequisites

Before attending the course, students should be familiar with

- basic arithmetic and algebraic calculations.

Objectives

At the end of the course, the students should be able to

VAC101-Ob1 Present a problem oriented introductory knowledge of Number systems and its applications to binary arithmetic.

VAC101-Ob2 Focus on the study of Boolean algebra and its applications to logic gates.

VAC101-Ob3 Understand the concept of Sum of Products (S.O.P) and product of sums (P.O.S) and its applications to Karnaugh map.

Corresponding outcomes

The outcome corresponding to the learning objective **VAC101-Ob1**, is

VAC101-CO1: Acquire basic knowledge of number systems and its applications to binary arithmetic.

The outcome corresponding to the learning objective **VAC101-Ob2**, is

VAC101-CO2: Employ Boolean algebra and its applications to logic gates.

The outcome corresponding to the learning objective **VAC101-Ob3**, is

VAC101-CO3: Understand the concept of Sum of Products (SOP) and product of sums (POS) and its applications to Karnaugh map.

Content

Unit: 1	Credits: 1	Lecture hours: 30
Objectives mapped: VAC101-Ob1 to VAC101-Ob3	Cognitive levels achieved through outcomes: Remembering: VAC101-CO1 and VAC101-CO2 Understanding: VAC101-CO1 to VAC101-CO3 Applying: VAC101-CO1 to VAC101-CO3	
INTRODUCTION TO CONVENTIONAL NUMBER SYSTEMS: Base, place value, digits available for a particular base. Binary, octal, decimal, hexadecimal number systems and conversions. Gray Code, Excess-3 code, code conversion. ASCII, EBCDIC codes and their conversions. Binary arithmetic and applications. Signed and unsigned binary numbers. 1's complement and 2's complement representation. Simple problems.		
BOOLEAN ALGEBRA AND LOGIC GATES: Basic logic circuits, logic gates, truth tables. Laws and properties of Boolean algebra. De Morgan's theorem and its applications. Min term, Max term with their applications. Conjunctive Normal Form (POS), Disjunctive Normal Form (SOP) and their inter-conversions. K-map and its applications. Simplifications of K-maps by Boolean theorems.		

Suggested readings

1. Mano, M Morris, *Digital Logic and Computer Design*, Pearson Education.
2. Salivahanan, S and Arivazhagan, S, *Digital Circuits And Design*, Oxford University Press.

6.1.2 Assessment

1. *Summative Assessment*: 50 marks. Assignment based.

6.2 23MATVAC102: Prerequisites to Linear Algebra

6.2.1 Course description

<i>Course code:</i>	23MATVAC102
<i>Course category:</i>	Value Added
<i>Title of the course:</i>	Prerequisites to Linear Algebra

<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
II	1	2	30	2023

Prerequisites

Before attending the course, students should be familiar with

- basic arithmetic and algebraic calculations.

Objectives

At the end of the course, the students should be able to

VAC102-Ob1 Learn and manipulate different types of matrices in its general form.

VAC102-Ob2 Define determinants and manipulate them using various formulæ.

Corresponding outcomes

The outcomes corresponding to the learning objective **VAC102-Ob1**, are

VAC102-CO1: Multiply two compatible matrices.

VAC102-CO2: Compute transpose of a matrix.

VAC102-CO3: Identify symmetric, skew symmetric, nilpotent, idempotent matrices.

VAC102-CO4: Find inverse of a matrix using elementary transformations.

The outcomes corresponding to the learning objective **VAC102-Ob2**, are

VAC102-CO5: Define determinants using permutation definition.

VAC102-CO6: Compute determinants using various formulæ.

Content

Unit: 1	Credits: 1	Lecture hours: 30
Objectives mapped: VAC102-Ob1 and VAC102-Ob2	Cognitive levels achieved through outcomes: Applying: VAC102-CO1 to VAC102-CO5	
MATRICES: Algebraic operations on matrices. Block multiplication of matrices. Transpose of a matrix. Symmetric and Skew-symmetric matrices. Types of matrices: orthogonal, idempotent, nilpotent matrix. Adjoint of a matrix, Inverse of a matrix, complex matrices.		
DETERMINANTS: Definition of determinant using permutations. Minors and Co-factors, complementary minor, multiplications of determinants, determinants of symmetric and skew-symmetric matrices, Cramer's Rule.		

Suggested readings

1. Mapa, S K, *Higher Algebra: Abstract and Linear*, Sarat Book House.

6.2.2 Assessment

1. *Summative Assessment*: 50 marks, Assignment based.

6.2.3 Approval (23MATVAC102)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Manoj Ray Bakshi	Subhajit Paul	Subhajit Paul

6.3 23MATVAC201: Graphing using GeoGebra

6.3.1 Course description

<i>Course code:</i> 23MATVAC201				
<i>Course category:</i> Value Added				
<i>Title of the course:</i> Graphing using GeoGebra				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
III	1	2	30	2023

Prerequisites

Before attending the course, students should be familiar with

- fundamental mathematical concepts, including algebra, geometry, and trigonometry;
- basic calculus concepts, including limits, derivatives, and integrals.
- basic computer literacy, including proficiency in using computer software and navigating interfaces.

Objectives

At the end of the course, the students should be able to

VAC201-Ob1 Learn and manipulate GeoGebra interface to create graphs of various functions.

VAC201-Ob2 Showcase the educational applications of GeoGebra in teaching and learning.

Corresponding outcomes

The outcomes corresponding to the learning objective **VAC201-Ob1** and **VAC201-Ob2**, are

VAC201-CO1: Students will proficiently navigate GeoGebra, utilising its basic tools for mathematical exploration.

VAC201-CO2: Dynamic geometry construction skills will allow students to visualise and manipulate geometric objects dynamically.

VAC201-CO3: The ability to connect algebraic and graphical representations will enable students to explore and analyse mathematical relationships effectively.

VAC201-CO4: Applying GeoGebra to investigate functions and calculus concepts dynamically, gaining insights into mathematical ideas.

VAC201-CO5: The creation of interactive demonstrations and simulations will allow students to communicate mathematical concepts effectively.

VAC201-CO6: The creation of custom tools and scripts in GeoGebra, tailoring the software to address specific mathematical problems.

VAC201-CO7: The course will demonstrate the diverse educational applications of GeoGebra in teaching and learning mathematics.

Content

Unit: 1	Credits: 1	Lecture hours: 30
Objectives mapped: VAC201-Ob1 and VAC201-Ob2	Cognitive levels achieved through outcomes: Applying: VAC201-CO1 to VAC201-CO7	
INTRODUCTION TO GEOGEBRA: Overview of GeoGebra interface: Introduction to GeoGebra software; navigation and basic tools. Dynamic geometry construction: Creating points, lines, and circles, exploring dynamic constructions with sliders. Algebraic and graphical representations: Inputting algebraic expressions and equations, connecting algebraic and graphical representations. Exploring functions in GeoGebra: Graphical analysis of functions, dynamic exploration of function transformations.		
ADVANCED FEATURES AND CUSTOMISATIONS: Advanced dynamic geometry: Using advanced geometric tools, exploring 3D geometry in GeoGebra. Calculus concepts in GeoGebra: Investigating limits graphically, dynamic exploration of derivatives and integrals. Interactive demonstrations: Designing interactive demonstrations, showcasing GeoGebra applications in mathematics.		

Suggested readings

1. GeoGebra Tutorials by official GeoGebra website: Beginner Tutorials – GeoGebra at <https://www.geogebra.org/m/ys2eur3x>.
2. YouTube Khan Academy – GeoGebra at <https://www.geogebra.org/m/rZHGcANX>.
3. GeoGebra Tube at <https://www.geogebra.org/?lang=en>.

4. Coursera: GeoGebra Course at <https://www.geogebra.org/m/kMm1U3DQ>.

6.3.2 Assessment

1. *Summative Assessment*: 50 marks, Assignment based.

6.3.3 Approval (23MATVAC201)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Bikiran Das	Subhajit Paul	Subhajit Paul

6.4 23MATVAC202: Poster Presentation

6.4.1 Course description

<i>Course code:</i> 23MATVAC202				
<i>Course category:</i> Value Added				
<i>Title of the course:</i> Poster Presentation				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
IV	1	2	30	2023

Prerequisites

Before attending the course, students should be familiar with

- basics of computer literacy.
- the course 23MATSEC101.

Objectives

At the end of the course, the students should be able to

VAC202-Ob1 Create and present a poster on a given topic.

Corresponding outcomes

The outcomes corresponding to the learning objective **VAC202-Ob1**, are

VAC202-CO1: Create a poster using a presentation software.

VAC202-CO2: Present the poster with vocal clarity and confidence.

VAC202-CO3: Answer questions from the audience.

Content

Unit: 1	Credits: 1	Lecture hours: 30
Objectives mapped: VAC202-Ob1	Cognitive levels achieved through outcomes: Applying: VAC202-CO1 to VAC202-CO3	
PRESENTATION SOFTWARE MS POWERPOINT OR EQUIVALENT: Creating a poster using available templates. PRESENTATION SOFTWARE L^AT_EX: Creating a poster using tikzposter or beamerposter document classes. Language and vocabulary for presenting the poster: outline, summary, background, problem, materials, methods, and processes. Explaining and discussing data in the form of figures and tables. Understanding and answering questions from the audience.		

Suggested readings

1. `tikzposter` and `beamerposter` tutorials at <https://www.overleaf.com/learn/latex/Posters>.
2. PowerPoint tutorials at https://youtube.com/playlist?list=PLpQQipWcxwt_KvhjMTsADzon_GY_vBGRL&si=vJFkOC2XPq0XCTAU.
3. Anthony, L, *Presenting Research in Science and Engineering*, 2nd Ed, DTP Publishing, Tokyo, Japan, 2010.

6.4.2 Assessment

1. *Summative Assessment*: 50 marks, Assignment based.

6.4.3 Approval (23MATVAC202)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Snigdha Roy	Subhajit Paul	Subhajit Paul

SYLLABI FOR STATISTICS MINOR COURSES

7.1 23STAMIN101: Statistical Methods

7.1.1 Course description

<i>Course code:</i> 23STAMIN101				
<i>Course category:</i> Minor				
<i>Title of the course:</i> Statistical Methods				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
I / II	3(L)+1(P) = 4	5	75	2023

Prerequisites

Before attending the course, students should be familiar with

- basic arithmetic and algebraic calculations.
- coordinate geometry, concept of straight lines.

Objectives

At the end of the course, the students should be able to

STAMIN101-Ob1	Demonstrate the history of statistics and present the data in various forms.
STAMIN101-Ob2	Understand and analyse the concepts of central tendency and dispersion.
STAMIN101-Ob3	Apply the concept of correlation and regression for relating two or more related variables.
STAMIN101-Ob4	Analyse data to measure association of attributes.

Corresponding outcomes

The outcome corresponding to the learning objective [STAMIN101-Ob1](#), is

STAMIN101-CO1: Demonstrate the history of statistics and present the data in various forms.

The outcome corresponding to the learning objective [STAMIN101-Ob2](#), is

STAMIN101-CO2: Understand and analyse the concepts of central tendency and dispersion.

The outcome corresponding to the learning objective [STAMIN101-Ob3](#), is

STAMIN101-CO3: Apply the concept of correlation and regression for relating two or more related variables.

The outcome corresponding to the learning objective [STAMIN101-Ob4](#), is

STAMIN101-CO4: Analyse data to measure association of attributes.

Content

Unit: 1	Credits: 1	Lecture hours: 15
Objectives mapped: STAMIN101-Ob1	Cognitive levels achieved through outcomes: Remembering: STAMIN101-CO1 Understanding: STAMIN101-CO1 Applying: STAMIN101-CO1	
TYPE OF DATA: Primary and secondary data, quantitative and qualitative data, nominal and ordinal data, cross section and time series data, discrete and continuous data. PRESENTATION OF DATA: Presentation by tables and by diagrams, construction of tables with one, two and three factors of classification, diagrammatic representations, frequency distributions for discrete and continuous data, representing distributions graphical by histogram and frequency polygon, stem & leaf and box-plot; cumulative frequency distributions (inclusive and representation of a frequency conclusive method and Ogive. Stem-leaf and Box-plot diagrams. Horizontal and vertical bar charts.		

Unit: 2	Credits: 1	Lecture hours: 15
Objectives mapped: STAMIN101-Ob2	Cognitive levels achieved through outcomes:	
	Remembering:	STAMIN101-CO2
	Understanding:	STAMIN101-CO2
	Applying:	STAMIN101-CO2
DESCRIPTIVE STATISTICS: Measure of central tendency; measures of dispersion, moments and quartiles, measure of skewness and kurtosis for both grouped and ungrouped data.		

Unit: 3	Credits: 1	Lecture hours: 20
Objectives mapped: STAMIN101-Ob3	Cognitive levels achieved through outcomes:	
	Remembering:	STAMIN101-CO3
	Understanding:	STAMIN101-CO3
	Applying:	STAMIN101-CO3
BIVARIATE ANALYSIS: Scatter diagram, regression, curve between two variables and concept of error in regression, principles of least squares; fitting of first, second and third degree. Concept of correlation coefficient and its properties.		

Unit: 4	Credits: 1	Lecture hours: 25
Objectives mapped: STAMIN101-Ob4	Cognitive levels achieved through outcomes:	
	Remembering:	STAMIN101-CO4
	Understanding:	STAMIN101-CO4
	Applying:	STAMIN101-CO4
ANALYSIS OF CATEGORICAL DATA: Fundamental set of frequencies, consistency of data; Measures of association and contingency-table; Association of attributes and various measurement of association; Analysis of data on two characters and three characters.		

List of practicals

Following problems are to be done using calculators, or spreadsheet programme software.

1. Charts and diagrams.
2. Grouping of data.
3. Preparation of Histogram, frequency polygon and ogive from a set of given data.
4. Measure of central tendency, dispersion, moments, skewness and kurtosis of frequency distribution.
5. Calculation of correlation co-efficient from bivariate data. Interpretation of data and diagram.
6. Calculation of Spearman's rank correlation co-efficient from qualitative data.
7. Fitting of regression line by least square method.

Suggested readings

1. Gun, A M, Gupta, M K and Dasgupta, B, *Fundamentals of Statistics (Volume One)*, World Press Private Ltd.
2. Gupta, S C and Kapoor, V K, *Fundamentals of Mathematical Statistics*, S Chand & Sons.

3. Bhattacharya, D and Roychowdhury, S, *Statistics – Theory and Practice*, U N Dhar Publications.
4. Mukherjee, A, *Fundamental Treatise On Probability And Statistics*, Shreetara Prakashani.
5. Kendall, M G and Stuart, A, *Advanced Theory of Statistics*, John Wiley & Sons Inc.
6. Gupta, S C, *Fundamentals of Statistics*, Himalaya Publishing House.

7.1.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*:
 - (a) *Theory examination*: 50 marks, 2 hours; weighed down to 50% (25 marks). Marks distribution as follows:
 - i. Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - ii. Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - iii. Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.
 - (b) *Practical examination*: 50 marks; weighed down to 50% (25 marks). Marks distribution as follows:
 - i. Lab report: 10 marks.
 - ii. Viva-voce: 10 marks.
 - iii. Solve three questions for 10 marks each, chosen randomly from a pool of ten questions. $10 \times 3 = 30$.

7.2 23STAMIN201: Fundamentals of Probability

7.2.1 Course description

<i>Course code:</i> 23STAMIN201				
<i>Course category:</i> Minor				
<i>Title of the course:</i> Fundamentals of Probability				
<i>Semester</i>	<i>Credits</i>	<i>Lecture hours in a week</i>	<i>Total lecture hours</i>	<i>Regulation year</i>
III / IV	3(L)+1(P) = 4	5	75	2023

Prerequisites

Before attending the course, students should be familiar with

- basic arithmetic and algebraic calculations.
- coordinate geometry, concept of straight lines.
- basic calculus.
- the course 23STAMIN101.

Objectives

At the end of the course, the students should be able to

STAMIN201-Ob1	Understand the preliminary ideas of probability.
STAMIN201-Ob2	Have the concept of random variables.
STAMIN201-Ob3	Manipulate different standard probability distributions of both discrete and continuous types.
STAMIN201-Ob4	Manipulate two dimensional random variables.
STAMIN201-Ob5	Have an idea about the mathematical expectation of random variables along with bivariate random variables.

Corresponding outcomes

The outcomes corresponding to the learning objective **STAMIN201-Ob1**, are

STAMIN201-CO1: Learn and understand the differences among different definitions of probability and apply various results therein.

STAMIN201-CO2: Demonstrate the use of Bayes' theorem in decision making.

The outcome corresponding to the learning objectives **STAMIN201-Ob2** and **STAMIN201-Ob3**, is

STAMIN201-CO3: Distinguish between a discrete and a continuous random variable.

The outcome corresponding to the learning objective **STAMIN201-Ob4**, is

STAMIN201-CO4: Demonstrate the concept of joint, marginal and conditional probability distributions and the bivariate transformations.

The outcome corresponding to the learning objective **STAMIN201-Ob5**, is

STAMIN201-CO5: State and prove various properties of expectation, variance and covariance.

Content

Unit: 1	Credits: 1	Lecture hours: 10
Objectives mapped: STAMIN201-Ob1	Cognitive levels achieved through outcomes: Understanding: STAMIN201-CO1 Applying: STAMIN201-CO2	

Concept of deterministic and non-deterministic experiments. Sample space, events. Definitions of Probability: classical, statistical, and axiomatic. Conditional Probability, independent events. Laws of addition and multiplication. Theorem of total probability, Bayes' theorem and its applications.

Unit: 2	Credits: 1	Lecture hours: 25
Objectives mapped: STAMIN201-Ob2 , STAMIN201-Ob3 and STAMIN201-Ob5	Cognitive levels achieved through outcomes: Understanding: STAMIN201-CO3 Applying: STAMIN201-CO5	
Random variables. Probability distributions: probability density and probability mass functions, cumulative distribution functions. Mathematical expectation in one and two dimensional distribution with its related results. Moments generating and characteristic functions, Cauchy-Schwartz inequality. Standard discrete probability distributions: Uniform, Geometric, Binomial, Poisson, and Hyper-geometric. Standard continuous probability distributions: Uniform, Gamma, Beta, Exponential and Normal. Transformation of random variables.		

Unit: 3	Credits: 1	Lecture hours: 10
Objectives mapped: STAMIN201-Ob4	Cognitive levels achieved through outcomes: Understanding: STAMIN201-CO4 Applying: STAMIN201-CO4	
Two dimensional Random variables and bi-variate distributions. Marginal and conditional distributions, independence of variables. Bivariate transformations with illustrations.		

List of practicals (Credit: 1)

Following problems are to be done using calculators.

1. Application problems based on binomial distribution.
2. Application problems based on Poisson distribution.
3. Problems based on area property of normal distribution.
4. Fitting of binomial distributions for given n .
5. Fitting of Poisson distributions.
6. Fitting of normal distribution when parameters are not given.
7. Approximation of hypergeometric distribution by binomial distribution.
8. Approximation of binomial distribution by Poisson distribution.
9. Approximation of Poisson distribution by Normal distribution.

Suggested readings

1. Gun, A M, Gupta, M K and Dasgupta, B, *Fundamentals of Statistics (Volume One)*, World Press Private Ltd.
2. Gupta, S C and Kapoor, V K, *Fundamentals of Mathematical Statistics*, S Chand & Sons.
3. Das, N G, *Statistical Methods*, Combined edition: volume 1 & 2, McGraw Hill Education.
4. Bhattacharya, D and Roychowdhury, S, *Statistics – Theory and Practice*, U N Dhar Publications.
5. Mukherjee, A, *Fundamental Treatise On Probability And Statistics*, Shreetara Prakashani.
6. Kendall, M G and Stuart, A, *Advanced Theory of Statistics*, John Wiley & Sons Inc.
7. Gupta, S C, *Fundamentals of Statistics*, Himalaya Publishing House.

7.2.2 Assessment

1. *Formative Assessment*: 50 marks, as per Assessment & Evaluation Framework Document of Salesian College.
2. *Summative Assessment*:
 - (a) *Theory examination*: 50 marks, 2 hours; weighed down to 50% (25 marks). Marks distribution as follows:
 - i. Five questions of 2 marks each, out of eight questions. Remembering and Understanding levels of Revised Bloom's Taxonomy (RBT). $2 \times 5 = 10$.
 - ii. Four questions of 5 marks each, out of six questions. Analysis, and Applying levels of RBT. $5 \times 4 = 20$.
 - iii. Two questions of 10 marks each, out of four questions. Analysis, Application and Evaluation levels of RBT. $10 \times 2 = 20$.
 - (b) *Practical examination*: 50 marks; weighed down to 50% (25 marks). Marks distribution as follows:
 - i. Lab report: 10 marks.
 - ii. Viva-voce: 10 marks.
 - iii. Solve three questions for 10 marks each, chosen randomly from a pool of ten questions. $10 \times 3 = 30$.

7.2.3 Approval (23STAMIN201)

(Prepared by) Course Faculty	(Checked and verified by) Head of the Dept	(Approved by) Dean
Manoj Ray Bakshi	Subhajit Paul	Subhajit Paul

APPROVAL BY BOS MEMBERS

The above syllabi are discussed thoroughly and found to be fit for the students in Semesters I – IV (Regulation year: 2023) in Mathematics Major, Mathematics Minor and Statistics Minor (as applicable) studying in Salesian College (Autonomous) Siliguri.

Subhajit Paul Vice Chairperson, BoS, Mathematics & Statistics	
Bikiran Das Secretary, BoS, Mathematics & Statistics	
Debdut Sengupta Member, BoS, Mathematics & Statistics	
Snigdha Roy Member, BoS, Mathematics & Statistics	
Manoj Ray Baksi Member, BoS, Mathematics & Statistics	
Dr Atasi Deb Roy Asso Prof, Dept of Mathematics, University of Calcutta; External Expert, BoS, Mathematics & Statistics	

Prof Kajal Kumar Mondal Dept of Mathematics, Coochbehar P B University; External Expert, BoS, Mathematics & Statistics	
Prof Arindam Sengupta Dept of Statistics, University of Calcutta; External Expert, BoS, Mathematics & Statistics	
Dr Bibaswan Dey Asst Prof, Dept of Mathematics, University of North Bengal (NBU); Nominated by Vice Chancellor (NBU), BoS, Mathematics & Statistics	
Anuj Kumar Bhagat Senior Research Fellow, Dept of Mathematics, IIT Delhi; Alumni Representative, BoS, Mathematics & Statistics	
Divyata Chhetri Deputy Manager, Retail Assets – Home Loans, HDFC Bank, Industry Representative, BoS, Mathematics & Statistics	



Salesian College_(Autonomous)

Sonada - Siliguri

National Education Policy (NEP) 2020 Curriculum Framework

For

Minor, Multi-disciplinary Course and Value-added Course in Music

Department of Music

Curriculum Document

2023 – 2024

Vision

We aim to provide our students with a quality music education that focuses on building a good foundation in music. The lessons learnt shall engage and inspire the students to develop a life-long love for music and a holistic approach to learning. It shall help the students to expand their creative horizons and for those who wish to continue doing music, the course shall prove to be a stepping stone for their musical endeavors.

Missions

- To foster the holistic development of learners, nurturing their cognitive, emotional, social, and creative skills.
- To encourage critical thinking, self-expression, and empathy through the exploration of music.
- To expose students to a diverse range of musical genres, styles, and traditions from various cultures.
- To engage students in singing, playing instruments, composing, and improvising to develop their musical skills and creativity.
- Regular performance opportunities, whether in solo, ensemble, or group settings, allow students to showcase their progress and build confidence in their musical abilities.
- To foster interdisciplinary connections with subjects like history, literature, mathematics, and science.
- To actively involve the students by encouraging participation in local music events, concerts, and collaborations with other artistic and cultural organizations.

1. PROGRAMME OVERVIEW

The Department of Music is offering the Minor, Multi-disciplinary Course and Value added course for the year 2024-25. As the majority of students in our region have not received any formal music training, we have designed courses that cater to beginners. These courses align with the UGC's learning levels,

2. PROGRAMME OUTCOMES

Students will possess the knowledge and skills in both theoretical and practical ways such that they:

- Have the ability to play and sing different Swaras with accurate intonations.
- Grasp the concept of Shrutis and apply it effectively in musical performances.
- Will be able to explain the idea of Raga and the associated terms and terminologies.
- Showcase their understanding of Raga music through instrumental or vocal demonstrations.
- Have the skill to distinguish between various forms and compositions related to Indian and Western music.
- Develop comprehensive knowledge of music theory, history, and performance.
- Cultivate critical listening skills and an understanding of various musical styles.
- Demonstrate proficiency in musical composition and arrangement.
- Analyze and interpret musical works with a discerning eye.
- Collaborate effectively within musical ensembles and groups.
- Engage in continuous self-improvement and adapt to evolving musical trends.
- Understanding the essentials of performing art: Learning the rudiments of Classical art and the various elements that go into the presentation of such an art.
- Developing theoretical knowledge: Learning the theory that goes behind the practice of performing art supplements the learner to become a holistic practitioner.
- Learning History and Culture: The contribution and patronage of various establishments, the background and evolution of Art.
- Allied Art forms: An overview of allied fields of art and exposure to World Music.
- Modern trends: Understanding the modern trends in Classical Arts and the contribution of revolutionaries of this century.
- Contribution to society: Applying knowledge learnt to teach students of future generations.
- Research and Further study: Encouraging further study and research into the field of Classical Art with a focus on interdisciplinary study impacting society at large.

3. PROGRAMME MATRIX

Semester	Course Code	Course Type	Title of the Course	Credits	Lecture+Tutorial+ Practical	Total Hours	Total Marks
III	23MUSMIN201	MINOR	Integrated Study of Classical Music- 1	4	3+0+1	75	100
	23MUSMDC201	MDC	Comparative Study of Classical Music	3	2+0+1	60	75
	23MUSVAC201	VAC	Elementary Concepts of Raga - 2	1	1	30	25
	Total						
Semester	Course Code	Course Type	Title of the Course	Credits	Lecture+Tutorial+ Practical	Total Hours	Total Marks
IV	23MUSMIN201	MINOR	Integrated Study of Classical Music- 1	4	3+0+1	75	100
	23MUSVAC202	VAC	Elementary Concepts of Raga - 3.	1	1	30	25
	Total						

[**Abbreviations:** **HCM**- Hindustani Classical Music, **WCM**- Western Classical Music, **RBT**- Revised Bloom's Taxonomy, **DC**- Dave's Classification, **COs**- Course Objectives, **CLOs**- Course Learning Outcomes]

SEMESTER III

MINOR CORE

Theory

COURSE CODE	23 MUSMIN 201
COURSE TITLE	Integrated Study of Classical Music.
CREDITS	3
LECTURE HOURS	45
CATEGORY	Minor Core - Theory
SEMESTER	III
INTENDED LEVEL	UG CERTIFICATE
REGULATION	2023
COURSE OVERVIEW: This course -	● Covers the fundamental study of HCM and WCM.
	● Explains the basic terms and terminologies of HCM and WCM.
	● Discusses the common forms and compositions of HCM.
	● Classify introductory Ragas and Modes.
	● Identify Basic Ragas and Scales.

	• Distinguish types of Swaras or notes while listening.
	• Justify the use of taal or time frame in the music that learners listen to or do.
	• Combine all the elements of music that learners learned during the course to use in creating or presenting music.
COURSE OBJECTIVES: The students will be able to -	1. Define the basic technical terms of HCM and WCM.
	2. Interpret the terminologies of HCM and WCM
	3. Identify the different forms and compositions of HCM.
	4. Classify the various elements of HCM and WCM.
	5. Discuss the Introductory ragas and Modes.
	6. Develop a solid foundation by practicing the basics of Raga Swar Vistar/ Major and Minor scales.
	7. Distinguish between the standard series of notes of raga and Major-Minor Scales
	8. Simplify Rhythms and Time frames during the music listening.
COURSE LEARNING OUTCOMES: The students will be able to -	1. Define the Basic terms associated with HCM and WCM.
	2. Explain the meaning and importance of terms associated with HCM and WCM.
	3. Develop the idea of how forms and compositions are structured in HCM and WCM.

	4. Distinguish between two ragas/two modes by just seeing the sets of notes used in their scales/progression.				
	5. Deduct the relation between a Raga and Thaata/Scale and Modes.				
	6. Design practicing sets using Taals and the Swaras.				
Prerequisites: ● Students who have music as their Minor in the First Semester ● Basic musical knowledge. Must have a practical aptitude for music. (Preferable). ● Instruments for the chosen discipline.					
UNITS	CONTENT	HOURS	COs	CLOs	RBT
Unit I	Terms and terminologies -				

Unit II	Detailed study of the following. ● Sargamgeet ● Lakshangeet ● Razakhani Gat ● Modes ● Scales ● Arpeggios	15	CO1	CLO3	R
			CO2		
			CO3		A1
			CO4		A2
	Choir singing and its components. ● Soprano ● Alto ● Tenor ● Bass		CO6		
			CO8		
Unit III	Theoretical study of introductory Ragas (Part I) ● Bilawal ● Yaman ● Bhairav	15	CO5	CLO4	R
			CO6		
			CO7		A1
	Theoretical study of modes(Part I) ● Ionian ● Dorian ● Phrygian		CO8	CLO5	A2
					E
	Learning about Time and Rhythm ● Teental ● Dadra ● 4 / 4 ● 3/4			CLO6	C

PRACTICAL

COURSE CODE	23 MUSMIN 201

COURSE TITLE	Integrated Study of Classical Music
CREDITS	1
LECTURE HOURS	30
CATEGORY	Minor Core - Practical
SEMESTER	III
INTENDED LEVEL	UG CERTIFICATE
REGULATION	2023
COURSE OVERVIEW: This course -	● Identification of Swaras/Notes
	● Understand Bhatkhande's notation system
	● Demonstration of Alankars and Paltas
	● Interpretation of Raga music
COURSE OBJECTIVES: Students will be able to -	1. Repeat Swaras/Notes after the demonstrator
	2. Reproduce all the swaras/Notes while observing the demonstrator
	3. Follow the ragas and modes as demonstrated by the demonstrator
	4. Build the basic structure of a raga
	5. Follow the instructions to sing/play the notes
	6. Attempt notation citing
	7. Alter and practice the alankars shown by demonstrator
	8. Perform the series of notes after taking the lesson
	9. Demonstrate different Alankars, Paltas, Taali-Khaali, and Major and Minor scales skillfully.
	10. Perform the basic composition of the ragas/pieces given masterfully.

		11. Combine different Swara combinations to create Paltas.			
		12. Adapt to the core structure of a raga/choir.			
		13. Construct the different parts of the Bandish with various taans/alap of a raga.			
COURSE LEARNING OUTCOMES:		1. Follow all the rules and sing/play all the Swaras/Notes skillfully.			
The students will be able to -		2. Play and experiment with Swaras/Notes of Raga/Scale.			
		3. Achieve mastery in reading and writing notations.			
		4. Combine the practicing strategies of paltas and scales to create furthermore paltas which will be useful in gaining skills in the field.			
		5. Manage naturally to present the concept of Time used in music through hand demonstrations.			
UNIT	CONTENT	HOURS	COs	CLOs	DC
Unit I	Practicing on musical notes and Reading writing Notation systems. • Swaras • Shuddha • Vikrit/Vikrut • Bhatkhande's Notation System Or • Notes • Sharps	7	CO1 CO2 CO3 CO5 CO6	CLO1 CLO3	I M P A
	• Flats • Naturals • Staff Notation System				

Unit II	Exercises on Scales, Arpeggios and Paltas. • Simple Paltas • Complex Paltas Or • C major scale • G major scale • D major scale • F minor scale • E minor scale	7	CO1 CO2 CO3 CO4 CO5 CO7 CO8 CO9	CLO1 CLO2 CLO4	I M P A
Unit III	Practical study and demonstration of introductory Ragas (Any one) • Yaman • Bilawal • Bhairav Or, Demonstrating one Western Classical Piece Taught by a Teacher (Based on Beginners level of renowned Music schools across the world.)	8	CO1 CO2 CO3 CO4 CO5 CO6 CO10 CO12 CO13	CLO2 CLO3 CLO4	I M P A
Unit IV	1. Basic knowledge and demonstration on 1. Taali- Khali 2. Rhythmic diction Music Listening: Listening to Classical Music of Both HCM and WCM. Understanding and analysing the composition and developing listening habits. 2. Choir Singing • Soprano • Alto	8	CO1 CO2 CO3 CO5 CO6 CO8 CO9	 CLO3 CLO4 CLO5	 I M P A

	• Tenor • Bass		CO12		

Textbooks and Reference Books

1. Prof.Harishchandra Srivastava: Raag Parichay Part I&II
2. Swatantra Sharma: Fundamentals of Indian Music
3. Sandeep Bagehee: Nad, Understanding Raga music, Eeshwar publications, Mumbai,1998
4. V.N. Bhattachande: Kramik Pushtak Malika (Book 1) Hathras, Uttar Pradesh.
5. Swami Prajnanananda: A Historical Study of Indian Music. Munshiram Manoharlal Publishers Pvt. Ltd.New Delhi, 1981.
6. Ashok De Ranade: Hindustani music NBT, India,1997
7. Jauhari Shruti (2011) Elements of Hindustani Classical Music, D.K.Printworld, New Delhi
8. Roy Choudhuri Bimalakanta The Dictionary of Hindustani Classical Music (2013), Motilal Banarsi Dass, New Delhi
9. Scholes, Percy A, The Oxford Companion of Music, ed. John Owen Ward, Oxford University Press, New York, 2000.
10. Colwell, Richard Handbook of Research on music teaching and learning: A project of the Music Educators National Conference, Hackett Editorial service, 1992.
11. Kennedy, Rod, ed. Sparks, Hugh C., Music from the heart, Eakin Press, Austin, Texas,1998.
12. Arnold, The New Oxford Companion to Music Vols. I and II 8. William Love Lock, Form in Brief, A. Hammond and Co. 1948.
13. Vernal Louis, Music theory, Salesian College Sonada, 1975.
14. Gerald Abraham. The Concise Oxford History of Music, Oxford University Press, 1985.
15. Richard Taruskin, Encyclopedia of Music, Oxford University Press, New York, 2005.
16. The Publication of the Associated Board of the Royal Schools of Music, Grade I to IV, Richard Jones.
17. Fundamentals of Music, Raymond Elliott, 4th Ed 2009
18. Tip Basic Music Theory, Wise Publications, Hugo Pinksterdoer, 2007

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating Assessment

i. Formative Assessment: 25 marks as per Assessment & Evaluation

Framework Document of Salesian College ii. Summative Assessment: 50 marks

- a) **Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)**
- b) **Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks). Summative Assessment Time: 2 Hours for pen and paper test**

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Signature:	Name: Signature:	Name: Signature:

(College round seal in all pages)

MULTI-DISCIPLINARY COURSE

SYLLABUS

COURSE CODE	23 MUSMDC 201
COURSE TITLE	Comparative Study of Classical Music
CREDITS	2
LECTURE HOURS	30
CATEGORY	Multidisciplinary Course (MDC)- Theory
SEMESTER	III
INTENDED LEVEL	UG CERTIFICATE
REGULATION	2023
	Covers the basic concept of HCM and WCM

COURSE OVERVIEW This course -	Recognises <i>Swaras</i>/Notes and their placements
	Explains the fundamentals and terminologies of ICM/WCM
	Illustrates the Notation system of major classical forms.
	Implements the notation system in HCM and WCM
	Classifies Introductory ragas, modes and scales.
	Summarise different Taals and Time signatures.
COURSE OBJECTIVES The students will be able to	1. Understand the basic concepts of HCM and WCM.
	2. Recognise <i>Swaras</i> /Notes and their placements.
	3. Explain the fundamentals and terminologies of ICM and WCM.
	4. Illustrate the notation system.
	5. Implement the notation system in ICM and WCM.
	6. Classify introductory ragas, modes and scales.
	7. Analyse <i>Swaras</i> and their combinations.
	8. Summarise different Taals and Time signatures.
	9. Categorize forms of ICM and WCM.
COURSE LEARNING OUTCOMES: The students will be able to -	1. Define the Basic terms associated with HCM and WCM.
	2. Explain the meaning and importance of terms associated with HCM and WCM.
	3. Develop a general idea of how classical music came into existence.
	4. Compare the elements and technicalities present in the Notation system of HCM and WCM.
	5. Evaluate the Similarities and similarities present in HCM and WCM.

6. Design practicing sets using Taals and the Swaras.

Prerequisites:

- Students who have music as their Multi-Disciplinary Course in the First Semester
- Basic musical knowledge. Must have a practical aptitude for music. (Preferable).
- Instruments for the chosen discipline.

UNIT	CONTENT	HOURS	COs	CLOs	RBT
Unit I	Study of terms and terminologies - a) Swara b) Shuddha Swara c) Vikrit Swara d) Saptak e) Aaroha f) Avaroha g) Naad and its types h) Raga i) Taal j) Sound k) Tone l) Pitch m) Intensity n) Quality o) Duration p) Tonal relation q) Staff notes r) Accidentals s) Intervals	10	CO1 CO2 CO3	CLO1 CLO2	R U A1 A2
Unit II	History of Indian Classical music and Western Classical Music				

	A brief study of the origin and evolution of Indian Classical Music and Western Classical Music From Ancient times to the present day, highlighting styles and instruments. Theoretical and correlative study of Time and Rhythms Concepts of 1. Teental 2. Ektaal 3. Gun 4. Simple Time 5. Compound Time	10	CO1 CO4 CO5	CLO3 CLO6	R U A1 A2 C
Unit III	1. Study of Notation Systems a) Bhatkhande's notation system b) Staff Notation System 2. Knowing Raga : Raag Yaman 3. Modes and Modal scale pt. 1 a. Ionian b. Dorian 4. Choir Singing • Soprano • Alto • Tenor • Bass	10	CO8 CO9	CLO4 CLO5	R U A1 A2 E

PRACTICAL

COURSE CODE	23 MUSMDC 201
COURSE TITLE	Comparative Study of Classical Music
CREDITS	1
LECTURE HOURS	30
CATEGORY	Multidisciplinary Course (MDC) - Practical
SEMESTER	III
INTENDED LEVEL	UG CERTIFICATE
REGULATION	2023
COURSE OVERVIEW This course -	Covers the understanding of the categories of swaras/notes i.e. shuddha or, Vikrut/ Sharp or, flats.
	Explains the formation of alankars/ progression.
	Formulates Paltas and practicing techniques
	Learn to embrace and practice classical music.
	Combine techniques of ICM and WCM Swara scale methods to create and progress in musical ventures.
COURSE OBJECTIVES The students will be able to	1. Attempt singing/playing swaras/notes.
	2. Follow the method of singing/playing paltas/scales.
	3. Perform a skill while observing a demonstrator.
	4. Demonstrate skillfully different types of Alankars/modes.
	5. Adapt to the Swar vistaar/ scale progressions and execution.
	6. Construct different Paltas/progressions using
	swara/notes and taal/time.

COURSE LEARNING OUTCOMES: The students will be able to -		1.	Demonstrate skillfully singing/playing of swaras and notes.			
		2.	Perform Paltas/Scales/Arpeggios with good accuracy.			
		3.	Attempt to play/sing Raga easily.			
		4.	Combine the concepts of modes and scales to create new exercises.			
		5.	Manage naturally to present the concept of Time used in music through hand demonstrations.			
UNIT	CONTENT	HOURS	COs	CLOs	DC	
Unit I	Practice and demonstration a) Swaras - Shuddha and Vikrit b) Alankars c) Paltas d) Scales e) Arpeggios	10	CO1 CO2 CO4 CO5 CO6	CLO1 CLO2	I M P A	
Unit II	Practical study of Raga demonstration ● Raag Yaman Demonstrating Modes and Scales ● Ionian ● Dorian ● A major Scale ● E major Scale ● G minor Scale	10	CO1 CO2 CO3 CO4 CO5	CLO2 CLO3 CLO4	I M P A N	
Unit III	Sight Reading and Demonstration For both Indian and Western Music Reading and Playing notation provided. (Difficulty level: Grade I of Renowned Music Schools in the world)		CO1		I	

	Practical demonstration of Taal with taali-khali. ● Teental ● Ektaal Syncopation ● Rhythmic Diction ● Ear training	10	CO2 CO3	CLO5	M P A

Textbooks and Reference books

1. Prof.Harishchandra Srivastava: Raag Parichay Part I&II
2. Swatantra Sharma: Fundamentals of Indian Music
3. Sandeep Bagehee: Nad, Understanding Raga music, Eeshwar publications, Mumbai,1998
4. V.N. Bhattachande: Kramik Pushtak Malika (Book 1) Hathras, Uttar Pradesh.
5. Swami Prajnanananda: A Historical Study of Indian Music. Munshiram Manoharlal Publishers Pvt. Ltd.New Delhi, 1981.
6. Ashok De Ranade: Hindustani music NBT, India,1997
7. Roy Choudhuri Bimalakanta The Dictionary of Hindustani Classical Music (2013), Motilal Banarsi Dass, New Delhi
8. Scholes, Percy A, The Oxford Companion of Music, ed. John Owen Ward, Oxford University Press, New York, 2000.
9. Colwell, Richard Handbook of Research on music teaching and learning: A project of the Music Educators National Conference, Hackett Editorial service, 1992.
10. Kennedy, Rod, ed. Sparks, Hugh C., Music from the heart, Eakin Press, Austin, Texas,1998.
11. Arnold, The New Oxford Companion to Music Vols. I and II 8. William Love Lock, Form in Brief, A. Hammond and Co. 1948.
12. Vernal Louis, Music theory, Salesian College Sonada, 1975.
13. Gerald Abraham. The Concise Oxford History of Music, Oxford University Press, 1985.
14. Richard Taruskin, Encyclopedia of Music, Oxford University Press, New York, 2005.
15. The Publication of the Associated Board of the Royal Schools of Music, Grade I to IV, Richard Jones.
16. Fundamentals of Music, Raymond Elliott, 4th Ed 2009
17. Tip Basic Music Theory, Wise Publications, Hugo Pinksterdoer, 2007
18. V.S.Nigam: Musicology of India, part I, part II (1992)part III (1993) and part IV(1993),73, Rajendra Nagar, Lucknow-226004.

R: Remembering, U: Understanding, A1: Applying,A2: Analyzing, E: Evaluating, C: Creating Assessment

i. Formative Assessment: 25 marks as per Assessment & Evaluation

Framework Document of Salesian College ii. Summative Assessment: 50 marks

- a) **Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)**
- b) **Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks). Summative Assessment Time: 2 Hours for pen and paper test**

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name:	Name:	Name:
Signature:	Signature:	Signature:

(College round seal in all pages)

VALUE ADDED COURSE

Syllabus

Theory

Paper code	23MUSVAC201
Course Title	Elementary Concepts Of Raga - 2

Credits	1 / 2
Lecture Hours	15
Category	VAC THEORY
Semester	III
INTENDED LEVEL	UG CERTIFICATE
REGULATION	2023
COURSE OVERVIEW This course shall cover	Explains the basic technical terms and terminologies of Hindustani classical music.
	Identification and implementation of various sections of compositions.
	Development of a deeper understanding of the forms and composition in music theory through standard melodic, harmonic and rhythmic structure.
	Appraise major compositions and relate it with other forms of ICM.
COURSE OBJECTIVES The students will be able to	1. Define the basic technical terms and terminologies of Hindustani classical music.
	2. Classify sections of a composition in an orderly manner.
	3. Identify Swaras of raga practically.
	4. Develop a deeper understanding of the raga progression in sequence building a strong foundation in theory through the standard melodic, harmonic and rhythmic structure.
	5. Analyze the classification of the introductory raga.
	6. Interpret the format of a Bandish using the signs of Bhatkhande's notation system.

		7. Test the Classical music system to modern-day music.			
		8. Elaborate the roles and impact of famous musicians in the growth of Indian Classical Music.			
COURSE LEARNING OUTCOMES: The students will be able to -	1.	Tell about the terminologies associated with Ragas mentioned in this course.			
	2.	Classify different parts of a composition.			
	3.	Identify the numerous forms of HCM.			
	4.	Distinguish simple structural differences between the Bhajan and the Thumri.			
	5.	Compose Swar vistaar, Taans following the Chalan of raga and the palta structures.			
	6.	Appraise the role played by eminent musicians in developing and taking HCM to a global platform.			
Prerequisites: ● Basic musical knowledge. Must have a practical aptitude for music. (Preferable). ● Students having Music as their Value added Course in 1st and 2nd Semester.					
UNITS	CONTENT	HOURS	COs	CLOs	RBT
Unit I	I. Study of technical terms and terminologies:				

	• Raga • Alap • Bandish • Taan • Vilambit • Drut • Sthayi • Antara • Bol Composition Study: • Bhajan • Thumri	4	CO1 CO2 CO3 CO4 CO5	CLO1 CLO2	R U A1 A2
		3		CLO3 CLO4	E C
Unit II	I. Notation of compositions in prescribed ragas. • Bhairav • Yaman II. Life sketch of eminent personalities. a) Pandit Ravi Shankar b) Pandit Bhimsen Joshi	6	CO3 CO4 CO5	CLO5	R U A1
		2	CO6 CO7 CO8	CLO6	A2

PRACTICAL

Paper code	23MUSVAC201
Course Title	Elementary Concepts Of Raga - 2
Credits	1 / 2
Lecture Hours	15
Category	VAC Practical

Semester	III
INTENDED LEVEL	UG CERTIFICATE
REGULATION	2023
COURSE OVERVIEW This course shall cover	Study of terms and terminologies associated with raga and compositions
	Different section of a khayal gayaki.
	Summarize forms Khayal and Sargamgeet.
	Application of raga music in modern-day music or music around the students.
COURSE OBJECTIVES The students shall be able to	1. Repeat the singing composition demonstrated by the demonstrator.
	2. Perform the bandish as shown by the demonstrator.
	3. Masterfully perform the Sargamgeet.
	4. Adapt the systematic approach of raga scale.
	5. Manage perfectly to sing raga.
	6. Excel expertly in developing rhythmic sense using taals.
	7. Adapt to the Swara formation and application based on a particular raga in different taals.
	8. Calibrate perfectly while choir singing.
COURSE LEARNING OUTCOMES: The students will be able to -	1. Reproduce and even improvise on the Compositions learned in this course.
	2. Perform Sargamgeet and Khayal in a good manner.
	3. Demonstrate skillfully framing of taans and vistaars following Raga and Time concepts.
	4. Adapt to the system of creating exercises using swars based on a particular raga.

		5. Develop a good sense of Swar and Taals through regular systematic practice.			
UNIT	CONTENT	HOURS	COs	CLOs	DC
Unit I	I. Forms and Compositions of Indian Classical Music (Part I) - Sargamgeet - Khyal II. Knowledge and demonstrating basic taals - Teental - Rupak	8	CO1 CO2 CO3 CO4 CO7	CLO1 CLO2 CLO3 CLO5	I M P A
Unit II	Practical study and demonstration of Ragas (Any One) - Bhairav - Yaman Choir Singing - Soprano	7	CO1 CO3 CO6 CO7	CLO4 CLO5	I M P A
	- Alto - Tenor - Bass				

Textbooks and Reference books

1. Prof.Harishchandra Srivastava: Raag Parichay Part I&II
2. Swatantra Sharma: Fundamentals of Indian Music
3. Sandeep Bagehee: Nad, Understanding Raga music, Eeshwar publications, Mumbai,1998
4. V.N. Bhatkhande: Kramik Pushtak Malika (Book 1) Hathras, Uttar Pradesh.
5. Swami Prajnanananda: A Historical Study of Indian Music. Munshiram Manoharlal Publishers Pvt. Ltd.New Delhi, 1981.
6. Ashok De Ranade: Hindustani music NBT, India,1997

7. V.S.Nigam: Musicology of India, part I, part II (1992)part III (1993) and part IV(1993),73,
Rajendra Nagar, Lucknow-226004

R: Remembering, U: Understanding, A1: Applying, A2: Analyzing, E: Evaluating, C: Creating

Assessment

- i. *Formative Assessment*: 10 marks as per Assessment & Evaluation Framework Document of Salesian College ii. *Summative Assessment*: 15 marks

- a) Assessment will be based on the activity and learning outcome of the student.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Signature:	Name: Signature:	Name: Signature:

(College round seal in all pages)
SEMESTER IV

Syllabus

Theory

COURSE CODE	23MUSVAC202

COURSE TITLE	Elementary Concepts Of Raga - 3
CREDITS	1 / 2
LECTURE HOURS	15
CATEGORY	VAC Theory
SEMESTER	IV
INTENDED LEVEL	UG CERTIFICATE
REGULATION	2023
COURSE OVERVIEW: This course -	Helps identify and understand basic terminology in raga music.
	Guides the interpretation of the compositions of HCM.
	Assists in developing initial musical abilities.

	• Outlines the basic understanding of taal.
	• Evaluates characteristics of Forms and compositions in HCM.
COURSE OBJECTIVES: This course will help students to -	1. Relate terminologies associated with Ragas.
	2. Contrast taals the structure of taals.
	3. Develop progressions based on a chalan of raga.
	4. Analyze laya and its role in providing variety to any composition of HCM.
	5. Justify forms and compositions according to their nature and set-up required.
	6. Improve and gain mastery in the mentioned forms and composition of HCM with regular practice.

COURSE LEARNING OUTCOMES: The students will be able to -	1. Tell why Vadi and Samvadi swars are important in Ragas.				
	2. Summarize the importance of shruti in HCM.				
	3. Make use of Laya and Gun to obtain variations in the taans and vistaars.				
	4. Inspect the structural differences between talas and their rhythmic approach and uses.				
	5. Compare the compositions of various singing forms present in HCM.				
	6. Elaborate the basic theoretical details of Raga mentioned in this course.				
Prerequisites: • Basic musical knowledge. Must have a practical aptitude for music. (Preferable). • Students having Music as their Value added Course in 1st and 2nd Semester.					
UNITS	CONTENT	HOURS	COs	CLOs	RBT

Unit I	Detailed study of musical terms and its application – • Jati • Vadi • Samvadi • Anuvadi • Vivadi • Pakad • Chalan • Meend • Nyas • Shruti • Prahar	3	CO1 CO2 CO3 CO4	CLO1 CLO2	R U A1 A2
Unit II	General Study of Tala: • Laya • Matra • Vibhag • Tali • Khali • Sam • Gun Knowledge of Tala and Laya with oral rendering with Tali- Khali • Teental • Ektaal	4	CO1 CO2 CO4	CLO3 CLO4	R U A1 A2 E C

Unit III	Knowledge of following Forms and composition: • Kheyal • Thumri • Hori • Sargam Geet • Lakshan Geet Theoretical study of Raga: • Khamaj • Bhairav	8	CO4 CO5 CO6	CLO5 CLO6	R U A1 A2 E

PRACTICAL

COURSE CODE	23MUSVAC202
COURSE TITLE	Elementary Concepts Of Raga - 3
CREDITS	1 / 2
LECTURE HOURS	15
CATEGORY	VAC Core - Practical
SEMESTER	IV
INTENDED LEVEL	UG CERTIFICATE
REGULATION	2023

COURSE OVERVIEW: This course -	• Identification of various sections of forms and compositions of HCM.
	• Understand and sing Alap following Chalan of a Raga.
	• Demonstration of some simple taans.
	• Interpret the relation between taal and laya.
COURSE OBJECTIVES: Students will be able to -	1. Follow the instructor and develop/render the Alap.
	2. Attempt the Bandish taught by the teacher.
	3. Build Alap based on the Chalan of raga.
	4. Produce simple taans of 8 matras and 16 matras.
	5. Demonstrate skillfully Taali-Khali and time division of taals.
	6. Perform masterfully using the concept of gun in the Bandish demonstration.
	7. Adapt to the semi-classical singing forms and render it with ease.
	8. Combine different elements of Choir Singing to Perform as a Team.

COURSE LEARNING OUTCOMES: The students will be able to -	1. Attempt to render Alap based on the ragas mentioned in the syllabus.
	2. Perform Madhya or, Drut Bandish.
	3. Excel expertly in the art of improvising with Taans and Taals.
	4. Combine the concept of gun from taal to improvise and create various components while performing.
	5. Manage perfectly to sing semi-classical forms like Thumri/Bhajan.

UNIT	CONTENT	HOURS	COs	CLOs	DC
Unit I	Demonstration on any one raga mentioned in the syllabus. (The demonstration must include the following components) • Alaap. • Madhya or Drut Bandish (Composition) • Simple Taans	6	CO1 CO2 CO3 CO4 CO6	CLO1 CLO2 CLO3	I M P A N
Unit II	Demonstration of the Taali-Khali of the taal mentioned in the syllabus. • Teental • Ektaal The demonstration will also focus on the command of the laya and demonstration of Ekgun, Dwigun and Chargin.	4	CO4 CO5 CO6	CLO3 CLO4	I M P A

Unit III	Semi Classical Forms and their applications: (Students will demonstrate any one from the following based on the ragas mentioned in the syllabus.) • Thumri • Hori • Bhajan Choir Singing and notation reading. • Soprano • Alto • Tenor • Bass	5	CO3	CLO1	I
			CO6	CLO2	M
			CO7	CLO3	P
			CO8	CLO4	N
				CLO5	

Textbooks and Reference Books

- Prof.Harishchandra Srivastava: Raag Parichay Part I&II
- Swatantra Sharma: Fundamentals of Indian Music
- Sandeep Bagehee: Nad, Understanding Raga music, Eeshwar publications, Mumbai,1998
- V.N. Bhatkhande: Kramik Pushtak Malika (Book 1) Hathras, Uttar Pradesh.
- Swami Prajnanananda: A Historical Study of Indian Music. Munshiram Manoharlal Publishers Pvt. Ltd.New Delhi, 1981.
- Ashok De Ranade: Hindustani music NBT, India,1997

R: Remembering, U: Understanding, A1: Applying,A2: Analyzing, E: Evaluating, C: Creating
Assessment

i. Formative Assessment: 10 marks as per Assessment & Evaluation

Framework Document of Salesian College ii. Summative Assessment: 15 marks

a) Assessment will be based on the activity and learning outcome of the student.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name:	Name:	Name:
Signature:	Signature:	Signature:

(College round seal in all pages)



Signature

CO-ORDINATOR
Internal Quality Assurance Cell
Salesian College Sonada (Autonomous)
Darjeeling, WB – 734 209



Signature
VICE PRINCIPAL

Salesian College Sonada (Autonomous)
Darjeeling, WB – 734 209

Course Code	23MCJSEC102
Course Title	Newspaper Production
Credits	03
Lecture Hours	90 45
Hours/Week	4
Category	Skill Enhancement Course
Semester	II
Regulation	2023

Course Overview:

This course –

Has been designed for students to get a theoretical understanding and practical training in producing an in-house newspaper.

Prerequisites and/or Note(s):

- Basic knowledge of report writing
- Basic computer knowledge

Course Objectives:

1. To define various elements of a newspaper
2. To understand basics of the various newspaper formats and design
3. To implement various technological process involved in the production of a newspaper
4. To produce a newspaper

Course Outcomes (COs) and Cognitive Level Mapping

At the end of this course, the students will be able to-

COs	Statement	Dave's Taxonomy
CO1	Follow the instructor to create a newspaper layout	I
CO2	Execute the knowledge of newspaper designing	M
CO3	Demonstrate the various aspects of newspaper designing and photo editing	P
CO4	Formulate layout design of a dummy newspaper	A
CO5	Create a four page dummy newspaper comprising of an Op- Ed and six reports	N

(College round seal in all pages)

COURSE ONTENT

UNITS	CONTENT	HOURS	COs	DAVE'S TAXONOMY
UNIT - I	Newspaper Designing Terminology Dateline, credit line, print line, editorial and Op-Ed page, columns, cartoons, jumpy copies, marriage of copies; Types of headlines – Stepped, tombstone, flush left, centered, pyramid, reverse pyramid, waist, reverse waist. MAST HEAD	12	CO 1 CO 2 CO 3	I M P
UNIT - II	Principles of Newspaper Designing I Designing, different types of newspaper layouts, eye movement, The Z Pattern - Measuring in Design, Determining Type Readability, Marking up Reporter's Copy, Determining Copy Depth, Using a Copy Log, Determining Headline Size, Determining Headline Depth, Scaling Artwork, Dummying with Symbols	18	CO 1 CO 2 CO 3 CO 4	I M P A
Unit III	Principles of Newspaper Designing II Horizontal Page Design, the Quadrant Page Design, the Modular Page Design, the Single Theme Page, the Editorial Page, the Sports Page, the Single-Page Feature, the Photo Features Page, Dealing with Ads, and Introduction to Adobe InDesign	20	CO 1 CO 2 CO 3 CO 4 CO 5	I M P A N
Unit IV	Photo Editing Photo Editing -The Single Image and the Photo-story - The paradox of the photo-story, word, image, caption writing, photographs in newspapers. The Production process - the photo-story, the equipment, the fieldwork, return to the editorial desk, editing and final touch-offs, and the photo desk; Introduction to	15	CO 1 CO 2 CO 3 CO 4 CO 5	I M P A N

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	Adobe Photoshop			
Unit V	Designing and Production Design and produce a 4-page newspaper comprising of an Op-Ed page. Include six news reports from the following news beats: - Political Reporting - Entertainment Reporting - Education Reporting - Health Reporting - Sports Reporting - Human Interest Reporting	25	CO 1 CO 2 CO 3 CO 4 CO 5	I M P A N

Learning Resources:

Kamath, M.V. (2009). *The Journalist's Handbook*. New Delhi: Vikas Publishing House Pvt. Limited

Gupta, V. S. (2003). *Handbook of Reporting and Communication Skills*. India: Concept Publishing Company

Roy, B. (2004). *Modern Student Journalism*. India: Pointer Publishers.

Aggarwal, V.B. (2006) *Essentials of Practical Journalism*, Concept Publishing Company

Smith, J. (2007) *Essential Reporting*, Sage publications

Suggested Reading:

Baker, J. (2021). *Essential Journalism: The NCTJ Guide for Trainee Journalists*. United Kingdom: Taylor & Francis

Hasan, S. (2020). *Mass Communication: Principles and Concepts*. India: CBS Publishers & Distributors.

Horst, M., Viet, K. (2017). *Journalism Basics: An Introduction to Print Journalism*. Poland: Create Space Independent Publishing Platform

Saltz, I. (2019). *Typography Essentials Revised and Updated: 100 Design Principles for Working with Type*. United States: Rockport Publishers.

Assessment:

Practical Exam:

- Formative Assessment*: 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- Summative Assessment*: 50 marks

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1. Course Description

Course Code	23PEDVAC101			
Course Title	Sports for Life - I			
Credits	2			
Total Hours	60			
Hours per Week	4			
Course Type	Value Added Course			
Semester	I			
Intended Level	Certificate			
Issue(s) Addressed	Human Values			
Course Offered to	Physical Education			
Regulation	2024			
Course Overview	This course: a. Covers the Fundamental skills and rules of the Selected Sport. b. Gives an exposure of match practice with the application of rules of the various games.			
Prerequisite	Basic knowledge on Sports.			
Course Objectives	A student will be able to: 1. Analyse the significance of sports to promote health, fitness, and wellness in life. 2. Relate the values of teamwork, tolerance, goal-setting, and decision making. 3. Design the strategies and tactical moves while playing a sport. 4. Evaluate the importance of physical activity in reference to 3S: strength, speed, and suppleness.			
Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Recall the History of the Game	R		
CO2	Explain the rules and their interpretation of the Game	U		
CO3	Demonstrate the Fundamental Skills of the Game.	A1		
CO4	Examine the duties of the Officials	A2		
CO5	Rate the execution of fundamental skills of the Game.	E		
CO6	Construct the various playfields with correct markings.	C		
CO7	Replicate the basic skills of the game	I		
CO8	Re-create the fundamental skills of the game.	M		
CO9	Demonstrate the fundamental skills during the game.	P		
CO10	Teach the fundamental skills of the game	A		
CO11	Design the fundamental skills of the game.	N		
Course Content				
Units	Content (ANY 2 OUT OF 3 UNITS)	Lecture Hours	COs	RBT

Unit I	FOOTBALL A. <u>Session 1</u> - History of the Game B. . <u>Session 2-5</u> Playfield Technology – Marking and Construction of the playfields C. . <u>Session 6-8</u> Rules and their interpretation and duties of officials. D. . <u>Session 9-14</u> Fundamental Skills: ☐ Kicking: Kicking the ball with inside of the foot, kicking the ball with Full Instep of the foot, kicking the ball with Inner Instep of the foot, kicking the ball with Outer Instep of the foot and Lofted Kick. ☐ Trapping: Trapping- the Rolling ball, and the Bouncing ball with sole of the foot. ☐ Dribbling: Dribbling the ball with Instep of the foot, dribbling the ball with Inner and Outer Instep of the foot. ☐ Heading: In standing, running, and jumping condition. ☐ Throw-in: Standing throw-in and Running throw-in. ☐ Feinting: With the lower limb and upper part of the body. ☐ Tackling: Simple Tackling, Slide Tackling. ☐ Goal Keeping: Collection of Ball, Ball clearance, kicking, throwing, and deflecting. E. <u>Session 15</u>: Game practice with application of Rules and Regulations.	30	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8 CO9	R U A1 A2 E C I M P A N P
Unit II	BASKETBALL A. <u>Session 1</u> - History of the Game B. . <u>Session 2-5</u> Playfield Technology – Marking and Construction of the playfields C. . <u>Session 6-8</u> Rules and their interpretation and duties of officials. D. Fundamental Skills:	30	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E C I

	• Passing: Two hand Chest Pass, two hands Bounce Pass, One hand Baseball Pass, Side arm Pass, Overhead Pass, Hook Pass. • Receiving: Two hand receiving, one hand receiving, receiving in stationary position, receiving while Jumping and Receiving while Running. • Dribbling: How to start dribble, drop dribble, High Dribble, Low Dribble, Reverse Dribble, Rolling Dribble. • Shooting: Lay-up shot and its variations, One hand set shot, Two hands jump shot, Hook shot, Free Throw. • Rebounding: Defensive rebound and Offensive rebound. • Individual Defence: Guarding the player with the ball and without the ball, Pivoting. E. Session 15: Game practice with application of Rules and Regulations		CO6 CO7 CO8	M P A N
Unit III	ATHLETICS A. Session 1 - History of the Game B. . Session 2-5 Playfield Technology – Marking and Construction of the playfields C. . Session 6-8 Rules and their interpretation and duties of officials. D. . Basic skills and techniques of Athletic Events: (Any One) • Running Events: sprint races, middle- and long-distance races, hurdles races • Jumping Events- long jump, Triple Jump and High Jump. • Throwing Events- Shot put, Discus throw. E. Session 15: Game practice with application of Rules and Regulations	30	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8 CO9	R U A1 A2 E C I M P A N P
LEARNING RESOURCES: 1. Sharma, N.P., (2005) Fundamental of Track and Field, Khel Sahitya Kendra, New Delhi, India. 2. Striano, P & DC., (2013) Anatomy of Running: A Guide to Running Right, Hinkler Publishers, UK. 3. Kaur, B., (2020) Officiating and Coaching, Sports Publication, New Delhi.				

4. Jain, R., (2012) Play and Learn Track and Field, Khel Sahitya Kendra, New Delhi.
5. Mitra, S., Das, P.K & Bandyopadhyay, N., (2022) Basics of Basketball for Teaching and Coaching Courses, Akansha Publishing House, Darya Ganj, Delhi.
6. Srivastava, A.K., (2010) Book of Rules of Games and Sports, Sports Publication, New Delhi.
7. Jange, H.S. & Pasodi, M.S., (1 January 2018) Officiating and Coaching in Physical Education and Sports, Khel Sahitya Kendra, New Delhi.
8. Hohenstein, M., (1 February, 2000) Games, Bethany House Publishers, a division of Baker Publishing Group, Minnesota, US.

SUGGESTED READING:

- 1) Mahaboobjan, A., and Viswejan, U. (2021) Rules and Measurements in sports and games, Sports Publication (First Edition), New Delhi.
- 2) Bain, R., (2019) Rule Book of Games: Football, Alpha Editions.
- 3) Hawkins, V., (2018) Rule Book of Games: Basketball, Alpha Edition.
- 4) Singh, A.K., (2022) Basketball- Complete Guide Book – (First Edition), Sport Publication, New Delhi.
- 5) Amateur Athletic Union of the United States, (2010), Official Athletic Rules and Official Handbook, Nabu Press.
- 6) Pluff, G.E., (1 January, 2013) The A-Z Basketball Book: What Every Player Needs to Know to be Great at the Game, Zaccheus Entertainment.
- 7) Singh, L., (2021) Track & Field Rules and Regulations, Khel Sahitya Kendra, New Delhi.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment:

Log Books to be maintained and recorded for individual students for formative assessment.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Wilson Bara	Name: Mr. Wilson Bara	Name: Mr Ravi Bhushan Singh
Signature:	Signature:	Signature:



Salesian College

(Autonomous)

Sonada - Siliguri

National Education Policy (NEP) 2020 Curriculum Framework

For

Physical Education (Non-Major Papers)

Department of Physical Education

Curriculum Document

2023 – 2024

Vision

To prepare Physical Education leaders of high academic calibre with a holistic development of body, mind and spirit nurtured with a strong commitment to serve humanity.

Mission

To give all students opportunities and experiences that lead to the achievement of total wellness and result in a longer and healthier life.

To develop a quality physical education program that emphasizes enjoyable participation in physical activities; to help students develop the knowledge, attitude, motor skills, social skills and confidence needed to begin and maintain a healthy physically active lifestyle for the rest of their life.

1. Programme Overview

Bachelor of Arts is a four-year degree programme with the possibility of completing the fourth year with research if a particular student secures 75% CGPA in the previous exams.

2. Programme Objectives and Outcomes (POs)

1. The curriculum would enable the pass out to select the inherited talented children for various sports activities.
2. The pass out shall be able to orient children in schools with the fundamental skills of selected sports as per their inherited potential.
3. The pass out shall be able to devise training program for athletes engaged in different sports activities
4. The curriculum shall enable them to officiate, supervise various sports tournaments and orient them in organizing sports events at all levels.
5. The curriculum would enable the pass out students to be entrepreneur (to start their own fitness centre, gym, spa etc) and device appropriate fitness program for different genders and age groups of people.
6. The curriculum would enable the pass out to devise training program for physically challenged peoples

After completion of the programme, a student will be able to:	
Knowledge	PO01: Grasp the theories of Physical Education philosophy, sociology, and psychology.
	PO02: Acquaint him/herself with the history of the Indian Physical Education system, its educational policies, commissions and committees.
	PO03: Relate his/her understanding of guidance and counselling, peace and value education in various classroom situations and societal experiences.
	PO04: Gain awareness about the various contemporary issues in Physical Education.
Skills	PO05: Demonstrate his/her communication skills through paper presentation on subject as well as various interdisciplinary themes.
	PO06: Construct instructional designs, scholastic & co-scholastic curriculum designs.
	PO07: Integrate and apply ICT in learning process
	PO08: Acquaint him/herself with the diverse current Physical education problems and other related issues like SSA, Inclusive education, unemployment, population explosion, poverty, and national disintegration.
Competence	PO09: Explore new ideas and thoughts through the application of theoretical knowledge of education subject and statistical techniques and pedagogical analysis.
	PO10: Initiate self-sufficiency, sincerity, independent thinking as education is a lifelong process for empowering the student to face all challenges in his/her future endeavours.
	PO11: Develop concern for the society, nation as well as promote the feeling of internationalism by comparing our Physical Education system with that of other developed countries.

3. Programme Specific Objectives & Outcomes (PSOs)

Knowledge	PSO1: A student develops a clear idea about the subject Physical Education and Sports, like nature, scope and aim of Physical Education, factors, different agencies of Physical Education and Sports.
	PSO2: A student gathers knowledge about Physical Education and Sports Psychology, its theories, and their implication in the field of education and education system.
	PSO3: A student develops knowledge about the detailed history of the Indian Physical Education system.
	PSO4: A student internalises the basics of Anatomy, Physiology and Exercise Physiology, relation between Anatomy and Physiology and importance of scientific analysis in the field of Physical Education.
	PSO5: A student develops knowledge about basic of Indian Sports as well as Western Sports.
	PSO6: A student develops the concept of coaching and training, various types of training and basic skills necessary for coaching.
	PSO7: A student develops the concept of research and statistics to develop skill in analysing descriptive measures, concept of Learning Curve and its uses in Physical Education, measures of relationship and organize relevant data and to represent data through graphs and to develop skill in analysing and displaying data.
	PSO8: S/he also develops knowledge about the importance of different types of sports in the field of Physical Education.
Skills	PSO1: A student will develop a clear idea about the subject Physical Education, like nature, scope and aim of Physical Education, factors, different agencies of Physical Education and Sports.
	PSO2: A student will execute the educational implications of the theories of Sports Psychology.
	PSO3: A student will construct Physical Education and Sports Instructional Designs, Scholastic and Co-Scholastic Curriculum designs.
	PSO4: A student will develop an understanding of Sports Technology, ICT and e-learning.
	PSO5: A student will advocate the importance of Coaching and Training.
	PSO6: A student will develop the skill of using computer in Physical Education and Sports, ICT & e-learning.
	PSO7: A learner will exhibit an excellent communication skill, Skill for Democratic Citizenship and related theories, teaching skills, life skill education, peace, and value education.
Competence	PSO1: A learner demonstrates competencies required to use computers in Physical Education and Sports, communication, ICT & e-learning for implementing instructional techniques and different models of teaching.
	PSO2: A student will analyse the detailed history of Indian Physical Education system.
	PSO3: A student will develop a positive attitude towards developing one's own potentials (both biological & cultural) and talents.
	PSO4: A student will be capable of self-paced and self-directed learning aimed at personal development.
	PSO5: A student will envision a society where people from all walks of life enjoy equal and equitable rights and opportunities.
	PSO6: A student will compute statistical analysis in the field of Physical Education research.
	PSO7: A student will analyse the contemporary trends in Physical Education.

4. Programme Matrix

Course Code	Course Type	Title of the Course	Credit	Lecture Tutorial Practical (L+T+P)	Total Hours	Total Marks
Semester 1						
23PEDMIN101	Minor	Introduction of Physical Education and Sports	4	3+0+1	75	100
23PEDMDC101	MDC	Fitness, Recreation and Sports Management	3	3+0+0	45	100
23PEDVAC5	VAC	Sports for Life	1	0+0+1	30	100
23PEDVAC01	VAC	Organization and Management in Sports	1	0+1+0	30	100
Total			9	6+1+2	180	400
Semester 2						
23PEDMIN102	Minor	Management of Physical Education and Sports	4	3+0+1	75	100
23PEDMDC102	MDC	Health and Fitness Education	3	3+0+0	45	100
23PEDVAC7	VAC	Sports for Life	1	0+0+1	30	100
23PEDVAC02	VAC	Contemporary Issues in Sports	1	0+1+0	30	100
Total			9	6+1+2	180	400

1. Course Description

Course Code	23PEDMIN101	
Course Title	Introduction of Physical Education and Sports	
Credits	4	
Total Hours	75	
Hours per Week	5	
Course Type	Minor	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed	Human Values	
Course Offered to	Physical Education	
Regulation	2023	
Course Overview	This course: 1. Covers the basic concepts of Physical Education. 2. Gives an exposure on the Sociological and Philosophical Foundations of Physical Education. 3. Makes the students understand the history and importance of Physical Education.	
Prerequisite	Basic knowledge on Physical Education and Sports.	
Course Objectives	A student will be able to: 1. State the meaning, definition and scope of Physical Education and Sports. 2. Illustrate the modern concept, misconceptions, need and importance of Physical Education. 3. Discuss the Sociological and Philosophical Foundations of Physical Education. 4. Analyse the role of games and sports in National and International integration. 5. Summarise the History of Physical Education and Sports in India. 6. Support the contribution of Akhadas, Vyayamshalas and National Institutes of Physical Education in India. 7. Discuss the Olympic Movement and the historical background of the Asian Games.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	State the meaning, definition and scope of Physical Education and Sports.	R
CO2	Discuss the historical development of Physical Education and Sports in India	U
CO3	Apply the sociological and philosophical principles of Physical Education and Sports	A1
CO4	Research on the contribution of Eminent Physical Educationists.	A2
CO5	Discriminate between Ancient and Modern Olympics.	E

CO6	Plan Yoga and Prayanama activity session.	C		
CO7	Replicate proper techniques of Yoga and Prayanama.	I		
CO8	Perform correct techniques of Yoga and Prayanama	M		
CO9	Demonstrate correct techniques of Yoga and Prayanama	P		
C010	Teach correct techniques of Yoga and Prayanama	A		
CO11	Design correct techniques of Yoga and Prayanama	N		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	INTRODUCTION a. Meaning, Definition & Scope of Physical Education and Sports. b. Aim, Objectives, Need & Importance of Physical Education and Sports. c. Misconceptions and Modern concept of Physical Education. d. Career Opportunities of Physical Education & Sports.	15	CO1	R U A1 A2 E C
Unit II	HISTORICAL DEVELOPMENT a. Historical Development of Physical Education and Sports in India - Pre and Post Independence periods - Contribution of Akhadas, Vyayamshalas and National Institutes of Physical Education in India b. Historical background and concept of Ancient & Modern Olympic Games, Asian Games and Commonwealth Games. c. Contribution of Eminent Physical Educationists. d. National Sports Awards- Arjuna Award, Dronacharya Award & Dhyanchand Award.	15	CO2 CO4 CO5	R U A1 A2 E C
Unit III	FOUNDATIONS OF PHYSICAL EDUCATION & SPORTS a. Sociological Foundation- Meaning and definition of Sociology, Society and Socialization. b. Biological Foundation: Growth & Development c. Philosophical Foundations- naturalism, pragmatism, realism, idealism	15	CO3	R U A1 A2 E C

	d. Role of games and sports in National and International integration, Ethics of Sports.			
Unit IV	FIELD PRACTICAL a. Yoga Asana: Standing position, Sitting Position, Supine Position, Prone Position, Inverted Position (Compulsory one asana in each position) b. Prayanama: Kapalbhati, Bhramari, Anulom Vilom (Any 2)	30	CO6 CO7 CO8 CO9 CO10 CO11	I M P A N

LEARNING RESOURCES:

1. Kamlesh, M. L. & Singh, M. K. (2006) Foundation of Physical Education (Naveen Publications).
2. Singh, A. et al. (2000) Essentials of Physical Education, Kalyani Publishers, Ludhiana, Punjab.
3. Jain, D., (2005) Principles of Physical Education, Khel Sahitya Kendra, New Delhi, India.
4. Deshmukh, S.V., (2012) Philosophical, Sociological, Historical and Recreational Basis of Physical Education and Sports, Sports Publication, New Delhi.
5. Srinivasan, M.V., (2013) Handbook of Physical Education, Swastik Publication, Nai Sarak, Delhi.
6. Prasad, Y.V.R.K., (2017) Methods of Teaching Physical Education, Discovery Publishing House, Ansari Road, Darya Ganj, New Delhi.
7. Bhunia, B., (2016) Modern Physical Education Sports and Globalization, SB Enterprises, Bangalore, India.

SUGGESTED READING:

1. Graham, G. (2001) Teaching Children Physical Education: Becoming a Master Teacher. Human Kinetics, Champaign, Illinois, USA.
2. Lau, S.K. (1999), Great Indian players, New Delhi, Sports Publication
3. Lumpkin, A. (2007) Introduction to Physical Education, Exercise Science and Sports Studies, McGraw Hill, New York, U.S.A.
4. Siedentop, D. (2004) Introduction to Physical Education, Fitness and Sport, McGraw Hill Companies Inc., New York, USA.
5. Shaffer, D.R. (2002) Developmental Psychology: Childhood and Adolescence. Thomson, Sydney, Australia
6. Shukla, (2000) Mother on Education, National Council of Teacher Education, New Delhi.
7. Wuest, D.A. & C.A. Bucher (2006) Foundations of Physical Education, Exercise Science, and Sports. McGraw Hill Companies, Inc., New York, USA.
8. Sharma, N.P., (2009), Sports History, KSK Publisher & Distributors, New Delhi – 110002.
9. Bhattacharyya, A.K. (2012), Dimensions of Physical Education: Principles, Foundations Interpretations, Classique Books, Kolkata-12

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment:

- i. **Formative Assessment:** 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. **Summative Assessment:** 50 marks (25 Marks Theory + 25 Marks Practical)
Theory (50 Marks Exam to be converted to 25 Marks):
a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)

- b) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks).
Summative Assessment Time: 2 Hours for pen and paper test

Practical (50 Marks Exam to be converted to 25 Marks):

SL. No.		
1	Lab. Note Book	10
2	Viva-voce	10
3	Practical	30
TOTAL		50

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Wilson Bara Signature:	Name: Mr. Wilson Bara Signature:	Name: Mr Ravi Bhushan Singh Signature:

1. Course Description

Course Code	23PEDMDC101	
Course Title	Fitness, Recreation and Sports Management	
Credits	3	
Total Hours	45	
Hours per Week	3	
Course Type	Multi-Disciplinary Course	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed	Human Values	
Course Offered to	Physical Education	
Regulation	2023	
Course Overview	This course: 1. Covers the basic concepts of Fitness, Recreation & Sports Management. 2. Gives an exposure on the components of Physical Fitness. 3. Discusses the types of recreational activities for different age group.	
Prerequisite	Basic knowledge on Sports, Fitness and Recreation.	
Course Objectives	A student will be able to: 1. Summarize the concepts of fitness, Recreation and Sports Management. 2. Express the components of Physical Fitness and factors affecting them. 3. Discuss the assessment and maintenance methods of Fitness components. 4. Design recreational activities for different age groups 5. Support the therapeutic aspects of recreational activities. 6. Explain the principles, functions, and purpose of Sports Management. 7. Analyse the scope of Management in Physical Education and Sports.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Define the concept, types, and components of fitness.	R
CO2	Discuss the various assessment and maintenance techniques of components of fitness.	U
CO3	Construct various types of recreational activities for different age groups	A1
CO4	Analyse the therapeutic aspects of recreational activities.	A2
CO5	Rate the factors affecting fitness	E
CO6	Develop management skills in Physical Education and Sports.	C

Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	INTRODUCTION TO FITNESS a. Meaning, Definition, Importance of fitness. b. Components of Skill and health related physical fitness, factors affecting fitness. c. Measurement of fitness through different tools and techniques.	15	CO1 CO2 CO5	R U A1 A2 E C
Unit II	RECREATION AND RECREATIONAL ACTIVITIES a. Meaning, Definition, and Importance of Recreation. b. Types of recreational activities for different age groups. c. Therapeutic aspects of recreational activities.	15	CO3 CO4	R U A1 A2 E C
Unit III	INTRODUCTION TO SPORTS MANAGEMENT a. Meaning, Definition, Scope, and principles of Sports Management. b. Management of Events, Equipment and Play Fields in Physical Education and Sports. c. Budget- meaning, source of income, expenditure, and preparation of budget.	15	CO6	R U A1 A2 E C
LEARNING RESOURCES: - Nathial, M.S., (2009) Sports, Health and Physical Education, Khel Sahitya Kendra, New Delhi. - Restak, R.M.D., (2014) The Bony: A Complete User's Guide, National Geographic Publishers, Washington, D.C., US. - Singh, Y., (2005) Sports Management, Sports Publication, New Delhi. - Chelladurai, P & Kerwin, S., (2017) Human Resource Management in Sport and Recreation, Human Kinetics, US. - Arora, S, Agarwal, M & Gupta, B., (2019) A Textbook on Physical Education and Health Education: Fitness, Wellness and Nutrition, Khel Sahitya Kendra Publishers and Distributors, New Delhi. - Govindarajulu, N., (2005) Management of Physical Education and Sports Programme, Friends Publications, India. - Miller, D.K. & Allen T.E., (1 September, 1989) Fitness: A Lifetime Commitment, Macmillan Publishers, USA. SUGGESTED READING: - Jensen C. and Naylor J. (2005). "Opportunities in Recreation and Leisure Sports" McGraw Hill. Publishers. New York. U.S.A. - V.V. Hunt, "Recreation for the Handicapped" Prentice Hall inc., 1974 - Chelladurai. P (1999) "Human Resource Management in sport and Recreation", Human kinetics. K. Chandrashekar "Sports Administration" Vinek Thani Khel Sahitya Kendra pub., (2004)				

5. Willgoose, C.E. (1979). "Curriculum in Physical Education" 3rd Ed. Englewood Cliffs.: N.J. Prentice Hall, Inc
6. "Greenbelt Recreation Activity Guide-Fall 2018" (Aug 17, 2018), City of Greenbelt
7. Mood Dale, Frank Musker, Judith Rink, (February 23, 2011), "Sports and Recreational Activities" McGraw-Hill Education; 15 edition, ISBN-10: 0078022487
8. Nanda, S.M. Sports Management, Friend Publications, New Delhi.
9. Paul, A. Sarirsikshay Management, Classic Publishers, Kolkata.
10. Bucher, C. A. Administration of Physical Education and Athletic Programme. St. Louis: The C.V. Mosby Co.
11. Broyles, F. J. & Robert, H. D. Administration of Sports, Athletic Programme: A Managerial Approach. New York: Prentice Hall Inc

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment:

- i. **Formative Assessment:** 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. **Summative Assessment:** 50 marks
 - c) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
 - d) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks).
 Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Wilson Bara Signature:	Name: Mr. Wilson Bara Signature:	Name: Mr Ravi Bhushan Singh Signature:

1. Course Description

Course Code	23PEDVAC5			
Course Title	Sports for Life			
Credits	1			
Total Hours	30			
Hours per Week	3			
Course Type	Value Added Course			
Semester	I			
Intended Level	Certificate			
Issue(s) Addressed	Human Values			
Course Offered to	Physical Education			
Regulation	2023			
Course Overview	This course: a. Covers the Fundamental skills and rules of the Selected Sport. b. Gives an exposure of match practice with the application of rules of the various games.			
Prerequisite	Basic knowledge on Sports.			
Course Objectives	A student will be able to: 1. Analyse the significance of sports to promote health, fitness, and wellness in life. 2. Relate the values of teamwork, tolerance, goal-setting, and decision making. 3. Design the strategies and tactical moves while playing a sport. 4. Evaluate the importance of physical activity in reference to 3S: strength, speed, and suppleness.			
Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Recall the History of the Game	R		
CO2	Explain the rules and their interpretation of the Game	U		
CO3	Demonstrate the Fundamental Skills of the Game.	A1		
CO4	Examine the duties of the Officials	A2		
CO5	Rate the execution of fundamental skills of the Game.	E		
CO6	Construct the various playfields with correct markings.	C		
CO7	Replicate the basic skills of the game	I		
CO8	Re-create the fundamental skills of the game.	M		
CO9	Demonstrate the fundamental skills during the game.	P		
CO10	Teach the fundamental skills of the game	A		
CO11	Design the fundamental skills of the game.	N		
Course Content				
Units	Content	Lecture Hours	COs	RBT

Unit I	FOOTBALL A. <u>Session 1</u>- History of the Game B. . <u>Session 2-5</u> Playfield Technology – Marking and Construction of the playfields C. . <u>Session 6-8</u> Rules and their interpretation and duties of officials. D. . <u>Session 9-14</u> Fundamental Skills: • Kicking: Kicking the ball with inside of the foot, kicking the ball with Full Instep of the foot, kicking the ball with Inner Instep of the foot, kicking the ball with Outer Instep of the foot and Lofted Kick. • Trapping: Trapping- the Rolling ball, and the Bouncing ball with sole of the foot. • Dribbling: Dribbling the ball with Instep of the foot, dribbling the ball with Inner and Outer Instep of the foot. • Heading: In standing, running, and jumping condition. • Throw-in: Standing throw-in and Running throw-in. • Feinting: With the lower limb and upper part of the body. • Tackling: Simple Tackling, Slide Tackling. • Goal Keeping: Collection of Ball, Ball clearance- kicking, throwing, and deflecting. E. <u>Session 15:</u> Game practice with application of Rules and Regulations.	30	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8 CO9	R U A1 A2 E C I M P A N P
Unit II	BASKETBALL A. <u>Session 1</u>- History of the Game B. . <u>Session 2-5</u> Playfield Technology – Marking and Construction of the playfields C. . <u>Session 6-8</u> Rules and their interpretation and duties of officials. D. Fundamental Skills:	30	CO1 CO2 CO3 CO4 CO5	R U A1 A2 E C I

	• Passing: Two hand Chest Pass, two hands Bounce Pass, One hand Baseball Pass, Side arm Pass, Overhead Pass, Hook Pass. • Receiving: Two hand receiving, one hand receiving, receiving in stationary position, receiving while Jumping and Receiving while Running. • Dribbling: How to start dribble, drop dribble, High Dribble, Low Dribble, Reverse Dribble, Rolling Dribble. • Shooting: Lay-up shot and its variations, One hand set shot, Two hands jump shot, Hook shot, Free Throw. • Rebounding: Defensive rebound and Offensive rebound. • Individual Defence: Guarding the player with the ball and without the ball, Pivoting. E. Session 15: Game practice with application of Rules and Regulations		CO6 CO7 CO8	M P A N
			CO9	P
Unit III	ATHLETICS A. Session 1 - History of the Game B. . Session 2-5 Playfield Technology – Marking and Construction of the playfields C. . Session 6-8 Rules and their interpretation and duties of officials. D. . Basic skills and techniques of Athletic Events: (Any One) • Running Events: sprint races, middle- and long-distance races, hurdles races • Jumping Events- long jump, Triple Jump and High Jump. • Throwing Events- Shot put, Discus throw. E. Session 15: Game practice with application of Rules and Regulations	30	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8 CO9	R U A1 A2 E C I M P A N P
LEARNING RESOURCES: 1. Sharma, N.P., (2005) Fundamental of Track and Field, Khel Sahitya Kendra, New Delhi, India. 2. Striano, P & DC., (2013) Anatomy of Running: A Guide to Running Right, Hinkler Publishers, UK. 3. Kaur, B., (2020) Officiating and Coaching, Sports Publication, New Delhi.				

4. Jain, R., (2012) Play and Learn Track and Field, Khel Sahitya Kendra, New Delhi.
5. Mitra, S., Das, P.K & Bandyopadhyay, N., (2022) Basics of Basketball for Teaching and Coaching Courses, Akansha Publishing House, Darya Ganj, Delhi.
6. Srivastava, A.K., (2010) Book of Rules of Games and Sports, Sports Publication, New Delhi.
7. Jange, H.S. & Pasodi, M.S., (1 January 2018) Officiating and Coaching in Physical Education and Sports, Khel Sahitya Kendra, New Delhi.
8. Hohenstein, M., (1 February, 2000) Games, Bethany House Publishers, a division of Baker Publishing Group, Minnesota, US.

SUGGESTED READING:

- 1) Mahaboobjan, A., and Viswejan, U. (2021) Rules and Measurements in sports and games, Sports Publication (First Edition), New Delhi.
- 2) Bain, R., (2019) Rule Book of Games: Football, Alpha Editions.
- 3) Hawkins, V., (2018) Rule Book of Games: Basketball, Alpha Edition.
- 4) Singh, A.K., (2022) Basketball- Complete Guide Book – (First Edition), Sport Publication, New Delhi.
- 5) Amateur Athletic Union of the United States, (2010), Official Athletic Rules and Official Handbook, Nabu Press.
- 6) Pluff, G.E., (1 January, 2013) The A-Z Basketball Book: What Every Player Needs to Know to be Great at the Game, Zaccheus Entertainment.

Singh, L., (2021) Track & Field Rules and Regulations, Khel Sahitya Kendra, New Delhi.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment:

Log Books to be maintained and recorded for individual students for formative assessment.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Wilson Bara	Name: Mr. Wilson Bara	Name: Mr Ravi Bhushan Singh
Signature:	Signature:	Signature:

1. Course Description

Course Code	23PEDVAC02			
Course Title	ORGANISATION AND MANAGEMENT IN SPORTS			
Credits	1			
Total Hours	30			
Hours per Week	2			
Course Type	VAC			
Semester	I			
Intended Level	Certificate			
Issue(s) Addressed	Professional Ethics			
Course Offered to	Sports Management			
Regulation	2023			
Course Overview	This course: a. Covers the basic concepts of Organisation Behaviour. b. Clear the concepts of sports management. c. Inbuilt the quality of sports Leadership d. Marking the International standard (400 m) running Track			
Prerequisite	Basic knowledge on Organisation and Behaviour.			
Course Objectives	A student will be able to: 1. Quote the meaning, definitions of Organisation Behaviour. 2. Outline the need of Physical Education in modern living. 3. Explain the concept of management in sports. 4. Outline the quality, role, responsibility, and personality of leaders. 5. Design the international standard Athletic track.			
Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Describe the concepts of Organisation Behaviour and Individual Behaviour	R		
CO2	Discuss the various styles and theories of Leadership.	U		
CO3	Apply the principles of Sports Management	A1		
CO4	Examine the need of Physical Education in modern living.	A2		
CO5	Evaluate the correct measurements of Athletic Track Marking.	E		
CO6	Manage Sports tournaments and events in Schools and Colleges.	C		
Course Content				
Units	Content	Lecture Hours	Cos	RBT
Session 1	Organization Behaviour meaning and its concepts.	2	CO1	R U A1 A2

				E C
Session 2	Organisation Behaviour meaning and its concepts.	2	CO1	R U A1 A2 E C
Session 3	Individual behaviour – Ability, Learning, Values, Attitudes, Personality.	2	CO1	R U A1 A2 E C
Session 4	Individual behaviour – Ability, Learning, Values, Attitudes, Personality.	2	CO1	R U A1 A2 E C
Session 5	Trait Theories of Leadership.	2	CO2	R U A1 A2 E C
Session 6	Leadership Styles and Situational theories of Leadership.	2	CO2	R U A1 A2 E C
Session 7	Concept of Sports Management.	2	CO3	R U A1 A2 E C
Session 8	Management in Physical Education and Sports.	2	CO3	R U A1 A2 E C

Session 9	Management in Physical Education and Sports.	2	CO3	R U A1 A2 E C
Session 10	Types of tournaments, preparing fixture of different types of tournaments.	2	CO6	R U A1 A2 E C
Session 11	Physical Education in our daily life.	2	CO4	R U A1 A2 E C
Session 12	Need of Physical Education in Modern living.	2	CO4	R U A1 A2 E C
Session 13	Method of Calculation of Athletic track (practical).	2	CO5	R U A1 A2 E C
Session 14	Track Marking	2	CO5	R U A1 A2 E C
Session 15	Track Marking	2	CO5	R U A1 A2 E C

LEARNING RESOURCES:

1. Govindarajulu, N., (2005) Management of Physical Education and Sports Programme, Friends Publications, India.
2. Thour, M., (2006) Camping Management in Physical Education, Friends Publications, India.
3. Singh, Y., (2005) Sports Management, Sports Publication, New Delhi.

4. Chelladurai, P & Kerwin, S., (2017) Human Resource Management in Sport and Recreation, Human Kinetics, US.

SUGGESTED READINGS:

1. Andin Carment Tabije“Organization and Management of Physical education and Sports” Rex book store, Philippines
2. Barnhill.R. Christopher.,Smith.l. Natalie.& Oja.D. Brent.“Organizational Behavior in sports management” 2021.
3. Dr. Rathore Vishan, “ Administration & Organisation in physical education” khel sahitya Kendra 2013.
4. Mishra.S.C “Organization in physical education” khel sahitya Kendra 2005.

2. Assessment:

Log Books to be maintained and recorded for individual students for formative assessment.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Rakesh Saibo Signature:	Name: Mr. Wilson Bara Signature:	Name: Mr Ravi Bhushan Singh Signature:

1. Course Description

Course Code	23PEDMIN102	
Course Title	Management of Physical Education and Sports	
Credits	4	
Total Hours	75	
Hours per Week	5	
Course Type	Minor	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed	Professional Ethics	
Course Offered to	Physical Education	
Regulation	2023	
Course Overview	This course: 1. Know sports management and employ principles of strategic planning, and financial and human resource management. 2. Develop overall traits of leadership and personality. 3. Develop critical thinking in analysing sport management issues and in managerial planning and decision making. 4. Gives to keen observation about the budget. 5. Able to organize events and sports tournaments.	
Prerequisite	Basic knowledge of Event management and Sports.	
Course Objectives	A student will be able to: 1. Quote the meaning, definitions, principles, and scope of Sports Management. 2. Analyse the concepts of Leadership and Personality in Sports Management. 3. Apply the principles of strategic planning, and financial and human resource management. 4. Examine the importance of management and planning in sports. 5. Critique the sport management issues and managerial planning and decision making in Sports.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Write the importance, Scope, Principles and Management of Physical Education and Sports Programs	R
CO2	Explain the concept of Leadership in Physical Education and Sports	U
CO3	Apply the management principles in Physical Education programs and Games & Sports meets.	A1
CO4	Organise physical Education programs and Games & Sports meets in School, College, and University	A2

CO5	Discriminate between various forms of Leadership	E		
CO6	Formulate a report on visit or participation to standard tournaments, competitions, and Adventure Sports.	C		
CO7	Replicate the techniques of Racket Sports	I		
CO8	Perform correct skills of Racket Sports.	M		
CO9	Demonstrate correct Racket Sports techniques.	P		
CO10	Teach correct skills and techniques of Racket Sports.	A		
CO11	Design proper technical sessions of Racket Sports.	N		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	INTRODUCTION a. Meaning, Definition, Scope, and Principles of Management in Physical Education and Sports. b. Intramural and Extramural competitions – Aims and Objective c. Management of Events, Equipment and Play Fields in Physical Education and Sports.	15	CO1	R U A1 A2 E C
Unit II	LEADERSHIP IN PHYSICAL EDUCATION AND SPORTS a. Meaning, Definition, importance, and principles of Leadership. b. Forms of Leadership (Autocratic, Laissez-faire, Democratic, Benevolent Dictator c. Qualities of good leader.	15	CO2 CO5	R U A1 A2 E C
Unit III	ORGANISATION OF TOURNAMENTS AND SPORTS PROGRAM a. Meaning, Definition, Importance, and types of Tournaments. b. Procedure of Drawing Fixture, merits, and demerits of Knock-out, League and Combination Tournaments. c. Management and Planning of Games & Sports meets in School, College, and University.	15	CO3 CO4	R U A1 A2 E C
Unit IV	FIELD PRACTICAL a. Racket Sports i. Badminton - Fundamental Skills - Playfield Technology – Marking and Construction of the playfields	30	CO6 CO7 CO8 CO9 CO10	I M P A

	Rules and their interpretations and duties of the officials OR		CO11	N
	ii. Table Tennis - Fundamental Skills - Playfield Technology – Marking and Construction of the playfield - Rules and their interpretations and duties of the officials		CO6 CO7 CO8 CO9 CO10 CO11	I M P A N
	b. Project: Organise a standard tournament or competition. Record Book to be maintained.		CO6	C

LEARNING RESOURCES:

- 1) Govindarajulu, N., (2005) Management of Physical Education and Sports Programme, Friends Publications, India.
- 2) Thour, M., (2006) Camping Management in Physical Education, Friends Publications, India.
- 3) Singh, Y., (2005) Sports Management, Sports Publication, New Delhi.
- 4) Chelladurai, P & Kerwin, S., (2017) Human Resource Management in Sport and Recreation, Human Kinetics, US.
- 5) Kaur, B., (2020) Officiating and Coaching, Sports Publication, New Delhi.
- 6) Srivastava, A.K., (2010) Book of Rules of Games and Sports, Sports Publication, New Delhi.
- 7) Jange, H.S. & Pasodi, M.S., (1 January 2018) Officiating and Coaching in Physical Education and Sports, Khel Sahitya Kendra, New Delhi.
- 8) Hohenstein, M., (1 February, 2000) Games, Bethany House Publishers, a division of Baker Publishing Group, Minnesota, US.

SUGGESTED READING:

- 1) Nanda, S.M. Sports Management, Friend Publications, New Delhi.
- 2) Paul, A. Sarirsikshay Management, Classic Publishers, Kolkata.
- 3) Bucher, C. A. Administration of Physical Education and Athletic Programme. St. Louis: The C.V. Mosby Co.
- 4) Broyles, F. J. & Robert, H. D. Administration of Sports, Athletic Programme: A Managerial Approach. New York: Prentice Hall Inc
- 5) Pandey, L.K. (1977). Methods in Physical Education. Delhi: Metropolitan Book Depot.
- 6) Sharma, V.M. & Tiwari, R.H.: (1979). Teaching Methods in Physical Education. Amaravati: Shakti Publication
- 7) Kar, S. & Santra, D.C. (2018): Santak Sarirsiksha Porichaya (Vol.-1), Santra Publication, Kolkata.
- 8) Kamlesh, M.L., (2016) Management Concepts in Physical Education and Sports, Khel Sahitya Kendra, New Delhi.
- 9) Northouse, P.G., (2021) Leadership: Theory and Practice, (ninth edition), Sage Pubns.
- 10) Martenik, T., & Hellison, D., (2015) Youth Leadership in Sports and Physical Education, (first edition), Palgrave Macmillan, New York.
- 11) Mahaboobjan, A., and Viswejan, U. (2021) Rules and Measurements in sports and games, Sports Publication (First Edition), New Delhi.

2. Assessment:

- i. **Formative Assessment:** 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. **Summative Assessment:** 50 marks (25 Marks Theory + 25 Marks Practical)
Theory (50 Marks Exam to be converted to 25 Marks):
 - a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
 - b) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks).Summative Assessment Time: 2 Hours for pen and paper test

Practical (50 Marks Exam to be converted to 25 Marks):

SL. No.		
1	Lab. Note Book	10
2	Viva-voce	10
3	Practical	30
TOTAL		50

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Wilson Bara Signature:	Name: Mr. Wilson Bara Signature:	Name: Mr Ravi Bhushan Singh Signature:

1. Course Description

Course Code	23PEDMDC102	
Course Title	Health and Fitness Education	
Credits	3	
Total Hours	45	
Hours per Week	3	
Course Type	Multi-Disciplinary Course	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed	Human Values	
Course Offered to	Physical Education	
Regulation	2023	
Course Overview	This course: - Covers the basic concepts of Health Education and Test & Measurements in Physical Education. - Discusses the nutritional requirements for daily living and balanced diet. - Gives an exposure to the concepts and management of Sports Injuries. - Studies the various methods of Measurement of Body Composition and Fitness.	
Prerequisite	Basic knowledge on Sports, Fitness and Recreation.	
Course Objectives	A student will be able to: - Describe the concepts and principles of Health and Health Education. - Indicate the Nutritional requirements for daily living of an individual. - Apply the principles of First Aid and Management of Sports Injuries. - Discuss the different types of Postural Deformities. - Examine the concepts of Body Composition Assessments and Fitness Tests. - Analyse the Body Composition and Fitness Levels of different individuals.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the concept and principles of Health and Health Education	R
CO2	Restate the nutritional requirements for daily living and health disorders due to its deficiencies.	U
CO3	Show the techniques of measurement of Body Compositions and Somatotype Assessment	A1
CO4	Examine the various types of Sports Injuries and Postural Deformities.	A2
CO5	Evaluate various components of Physical Fitness using scientific Fitness Tests	E
CO6	Plan a Balanced Diet Chart.	C
Course Content		

Units	Content	Lecture Hours	COs	RBT
Unit I	INTRODUCTION a. Concept, definition, and dimension of Health. b. Definition, aim, objectives and principles of Health Education. c. Nutrition- Nutritional requirements for daily living. d. Balance Diet. Health disorders due to deficiencies of Vitamins and Minerals.	12	CO1 CO2 CO6	R U A1 A2 E C
Unit II	HEALTH AND FIRST-AID MANagements a. First aid- Meaning, definition, importance. b. Management of sports injuries- Sprain, Strain, Fracture and Dislocation. c. Postural deformities- Causes and corrective exercise of Kyphosis, Lordosis, Scoliosis, Knock Knees, and Flat Foot.	12	CO4	R U A1 A2 E C
Unit III	MEASUREMENT OF BODY COMPOSITIONS AND SOMATOTYPE ASSESSMENT a. Body Mass Index (BMI)- Concept and method of measurement. b. Body Fat and Lean Body Mass (LBM) - Concept and method of measurement. c. Somatotype – Concept and meaning.	12	CO3	R U A1 A2 E C
Unit IV	FITNESS TEST (Any 2) a. Yo-Yo Fitness Test b. AAHPER Youth Fitness Test c. Harvard Step Test d. Queen's College Step Test	12	CO5	R U A1 A2 E

LEARNING RESOURCES:

1. Nathial, M.S., (2009) Sports, Health and Physical Education, Khel Sahitya Kendra, New Delhi.
2. Bijlani, R., (2015) Back to Health Through Yoga, Rupa & Co; First Edition, New Delhi.
3. Kansal, D.K., (2012) Practical Approach to Test, Measurement and Evaluation, SSS Publication, Bengaluru, Karnataka.
4. Arora, S., Agarwal M & Gupta B., (2019) Fitness, Wellness and Nutrition, KSK Publishers & Distributors, New Delhi.
5. Charless, H.M., (2004) Tests and Measurement in Health in Physical Education, Friends Publications, India.
6. Miller, D.K., & Allen T.E., (1990) Fitness: A Lifetime Commitment, Macmillan Publishers, New York, US.
7. Daniels, P., & Restak R.MD., (2014) The Body: A Complete User's Guide, National Geographic Publisher, Washington, DC.

SUGGESTED READING:

1. Wasuja, M., (2017) Health Education and Sports Nutrition, Friends Publications (India).

2. Punnya, L.I., (2017) Physical Fitness and Wellness (First Edition), Khel Sahitya Kendra, New Delhi.
3. Thakare, A.P., (2018) Test, Measurement and Evaluation in Physical Education, Sports Publication, New Delhi.
4. Sharma, S.K., (2018) Test, Measurement and Evaluation in Physical Education, Friends Publications, India.
5. Srilakshmi, B., Suganthi, V. & Ashok, C.K., (2016) Exercise Physiology Fitness and Sports Nutrition, (First Edition) New Age International Private Limited.
6. Sangangouda, K., Allaudin, M. & Pasodi, M.S., (2018) Sports Nutrition, Khel Sahitya Kendra, New Delhi.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment:

- i. **Formative Assessment:** 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. **Summative Assessment:** 50 marks
 - c) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
 - d) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks).
 Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Wilson Bara Signature:	Name: Mr. Wilson Bara Signature:	Name: Mr Ravi Bhushan Singh Signature:

1. Course Description

Course Code	23PEDVAC7			
Course Title	Sports for Life			
Credits	1			
Total Hours	30			
Hours per Week	3			
Course Type	Value Added Course			
Semester	I			
Intended Level	Certificate			
Issue(s) Addressed	Human Values			
Course Offered to	Physical Education			
Regulation	2023			
Course Overview	This course: a. Covers the Fundamental skills and rules of the Selected Sport. b. Gives an exposure of match practice with the application of rules of the various games.			
Prerequisite	Basic knowledge on Sports.			
Course Objectives	A student will be able to: 1. Analyse the significance of sports to promote health, fitness, and wellness in life. 2. Relate the values of teamwork, tolerance, goal-setting, and decision making. 3. Design the strategies and tactical moves while playing a sport. 4. Evaluate the importance of physical activity in reference to 3S: strength, speed, and suppleness.			
Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Recall the History of the Game	R		
CO2	Explain the rules and their interpretation of the Game	U		
CO3	Demonstrate the Fundamental Skills of the Game.	A1		
CO4	Examine the duties of the Officials	A2		
CO5	Rate the execution of fundamental skills of the Game.	E		
CO6	Construct the various playfields with correct markings.	C		
CO7	Replicate the basic skills of the game	I		
CO8	Re-create the fundamental skills of the game.	M		
CO9	Demonstrate the fundamental skills during the game.	P		
CO10	Teach the fundamental skills of the game	A		
CO11	Design the fundamental skills of the game.	N		
Course Content				
Units	Content	Lecture Hours	Cos	RBT
Unit I	HANDBALL	30		R

	A. <u>Session 1</u> - History of the Game B. . <u>Session 2-5</u> Playfield Technology – Marking and Construction of the playfields C. . <u>Session 6-8</u> Rules and their interpretation and duties of officials. D. . <u>Session 9-14</u> Fundamental Skills: • Catching, Throwing and Ball control • Goal Throws: Jump shot, Centre shot, Dive shot, Reverse shot. • Dribbling: High and low. • Attack and counter attack, simple counter attack, counter attack from two wings and center. • Blocking, Goalkeeping and Defensive skills. E. Session 15 Game practice with application of Rules and Regulations.		CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8 CO9 CO10 CO11	U A1 A2 E C I M P A N P
Unit II	VOLLEYBALL A) <u>Session 1</u> - History of the Game B)) <u>Session 2-5</u> Playfield Technology – Marking and Construction of the playfields C)) <u>Session 6-8</u> Rules and their interpretation and duties of officials. D)) Fundamental skills: • Service: Under arm service, Side arm service, Tennis service, Floating service. • Pass: Under arm pass, Overhead pass. • Spiking and Blocking. F. Game practice with application of Rules and Regulations.	30	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8 CO9 CO10 CO11	R U A1 A2 E C I M P A N P
Unit III	INDOOR GAMES: Badminton A) <u>Session 1</u> - History of the Game B)) <u>Session 2-5</u> Playfield Technology – Marking and Construction of the playfields C)) <u>Session 6-8</u> Rules and their	30	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C

	interpretation and duties of officials. D) Fundamental Skills • Basic Knowledge: Various parts of the Racket and Grip • Service: Short Service, Long Service, Long-high Service. • Shots: Over Head Shot, Defensive Clear Shot, Attacking Clear Shot, Drop Shot, Net Shot, Smash. E) Game Practice with applications of Rules and regulations OR Table Tennis A) <u>Session 1</u> - History of the Game B) <u>Session 2-5</u> Playfield Technology – Marking and Construction of the playfields C) <u>Session 6-8</u> Rules and their interpretation and duties of officials. D) <u>Session 9-14</u> Fundamental Skills • Basic Knowledge: various parts of the Racket and Grip (Shake Hand & Pen Hold Grip) • Stance: Alternate & Parallel • Push and Service: Backhand & Forehand • Chop: Backhand & Forehand • Receive: Push and Chop with both Backhand & Forehand E) Game Practice with applications of Rules and regulations.		CO7 CO8 CO9 CO10 CO11 CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8 CO9 CO10 CO11	I M P A N P R U A1 A2 E C I M P A N P

LEARNING RESOURCES:

1. Srivastava, A.K., (2010) Book of Rules of Games and Sports, Sports Publication, New Delhi.
2. Daniels, P., & Restak R.MD., (2014) The Body: A Complete User's Guide, National Geographic Publisher, Washington, DC.
3. Jackson, L. Jr., (2014) Racket Wars: Guide Book to all the World's Racket Sports, First Edition, BookBaby Publishers.

SUGGESTED READING:

1. Mahaboobjan, A., and Viswejan, U. (2021) Rules and Measurements in sports and games, Sports Publication (First Edition), New Delhi.

2. Bain, R., (2019) Rule Book of Games: Football, Alpha Editions.
3. Hawkins, V., (2018) Rule Book of Games: Volleyball, Alpha Edition.
4. Singh, A.K., (2022) Volleyball- Complete Guide Book – (First Edition), Sport Publication, New Delhi.
5. Tyson, P & Turman J., (1987) The Handball Book, Human Kinetics Publishers, Canada.
6. McAfee, R.E., (2009) Table Tennis; Steps to Success, Human Kinetics Publishers, Canada.
7. Rai G., (2016) The Art of Table Tennis, Sports Publications, New Delhi.
8. Weatherford, L., (2018) Rule Book of Games: Badminton, Alpha Editions, Ansari Road, New Delhi.
9. Srivastava, A.K., (2009) Badminton Rule Book, Sports Publication, New Delhi.
10. Singh, A.K., (2022) Volleyball: A Complete Guide Book, Sports Publication, New Delhi.
11. Thani, L., (2007) Skills & Tactics; Football Book, Sports Publication, New Delhi.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment:

Log Books to be maintained and recorded for individual students for formative assessment.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Wilson Bara Signature:	Name: Mr. Wilson Bara Signature:	Name: Mr Ravi Bhushan Singh Signature:

1. Course Description

Course Code	23PEDVAC02	
Course Title	CONTEMPORARY ISSUES IN SPORTS	
Credits	1	
Total Hours	30	
Hours per Week	2	
Course Type	VAC	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed	Professional Ethics	
Course Offered to	Sports Management	
Regulation	2023	
Course Overview	This course: a. Covers the Psychological aspect of sports. b. Gives an exposure of Anatomical body structure of sports persons. c. Gives knowledge about different type of sports training.	
Prerequisite	Basic knowledge on contemporary issues in Sports.	
Course Objectives	A student will be able to: 1. Identify the psychological aspects of Sports Training. 2. Discuss the Anatomical and Physiological functions and structure of sports person. 3. Distinguish between the Anatomical and Physiological characteristics of male & female. 4. Apply the concepts and principles of different type of sports training 5. Restate the specific major games’ rules and their interpretation and duties of officials	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the meaning and concepts of Sports Psychology, Anatomy and Physiology	R
CO2	Discuss the need and importance of Psychology in Sports	U
CO3	Apply the concept and principles of Sports Training	A1
CO4	Differentiate between the anatomical and physiological features of Male & Female	A2
CO5	Evaluate the various training methods	E
CO6	Design training programs for developing the various components of fitness.	C
CO7	Replicate the basic skills of the game	I
CO8	Re-create the fundamental skills of the game.	M
CO9	Demonstrate the fundamental skills during the game.	P
CO10	Teach the fundamental skills of the game	A
CO11	Design the fundamental skills of the game.	N

Course Content				
Units	Content	Lecture Hours	Cos	RBT
Session 1	Sports psychology.	2	CO1	R U A1 A2 E C
Session 2	Need and importance of Psychology in sports.	2	CO2	R U A1 A2 E C
Session 3	Attention and Interest	2	CO3	R U A1 A2 E C
Session 4	Anatomy and Physiology in Sports.	2	CO4	R U A1 A2 E C
Session 5	Human Skeleton System.	2	CO1	R U A1 A2 E C
Session 6	Anatomical sex difference.	2	CO5	R U A1 A2 E C
Session 7	Muscular System and the Nervous System.	2	CO1	R U A1 A2 E C

Session 8	Central and Autonomic Nervous System.	2	CO1	R U A1 A2 E C
Session 9	Concepts and Principles of Sports Training.	2	CO5	R U A1 A2 E C
Session 10	Motor fitness and its components.	2	CO6	R U A1 A2 E C
Session 11	Different exercises for developing the various components.	2	CO5 CO6	R U A1 A2 E C
Session 12	Different types of training method (Fartlek training, Interval training, Circuit training).	2	CO5 CO6	R U A1 A2 E C
Session 13	Major Specific Game (Practical).	2	CO7 CO8 CO9 CO10 C11	I M P A N
Session 14	Major Specific Game (Practical).	2	CO7 CO8 CO9 CO10 C11	I M P A N

Session 15	Major Specific Game (Practical).	2	CO7 CO8 CO9 CO10 C11	I M P A N
LEARNING RESOURCES: 1. Srivastava, A.K., (2010) Book of Rules of Games and Sports, Sports Publication, New Delhi. 2. Daniels, P., & Restak R.MD., (2014) The Body: A Complete User's Guide, National Geographic Publisher, Washington, DC. 3. Jackson, L. Jr., (2014) Racket Wars: Guide Book to all the World's Racket Sports, First Edition, BookBaby Publishers. SUGGESTED READINGS: 1. Brar Mandeep kaur "Sports Psychology", Punjab education board 2018. 2. Dr. Dagar R.K.S & Dr. Chauhan Shiv Kumar "sports psychology & sociology", Friends publication India 2020. 3. Perry John, "Sports Psychology a complete introduction" Hachette UK 2016. 4. Dr. uppal A.k "Principles of Sports Training", friends publication.2020. 5. Dr. nathial Mandeep Singh "Anatomy and Physiology of physical education" friends publication.2020. 6. Dr. Mishra sharad Chandra "Physiology in sports" sports publication India 2006. 7. Dr. Lega Sushil, "Anatomy & Physiology" sports publication, India 2020				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment:

Log Books to be maintained and recorded for individual students for formative assessment.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Rakesh Saibo Signature:	Name: Mr. Wilson Bara Signature:	Name: Mr Ravi Bhushan Singh Signature:

Course Description:

Course Code	23EDUOE101	
Course Title	EARLY CHILDHOOD CARE AND EDUCATION	
Credits	03	
Total Hours	45	
Hours per Week	03	
Course Type	Multidisciplinary Course (MDC)	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed	Human Values	
Course Offered to	Education	
Regulation	2023	
Course Overview	This course: • Recognizes the need to emphasize 0-6 years as the age of early learning with insights into the demographic and developmental perspective. • Describes the principles of growth and development and applies the same to understand the process of early care and early learning. • Identifies the significant domains of development and recognizes their interrelatedness in the development of young children. • Understands how education imparted at an early age can be the precursor of a productive adulthood.	
Prerequisite	Basic knowledge of human growth and development with special emphasis on the early years.	
Course Objectives	A student will be able to: • Describe the historical foundations of ECCE in India from conventional to contemporary philosophy. • Discuss the theoretical foundations and their implications for learning and development in the early years. • Discover the concept of play, its characteristics importance, and types. • Analyze the practicality of the theories of play and use the theories in planning the curriculum. • Integrate the various concepts and theories of ECCE with their practical implementation for learning and development in the early years.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the development of ECCE in India.	R

	State the objectives and principles of ECCE.	
CO2	Discuss the ECCE concerns. Explain the theoretical foundations and their implications for learning and development in the early years.	U
CO3	Implement the concept and types of play in ECCE.	A1
CO4	Analyze the curriculum of the play-way approach.	A2
CO5	Evaluate the curriculum of the play-way approach.	E
CO6	Design a strategy for teaching early literacy and numeracy skills using the play-way approach.	C

Course Content

Units	Content	Lecture Hours	COs	RB T
Unit I	Introduction to ECCE a) ECCE in India. b) Objectives and Principles of ECCE. c) ECCE concerns.	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C
Unit II	Theoretical Foundations and Their Implications in ECCE a) Behaviourism and Social Learning. b) Piaget's Cognitive developmental theory. c) Ecological and Socio-cultural perspective	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C
Unit III	Play in ECCE a) Concept, meaning, and benefits of play. b) Types of play and its values. c) Curriculum of play way approach- supporting communication skills, early literacy, numeracy, and reading skills.	15	CO1 CO2 CO3 CO4 CO5 CO6	R U A1 A2 E C

Learning Resources:

Text Books -

1. Aggarwal, J.C. (2010). Psychological, Philosophical and Sociological Foundations of Education (1st Edition). Shirpa Publication House Pvt. Ltd., New Delhi.

2. Berk, L. E. (2018). Child Development. Pearson India Education Services, Tamil Nadu.
3. Mangal, S. K. (2009). Essentials of Educational Psychology. PHI Learning Private Publication House Pvt. Ltd., New Delhi.

Suggested readings-

1. Kaul, V. (2009). Early Childhood Education Programme. National Council of Educational Research and Training, New Delhi.
2. Santrock, J. W. (2018). Educational Psychology (6th Edition). McGraw-Hill Education, New York.

Open Online Resources-

1. <https://ncert.nic.in/dee/pdf/deethemebased.pdf>
2. <https://ncert.nic.in/dee/pdf/Earlychildhood.pdf>

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Assessment:

- i. **Formative Assessment:** 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii. **Summative Assessment:** 50 marks
 - a) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
 - b) Three Long Questions to be answered out of six set from higher order of RBT – (30 Marks). Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Priya Topno Signature:	Name: Vivechana Dewan Signature:	Name: Ranita Chakraborty Signature:



Salesian College, Siliguri
(Autonomous)

National Education Policy (NEP) 2020 Curriculum Framework
For
Bachelor of Science in Physics

Offered by the

Department of Physics
Deanery of Sciences
Salesian College (Autonomous), Siliguri

NAAC Accredited A Grade (3rd cycle) and twice UGC certified College with Potential for Excellence (CPE)

Affiliated to the University of North Bengal
Siliguri - 734001
West Bengal

Vision

The vision of the Department of Physics is to build the rudiments for excellence and motivate the students to discover their latent talents through theoretical and practical physics and apply them to contribute to the betterment of self and of society and the nation at large.

Mission

The mission of the Department of Physics is to strive to attain high standards of excellence in generating and propagating knowledge in physics. The faculty members are committed to providing education that combines rigorous academics with the joy of discovery through nurturing a vibrant academic ambience conducive to study, creation, and dissemination of knowledge.

Exit Options:

Qualification	Exit Stage
Certificate in Physics	After successful completion of semesters I and II with 44 credits
Diploma in Physics	After successful completion of semesters I to IV with 86 credits
B.Sc. in Physics	After successful completion of semesters I to VI with 126 credits
B.Sc. (Hons.) in Physics	After successful completion of semesters I to VIII with 168 credits
B.Sc. (Hons. with Research) in Physics	After successful completion of semesters I to VIII with 168 credits, including 12 research credits

Program Objectives

Certificate in Physics

The Certificate course in Physics aims to provide

1. A comprehensive overview of introductory physics, mathematics and computation required to model and analyse elementary physical phenomena.
2. Development of analytical skills and competence in applying simple physical concepts to real life phenomena.
3. Encouragement and development of general critical and analytical thinking, scientific reasoning, problem-solving skills, written and verbal communication skills, and teamwork.
4. Self-conception with regard to moral and ethical awareness, leadership qualities, innovative ideas and life-long learning, and an appreciation for multicultural competence and multilingualism.
5. An ability to improve the knowledge and skills required to pursue higher levels of education or a career in the sciences.

Diploma in Physics

The Diploma course in Physics aims to provide

1. A comprehensive overview of the major areas of physics, mathematics and computation required to model and analyse general physical phenomena.
2. Development of analytical skills and competence in applying common physical concepts to real life phenomena.
3. Encouragement and development of general critical and analytical thinking, scientific reasoning, problem-solving skills, written and verbal communication skills, and teamwork.
4. Self-conception with regard to moral and ethical awareness, leadership qualities, innovative ideas and life-long learning, and an appreciation for multicultural competence and multilingualism.
5. An ability to improve the knowledge and skills required to pursue higher levels of education or a career in the sciences.

B. Sc. in Physics

The Bachelors course in Physics aims to provide

1. A comprehensive and detailed overview of all primary fields of physics, with the mathematical and computational background required to model and analyse most physical phenomena.
2. Development of analytical skills and competence in applying both common and abstract physical concepts to real life phenomena.
3. Encouragement and development of general critical and analytical thinking, scientific reasoning, problem-solving skills, written and verbal communication skills, and teamwork.
4. Self-conception with regard to moral and ethical awareness, leadership qualities, innovative ideas and life-long learning, and an appreciation for multicultural competence and multilingualism.
5. Sufficient knowledge to be able to participate in graduate and career entrance examinations such as IIT-JAM, CUET (PG), UPSC-CSE etc.

6. An ability to improve the knowledge and skills required to pursue higher levels of education or a career in the sciences.

B. Sc. (Hons./Hons. with Research) in Physics

The Bachelors (Hons./Hons. with Research) course in Physics aims to provide

1. A comprehensive and detailed overview of all primary fields of physics, with the mathematical and computational background required to model and analyse most physical phenomena.
2. A comprehensive and detailed overview of important advanced fields of physics.
3. Development of analytical skills and competence in recognizing and applying any pertinent physical concept to real life phenomena.
4. Encouragement and development of general critical and analytical thinking, scientific reasoning, problem-solving skills, written and verbal communication skills, and teamwork.
5. Self-conception with regard to moral and ethical awareness, leadership qualities, innovative ideas and life-long learning, and an appreciation for multicultural competence and multilingualism.
6. Sufficient knowledge to be able to participate in graduate/post-graduate and career entrance examinations such as IIT-JAM, CUET (PG), JEST, GATE, UPSC-CSE etc.
7. An ability to improve the knowledge and skills required to pursue higher levels of education or a career in the sciences.
8. Exposure to the latest advancements of physics, research and allied fields.

Program Outcomes

The learning outcomes of the undergraduate degree course in physics are

a) Knowledgeable and Technically Capable:

The graduate has the ability to apply the knowledge of basic science principles in the solution of complex problems of scientific and technical interest.

b) Problem Solver:

The graduate has the ability to identify, formulate and analyse complex scientific problems and reach substantiated conclusions using first principles of mathematical, computational and natural sciences.

c) Innovative Thinker:

The graduate has the ability to create, select and apply suitable techniques, resources and the use of modern analytical and scientific tools to identify, formulate and solve problems pertaining to applied science.

d) Modern Tools Oriented:

The graduate has the ability to apply appropriate techniques and resources of modern technology and computational tools for prediction and modelling of science problems.

e) *Scientifically Tempered:*

The graduate has the ability to develop a scientific temper and inquisitiveness for further studies, research and the promotion of scientific thinking.

f) *Effective Communicator:*

The graduate has the ability to communicate scientific and technical information in oral, written and graphical form to both science and lay audience.

g) *Group Worker:*

The graduate has the ability to work as a member and a leader in any team, and to manage projects and work in a multidisciplinary environment.

h) *Global Citizen:*

The graduate has an understanding of their professional, social and ethical responsibilities for a better society.

i) *Life-Long Learner:*

The graduate has the ability to recognize the need and importance of engaging in life-long learning.

Assessment

The Formative and Summative Assessments are to be evaluated as per the Assessment & Evaluation Policy Manual of Salesian College. For each course, the Board of Studies has provided a recommended, non-binding schema for assessment.

***Proposed Courses offered by the Department of Physics
4 Year Bachelors Course***

Semester	Paper Code	Paper	Credits (Theory)	Credits (Lab)	Teaching Hours
I	23PHYMAJ101	Calculus and Vector Analysis	4	0	4
	23PHYMAJ102	Mechanics and Properties of Matter	3	1	3 + 2
	23PHYSEC101	Introduction to Computers & Programming	0	3	6
	23PHYMDC101	Astronomy and Cosmology for the Curious	3	0	3
	23PHYVAC101	Quantum Crossroads I		1	2
		Total	15		20
II	23PHYMAJ103	Electricity and Magnetism	3	1	3 + 2
	23PHYMAJ104	Waves and Optics	3	1	3 + 2
	23PHYSEC102	Practical Electricity	2	1	2 + 2
	23PHYMDC102	Quantum Physics for the Curious	3	0	3
	23PHYMIN102	Mechanics	3	1	3 + 2
	23PHYVAC102	Quantum Crossroads II		1	2
		Total	19		24
III	23PHYMAJ201	Differential Eqns and Complex Analysis	4	0	4
	23PHYMAJ202	Digital Electronics	3	1	3+2
	23PHYSEC201	Numerical Methods using Computation	0	3	6
	23PHYMDC201	Physics of Sports	3	0	3
	23PHYVAC201	Quantum Crossroads III		1	2
		Total	15		20
IV	23PHYMAJ203	Thermal Physics	3	1	3 + 2
	23PHYMAJ204	Relativity and Modern Physics	3	1	3 + 2

	23PHYMAJ205	Analog Electronics	3	1	3 + 2
	23PHYMIN202	Electricity and Magnetism	3	1	3 + 2
	23PHYVAC202	Quantum Crossroads IV		1	2
		Total	17		22
V	23PHYMAJ301	Solid State Physics	3	1	3 + 2
	23PHYMAJ302	Analytical Mechanics	3	1	3 + 2
	23PHYMAJ303	Quantum Mechanics	3	1	3 + 2
	23PHYVAC301	Quantum Crossroads V		1	2
		Total	13		17
VI	23PHYMAJ304	Statistical Mechanics	3	1	3 + 2
	23PHYMAJ305	Atomic and Molecular Physics	3	1	3 + 2
	23PHYMAJ306	Elective I	4	0	4
	23PHYMIN302	Electronics	3	1	3 + 2
		Total	16		19
VII	23PHYMAJ401	Nuclear and Particle Physics	4	0	4
	23PHYMAJ402	Statistics and Research Methodology	3	1	3 + 2
	23PHYMAJ403	Advanced Mathematical Physics	4	0	4
	23PHYMAJ404	Elective II	4	0	4
		OR			
	23PHYMAJ405	Research	4		4
		Total	16		17
VIII	23PHYMAJ406	Advanced Electrodynamics	3	1	3 + 2
	23PHYMAJ407	Elective III	4	0	4
	23PHYMAJ408	Introduction to Nanophysics	4	0	4
	23PHYMAJ409	Elective IV	4	0	4
		OR			
	23PHYMAJ410	Research	8		8

	23PHYMIN402	Waves and Optics	3	1	3 + 2
		Total	20		22
		Grand Total	131		161

LIST OF ELECTIVES

Elective I	Elective II	Elective III	Elective IV
Physical Acoustics and Applications	Astronomy and Astrophysics	Advanced Quantum Mechanics	Advanced Solid State Physics
Magnetism in Materials	Nonlinear Dynamics and Chaos Theory	Physics of Radiation	Lasers and Advanced Optics

1. Programme Matrix of Courses offered by the Department of Physics (1st Year)

Semester	Course Code	Course Type	Title of the Course	Credit	Lecture Tutorial Practical (L+T+P)	Total Hours	Total Marks
I	23PHYMAJ101	Major	Calculus and Vector Analysis	4	3+1+0	60	100
	23PHYMAJ102	Major	Mechanics and Properties of Matter	4	3+0+1	75	100
	23PHYSEC101	SEC	Introduction to Computers & Programming	3	0+0+3	90	100
	23PHYMDC101	MDC	Astronomy and Cosmology for the Curious	3	3+0+0	45	100
	23PHYVAC101	VAC	Quantum Crossroads I	1	0+0+1	30	50
	Total			15		300	
II	23PHYMAJ103	Major	Electricity and Magnetism	4	3+0+1	75	100
	23PHYMAJ104	Major	Waves and Optics	4	3+0+1	75	100
	23PHYMIN102	Minor	Mechanics	4	3+0+1	75	100
	23PHYSEC102	SEC	Practical Electricity	3	2+0+1	60	100
	23PHYMDC102	MDC	Quantum Physics for the Curious	3	3+0+0	45	100
	23PHYVAC102	VAC	Quantum	1	0+0+1	30	50

			Crossroads II				
	Total			19		360	

Students' Progression Mapping			
RBT - Cognitive Level Mapping		Dave's Psychomotor Mapping	
Symbols	Meaning	Symbols	Meaning
R	Remembering	I	Imitation
U	Understanding	M	Manipulation
A1	Applying	P	Precision
A2	Analysing	A	Articulation
E	Evaluating	N	Naturalization
C	Creating		

Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYMAJ101 - Calculus and Vector Analysis

1. Course Description

Course Code	23PHYMAJ101	
Course Title	Calculus and Vector Analysis	
Credits	4	
Total Hours	60	
Hours per Week	4	
Course Type	Major	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Physics	
Regulation	2023	
Course Overview	This course: a. Aims to recapitulate basic understanding of calculus. b. Helps to explore the application of calculus in physics based problems. c. Helps to understand and apply the concept of vectors. d. Teaches the basic operations of vectors.	
Prerequisite	Student must have introductory knowledge of limits, derivatives, integrals (definite and indefinite), partial fractions, and vectors	
Course Objectives	A student will be able to: i. Develop skills in finding derivatives of functions and applying them to solve problems related to rates of change, optimization, etc. ii. Develop skills in solving definite and indefinite integrals and applying them to cases involving areas, volumes, and accumulation. iii. Understand the basic properties of vectors and their manipulation using addition, subtraction, scalar multiplication, and dot & cross products. iv. Understand vector equations and their applications in solving problems related to lines, planes, and curves. v. Introduce the concepts of vector differentiation and integration and their applications.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the concepts of integral and differential calculus in relation to the various physical and mathematical contexts.	R
CO2	Explain the importance of vector quantities in physics-based problems and restate the operation of vector quantities.	U

CO3	Classify and solve different kinds of derivatives, such as total, partial, exact and inexact derivatives, and apply them to physics-based problems.	A1		
CO4	Analyze the concept and properties of special functions such as Gamma function, Beta function, Dirac Delta function, etc., and apply them to solve numerical problems of physical interest.	A2		
CO5	Evaluate the different orthogonal coordinate systems and select the appropriate mutual and operator transformations.	E		
CO6	Construct solutions for real-life physics-based problems using vector differentiation & vector integration.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Single Variable Calculus	15	1, 4	R U A1 A2 E C
	Functions of a single variable: plotting functions, tangent to the curve; continuity; instantaneous and average quantities; the derivative; chain rule; higher order derivatives; implicit differentiation; mean value theorem; maxima and minima; approximations using Taylor and binomial theorems			
	Indefinite integrals; integrals by substitution; integration by parts; definite integrals; area under curves; first and second fundamental theorems of calculus; special techniques of integration: trigonometric substitution, partial fractions, completing the square, polar coordinates etc.			
	The Gaussian integral; the Dirac delta function: representation as a limit of Gaussian and rectangular functions; basic properties			
	Beta and Gamma functions and their properties; relation between beta and gamma functions; reduction of integrals to Gamma functions; the error function			
Unit II	Vector Algebra	5	2	R U A1 A2
	Review of scalars and vectors; properties of vectors under rotations; scalar product and its			

	invariance under rotation; vector product and interpretation as area; scalar triple product and interpretation as volume; vector triple product			E C
Unit III	Multivariable Calculus Orthogonal coordinate systems: Cartesian, spherical polar, and cylindrical polar coordinates, conversions between coordinate systems Partial derivatives and total derivatives; exact and inexact differentials; chain rule for partial derivatives; directional derivatives and the gradient; constrained maximization using Lagrange multipliers	8	3, 5	R U A1 A2 E C
Unit IV	Vector Differentiation Curves, surfaces, scalar and vector fields; time derivatives of a vector function Directional and normal derivatives; gradient of a scalar field and its geometric interpretation; divergence and curl of a vector field; the Laplacian operator; product rules and second derivatives of the del operator; gradient, divergence, curl and Laplacian in Cartesian, spherical and cylindrical coordinates (with derivation)	8	1, 2, 6	R U A1 A2 E C
Unit V	Vector Integration Parametric integrals of vector curves; infinitesimal line elements; line integrals and Green's theorem in a plane Multiple integrals and the Jacobian; infinitesimal surface and volume elements; surface integrals; areas of surfaces of revolution; volume integrals and determination of volumes; parameterization and coordinate conversions for integration Flux of a vector field; Gauss' divergence theorem; Stoke's theorem; applications	9	1, 2, 6	R U A1 A2 E C
Learning Resources: Textbooks 1. Dass, H.K. & Verma, R. (2019). <i>Mathematical physics</i> (8th ed.). S. Chand Publishing 2. Gupta, B.D. (2022). <i>Mathematical physics</i> (4th ed.). S. Chand Publishing				

3. Riley, K.F., Hobson, M.P., & Bence, S.J. (2018). *Mathematical methods for physics and engineering* (3rd ed.). Cambridge University Press
4. Nearing, J. (2010). *Mathematical tools for physicists*. Dover Publications.
http://www-mdp.eng.cam.ac.uk/web/library/enginfo/textbooks_dvd_only/nearing/math_methods.pdf
5. Thomas, G., Hass, J., Heil, C., & Weir, M. (2018). *Thomas' calculus* (14th ed.). Pearson Education
6. Spiegel, M., Lipschutz, S., & Spellman, D. (2009). *Schaum's outlines: Vector analysis* (2nd ed.). McGraw-Hill Education

Suggested Readings

1. Spiegel, M. (2009). *Schaum's outline of advanced mathematics for engineers and scientists*. McGraw-Hill Education
2. Anton, H., Bivens, I., & Davis Stephens. (2015). *Calculus* (10th ed.). Wiley
3. Kreyszig, E. (2017). *Advanced engineering mathematics* (10th ed.). Wiley
4. McMullen, C. (2018). *Essential calculus skills practice workbook with full solutions*. Zishka Publishing
5. Fernandez, O. (2017). *Everyday calculus: Discovering the hidden math all around us* (rev. ed.). Princeton University Press

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** be present for and score a minimum of 40% in the Summative Assessment, (ii) the student must be present for Formative Assessment II (Mid-Semester Examinations), and (iii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: 50 marks distributed across three different forms of Assessment. Evaluated as per the Assessment & Evaluation Framework Document of Salesian College.

Summative Assessment: The Summative Assessment will be a written examination of 50 marks of at least 2 hours duration, using the RBT categorization and scheme.

Section	Marks per question	No. of questions to be answered	No. of questions given	Total marks for Section
A	2	5	8	10
B	5	4	6	20
C	10	2	4	20
			Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment	50	100%	50
Formative Assessment I	20	50%	10
Formative Assessment II	50		25
Formative Assessment III	20		10
Attendance	5	100%	5
		Total	100

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Ms. Sujata Sinha (Signature) Mr. Bikramjit Chandra	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYMAJ102 - Mechanics and Properties of Matter

1. Course Description

Course Code	23PHYMAJ102
Course Title	Mechanics and Properties of Matter
Credits	4
Total Hours	75
Hours per Week	5
Course Type	Major
Semester	I
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Physics
Regulation	2023
Course Overview	This course: - Aims to train the students in the basic knowledge of Physics, and the laws governing it. - Helps to introduce the students to conservation laws and their utility in understanding the behaviour of physical systems. - Focuses on the motion of rigid bodies about any fixed point and any arbitrary axis passing through this point. - Helps the students understand the elastic properties of materials and the Physics behind the characteristics of liquids. - Helps the students develop knowledge of the central force and its characteristics, including gravitation. - Teaches the basics of harmonic motion and its characteristics. It will help the students understand the periodic motions in Nature.
Prerequisite	Students must have an introductory knowledge of kinematics in 1 and 2D, linear and rotational motion, energy, elasticity, Newtonian gravitation, and oscillations. Must take PHYMAJ101 concurrently
Course Objectives	A student will be able to: - Acquire preliminary knowledge of the laws of motion, the concept of Galilean invariance, the system of particles, and collisions. - Demonstrate the concepts of conservative and non-conservative forces, fictitious forces, translational and rotational dynamics and the ability to calculate the moment of inertia of various rigid bodies. - Describe the general properties of matter and the principles of elasticity, fluid flow, viscosity, and surface tension. - Analyse the laws of gravitation and central force motion and derive Kepler's law to demonstrate the motion of planets. - Explain the phenomenon of simple harmonic motion and the properties of the systems executing it.
Course Outcomes based on RBT and Cognitive Level Mapping	

At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Define and identify the fundamental laws of motion and associated concepts such as collisions	R		
CO2	Distinguish between inertial and non-inertial reference frames and interpret the physical consequences arising from them.	U		
CO3	Apply the motion of a particle under central force motion to demonstrate the properties and characteristics of gravitation.	A1		
CO4	Examine and investigate the general properties of matter and various physical constants.	A2		
CO5	Evaluate the differential equation of simple harmonic motion and assess the nature of oscillations.	E		
CO6	Construct the motion of a rigid body including translational & rotational motion.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Fundamentals of Dynamics and Non-Inertial Systems Laws of motion, Galilean transformation, Conservation laws, System of particles and Centre of Mass, Motion of rockets. Elastic and Inelastic collisions, Laboratory and Centre of Mass frames. Conservative and non-conservative forces, Potential Energy. Potential energy curves and equilibrium. Work done by non-conservative forces. Law of Conservation of Energy. Non-inertial frames and fictitious forces. Uniformly rotating frame. Rotating coordinate systems. Centrifugal force. Coriolis force and its applications.	13	1, 2	R U A1 A2 E C
Unit II	Rotational Dynamics: Angular momentum of a particle and system of particles, Torque, Conservation of angular momentum, Rotation about a fixed axis, Rotational energy	7	1, 6	R U A1 A2 E C

	Moment of Inertia, Theorem of perpendicular axis and Theorem of parallel axes. Calculation of moment of inertia for rectangular, cylindrical and spherical bodies.			
Unit III	Properties of Matter Elasticity: Stress-Strain diagram, Relation between Elastic constants – Young’s modulus, Bulk’s modulus and modulus of rigidity. Poisson’s ratio. Work done in stretching and in twisting a wire, twisting torque on a cylinder or wire. Viscosity: Streamline and Turbulent flow, Equation of Continuity, Coefficient of Viscosity by Poiseuille’s method and Stoke’s method. Surface Tension: Relation between surface tension and surface energy, pressure difference across curved surface, excess pressure inside spherical liquid drop. Angle of Contact and capillary ascent. Measurement of surface tension.	9	4	R U A1 A2 E C
Unit IV	Gravitation and Central Force Motion Law of Gravitation. Gravitational potential energy, potential, and field intensity. Motion of a particle under a central force field. Two-body problem, its reduction to a one-body problem, and its solution. The energy equation and energy diagram. Kepler’s Laws. Satellites in circular orbits and escape velocity.	8	3	R U A1 A2 E C
Unit V	Oscillations Simple Harmonic Motion, its differential equation and solution. Vertical oscillations of the light loaded spring, expression for force constant and determination of acceleration due to gravity. Energy and their time-average values. Damped oscillations. Forced oscillations, transient and steady states, Resonance, sharpness of resonance, power dissipation and Quality Factor.	8	5	R U A1 A2 E C
Learning Resources: Text Books				

1. Mathur, D.S. (2000). *Mechanics*. S. Chand & Co.
2. Lal B. & Subrahmanyam N. (2002). *Properties of matter*. S. Chand & Co
3. Murugesan R. (2010). *Elements of properties of matter*. S. Chand & Co.
4. Chatterjee, H. & Sengupta, R. (2010). *A treatise on general properties of matter* (7th rev. ed.). New Central Book Agency (P) Limited

Suggested readings

1. Kittel, K., Knight, W. D., Ruderman, M. A., Helmholz, A. C., & Moyer, B. J. (2011). *Mechanics*. Tata McGraw-Hill
2. Halliday, D., Resnick, R., & Walker, J. (2007) *Fundamentals of physics*. John Wiley & Sons
3. Kleppner, D. & Kolenkow, R. J. (2017) *An introduction to mechanics*. McGraw Hill Education

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Practicals

Course Code	23PHYMAJ102
Course Title	Mechanics and Properties of Matter
Credits	4
Total Hours	75
Hours per Week	5
Course Type	Major
Semester	I
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Physics
Regulation	2023
Course Overview	This course: a. Helps introduce students to different measuring instruments and their applications and significance. b. Emphasises the need to have hands-on experience with the measurement of physical quantities and understand the theoretical concepts through practical means. c. Aims to help in estimating the physical properties of rigid bodies and the elastic and mechanical properties of different materials using scientific instruments. d. Aims to help in assessing the properties of liquids through simple experiments.
Prerequisite	Students must have an introductory knowledge of kinematics in 1 and 2D, linear and rotational motion, energy, elasticity, Newtonian gravitation, and oscillations. Must take PHYMAJ101 concurrently
Course Objectives	A student will be able to: a. Identify, choose, and calibrate appropriate measuring instruments for a particular experiment.

	b. Record experimental data in a systematic manner and compute the results using the right physical or mathematical procedures. c. Interpret and communicate their results in an appropriate manner using written reports with the necessary data visualizations. d. Check the credibility of theoretical claims from experiments. e. Nurture their scientific temperament and encourage them to build upon their experience gained from conducting experiments.			
Course Outcomes based on Dave's Psychomotor Mapping At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Replicate the steps required to familiarize themselves with experiments and instruments related to the study of mechanical and elastic properties.	I		
CO2	Recreate any previously imitated experiment on the study of mechanical and elastic properties.	M		
CO3	Demonstrate skilled use of common measuring instruments such as callipers, gauges, measuring telescopes, etc.	P		
CO4	Be proficient in the setup and use of experimental apparatus used for the study of mechanical and elastic properties.	P		
CO5	Adapt or modify previously imitated experiments to analyze new mechanical and elastic properties.	A		
Course Content				
Units	Content	Lecture Hours	COs	Dave's
Unit I	List of Experiments: 1. Measurements of length/ diameter using vernier calliper, screw gauge and travelling microscope 2. Determination of g and velocity of freely falling body using digital timing technique 3. To study the motion of a spring and calculate: (a) it's spring constant, (b) modulus of rigidity of the spring material and (c) value of g. 4. To measure the radius of curvature of a spherical surface using a spherometer 5. To determine the value of g using a bar pendulum	30	1, 2, 3,4,5	I M P A

	6. To determine the surface tension of a liquid by capillary tube method 7. To determine the coefficient of viscosity of water by Poiseuille's method 8. To determine the modulus of rigidity of the material of a wire by dynamical method 9. To determine the modulus of rigidity of the material of a wire by statical method 10. To determine the modulus of rigidity of the material of a wire by Maxwell's needle 11. To determine the Young's modulus of the material of a wire by optical lever method 12. To determine the moment of inertia of a flywheel <i>A minimum of EIGHT (8) experiments is to be performed</i>			
Learning Resources: Text Books 1. Chattopadhyay, D. & Rakshit, P. C. (2011). <i>An advanced course in practical physics</i> . New Central Book Agency (P) Limited 2. Raychaudhuri, D. P. (n.d.). <i>Manual of practical physics</i> . Allied Book Agency 3. Dasgupta, C.R. (1985). <i>A handbook of practical physics</i> . Book Syndicate Private Limited 4. Singh, H. & Hemne, P.S. (2022). <i>B.Sc. practical physics</i> . S. Chand & Co. 5. Chandra, B. (2023). <i>PHY MAJ102P: Mechanics - Lab guidebook for practicals</i> . (n.p.)				

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** be present for and score a minimum of 40% in the Summative Assessment for theory and practical **each**, (ii) the student must be present for Formative Assessment II (Mid-Semester Examinations), and (iii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: 50 marks distributed across three different forms of Assessment. Evaluated as per the Assessment & Evaluation Framework Document of Salesian College.

Summative Assessment (Theory): The Summative Assessment will be a written examination of 50 marks of at least 2 hours duration, using the RBT categorization and scheme.

Section	Marks per question	No. of questions to be answered	No. of questions given	Total marks for Section
A	2	5	8	10
B	5	4	6	20
C	10	2	4	20
			Total	50

Summative Assessment (Practical): The Summative Assessment will be an examination of 50 marks of at least 3 hours duration. The student will be made to perform one or more experiments chosen at random from the topics given in the syllabus.

Sl. No.	Component	Marks per component
1	Practical Examination	30
2	Viva-voce	10
3	Lab notebook or Lab assignment	10
	Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment (Theory)	50	50%	25
Summative Assessment (Practical)	50		25
Formative Assessment I	20		10
Formative Assessment II	50		25
Formative Assessment III	20		10
Attendance	5	100%	5
		Total	100

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Dr. Digvijay Kharga (Signature) Mr. Mayukh Mazumdar (Signature) Dr. Prajwal Chettri	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYSEC101 - Introduction to Computers & Programming

1. Course Description

Course Code	23PHYSEC101	
Course Title	Introduction to Computers and Programming	
Credits	3	
Total Hours	90	
Hours per Week	6	
Course Type	Skill Enhancement Course	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Physics	
Regulation	2023	
Course Overview	This course: a. Introduces a student to the concept of using computers to enhance their scientific and numerical analysis skills. b. Trains a student in the construction and writing of technical scientific reports and papers. c. Teaches a student the basic concepts of programming using Python. d. Introduces tools and modules in Python used for advanced numerical and scientific analysis. e. Introduces the methods and skills needed to appropriately visualize technical data for analysis.	
Prerequisite	Students must be able to type on a keyboard and use a mouse. They must have elementary knowledge of linear and polynomial equations, differentiation, integration, differential equations, statistics, and conic sections.	
Course Objectives	A student will be able to: i. Learn about the benefits of FOSS software and common examples of them. ii. Write and construct a technical report or paper. iii. Acquire knowledge about the fundamentals of basic scientific and numerical programming using Python. iv. Use of common Python modules used in numerical and scientific programming, and their commonly used methods. v. Construct appropriate diagrams and charts for the purposes of data visualization and analysis.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Identify the benefits of FOSS software and name common examples of them.	R

CO2	Express physical and mathematical phenomena using appropriate Python code and data visualization approaches.	U		
CO3	Demonstrate physical phenomena or mathematical outcomes using Python code.	A1		
CO4	Investigate a physical phenomenon computationally and outline its result in a technical report or paper.	A2		
CO5	Determine parameters or evaluate the outcomes of physical situations using computational modelling with Python.	E		
CO6	Design computational algorithms that replicate common physical phenomena.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	FOSS and Operating Systems Lecture: FOSS and its importance; the Four Essential Freedoms; meaning of proprietary software; examples of popular FOSS software and alternatives to proprietary software Operating Systems (overview only): Windows, Macintosh, Linux, Android; general overview of Linux distributions, packages and repositories Lab: Introduction to and the basic functions and FOSS software of the Manjaro operating system (or whichever Linux system is in use)	6	1	R U A1 A2 E C
Unit II	Writing Technical Documents Lecture: Overview of the LibreOffice software suite; introduction to LibreOffice Writer; fonts: serif, san-serif and monospace fonts; appropriate selection of fonts Desmos graphing calculator: line plots from functions and data points; areas, derivatives and integrals of curves, linear regression; polar plots	14	4	R U A1 A2 E C

	Writing and formatting a technical report/paper Lab: writing and formatting text; inserting and formatting images; using the formula editor; creating model graphs and graphs from data; typesetting pages for print; writing a technical report			
Unit III	Introduction to Python Programming Lecture: constants, variables and common data types; strings and string manipulation; <i>input()</i> and <i>print()</i> statements; arithmetic, comparative and boolean relations; <i>if-else</i> conditionals; <i>for</i> and <i>while</i> loops; nesting; <i>break</i> and <i>return</i>; lists and tuples: introduction, methods, and use in iteration; functions and recursion; writing files to and reading from disk; search algorithms: linear/sequential, front and back, and binary Lab: simple programs to demonstrate use of conditionals and loops; summation; sorting, generation of number series; searching lists; computation of areas and volumes.	22	2, 3	R U A1 A2 E C
Unit IV	Modules for Scientific Computing Lecture: Modules; examples of common modules used in daily and scientific computing (overview only); importing modules; the <i>math</i> module: common methods and functions The <i>numpy</i> and <i>scipy</i> modules; arrays, array operations; slicing; random number generation; the <i>linalg</i> submodule; functions for matrix and vector analysis: addition, multiplication, scalar and vector products, inverses, determinants, eigen values and vectors <i>solve()</i> - solutions of a linear system of equations; <i>roots()</i> - roots of a polynomial equation; mean and standard deviation; <i>polyfit()</i> - linear fitting to data, and <i>interp()</i> - linear interpolation; <i>gradient()</i> -	26	5, 6	R U A1 A2 E C

	numerical differentiation, and <i>trapz()</i> - numerical integration; <i>odeint()</i> - solutions of differential equations Lab: programs that demonstrate the use of modules and their inbuilt functions; conversion of coordinate systems; roots of equations used in physics; equation of a line from linear experimental data; velocity and acceleration at a point from displacement and vice-versa; areas of non-standard regions (e.g. BH loop)			
Unit V	Data Visualization Lecture: the <i>matplotlib</i> module; other popular visualization modules (overview only); formatting graphs: log and semilog axes, simple TeX notation; creating subplots Plotting of 2D data: line plots; scatter plots; histograms; polar plots Plotting of 3D data: surface plots; contour plots; colour maps Lab: solving and plotting trajectories of 2D motion and collisions; estimating and plotting lines of best fit for linear experimental data; plotting solutions of differential equations; line plots of curves in Cartesian and polar coordinates; plots of temperature distribution on 2D surfaces etc.	22	5, 6	R U A1 A2 E C

Learning Resources: (Latest edition books listed in APA style: Seventh Edition)

Open Online Resources

1. Free Software Foundation. (2021, February 2). *What is free software?* GNU Operating System. <https://www.gnu.org/philosophy/free-sw.en.html>
2. Linux Training Academy. (2023, n.d.). *Linux distribution: Introduction and overview*. Linux Training Academy. <https://www.linuxtrainingacademy.com/linux-distribution-intro/>
3. LibreOffice Documentation Team. (2022). *Writer guide 7.3*. <https://documentation.libreoffice.org/assets/Uploads/Documentation/en/WG7.3/WG73-WriterGuide.pdf>
4. Desmos. (2022, April 17). *Learn Desmos* [Video playlist]. Youtube. https://www.youtube.com/playlist?list=PLfM6zMgnbgOGLZc_Yj3QVK3Vz_L4Cw59
5. Corey Schafer. (2019, April 22). *Python programming beginner tutorials* [Video playlist]. Youtube. <https://www.youtube.com/playlist?list=PL-osiE80TeTskrapNbzxHwofuILCjGgY7>

6. freeCodeCamp.org. (2019, August 7). *Python Numpy tutorial for beginners* [Video]. Youtube. <https://www.youtube.com/watch?v=QUT1VHiLmmI&pp=ygUSZnJlZWVvZGVjYW1wIG51bXB5>
7. Mr. P. Solver. (2021, June 1). *SciPy tutorial (2022): For physicists, engineers, and mathematicians* [Video]. Youtube. <https://www.youtube.com/watch?v=jmX4FOUEfgU>
8. sentdex. (2016, January 20). *Matplotlib tutorial series - Graphing in Python* [Video playlist]. Youtube. <https://www.youtube.com/playlist?list=PLQVvva0QuDfefDfXb9Yf0la1fPDklPF>

Suggested readings

1. Stallman, R. (2015). *Free software, free society: Selected essays of Richard M. Stallman* (3rd ed.). GNU Press. <https://www.gnu.org/doc/fsfs3-hardcover.pdf>
2. Hering, L., & Hering, H. (2019). *How to write technical reports: Understandable structure, good design, convincing presentation*. Springer
3. Matthes, E. (2016). *Python crash course: A hands-on, project-based introduction to programming*. No Starch Press. https://bedford-computing.co.uk/learning/wp-content/uploads/2015/10/No.Starch.Python.Oct_.2015.ISBN_.1593276036.pdf
4. Sweigart, A. (2019). *Automate the boring stuff with Python* (2nd ed.). No Starch Press. <https://automatetheboringstuff.com/>
5. Idris, I. (2015) *Numpy beginner's guide: Build efficient, high-speed programs using the high-performance Numpy mathematical library*. Packt Publishing Ltd.
6. Johansson, R. (2018). *Numerical Python: Scientific computing and data science applications with Numpy, SciPy and Matplotlib*. Apress
7. Rougier, N. P. (2021) *Scientific visualization: Python + Matplotlib*. <https://inria.hal.science/hal-03427242/document>

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** be present for and score a minimum of 40% in the Summative Assessment, (ii) the student must be present for Formative Assessment II (Mid-Semester Examinations), and (iii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: 50 marks distributed across three different forms of Assessment. Evaluated as per the Assessment & Evaluation Framework Document of Salesian College.

Summative Assessment: The Summative Assessment will be an examination of 50 marks of at least 3 hours duration. The student will be made to write one or more computational programs chosen at random from the topics given in the syllabus.

Sl. No.	Component	Marks per component
1	Practical Examination	30
2	Viva-voce	10

3	Lab notebook or Lab assignment	10
	Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment	50	100%	50
Formative Assessment I	20	50%	10
Formative Assessment II	50		25
Formative Assessment III	20		10
Attendance	5	100%	5
		Total	100

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Mr. Bikramjit Chandra	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYMDC101 - Astronomy and Cosmology for the Curious

1. Course Description

Course Code	23PHYMDC101	
Course Title	Astronomy and Cosmology for the Curious	
Credits	3	
Total Hours	45	
Hours per Week	3	
Course Type	Multi-Disciplinary Course	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	All Students (except students who have studied Physics)	
Regulation	2023	
Course Overview	This course: a. Introduces a student to the large scale structure of the Universe at a qualitative level without any mathematical or technical prerequisites. b. Introduces the student to the history of astronomy in India and abroad until the discovery of universal gravitation. c. Gives the student an overview of the Solar System and its major components, stars and galaxies. d. Introduces the student to the Lambda-CDM Standard Model of cosmology in simple terms. e. Briefly acquaints the student with the biggest open problems in modern day cosmology. f. Gives the student an overview of important space organisations and missions.	
Prerequisite	Students must have graduated from higher secondary school. Students cannot have studied physics in classes 11 & 12.	
Course Objectives	A student will be able to: i. Understand and appreciate the history of astronomy in India and abroad until the discovery of universal gravitation. ii. Identify and summarise the important properties of all major bodies in the Solar System. iii. Summarize the processes of the creation and evolution of stars, how they radiate energy, and how they form galaxies. iv. Understand the arguments for Big Bang cosmology, summarise the evolution of the Universe, and discuss open problems in cosmology. v. Familiarize themselves with important space agencies and significant space missions and probes.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping

CO1	Recall the history of astronomy in India and abroad until the discovery of universal gravitation.	R		
CO2	Distinguish between the different major bodies within the Solar System and summarise their properties.	U		
CO3	Apply qualitative physical arguments for the acceptance of the Big Bang and the current Standard Model of cosmology.	A1		
CO4	Categorize and outline different open problems in cosmology like dark matter, dark energy, the fate of the Universe, etc.	A2		
CO5	Critique important space agencies and significant space missions and probes.	E		
CO6	Propose how the gravitational forces and fusion process within stars lead to their evolution as a singular entity and as a group in galaxies.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	A Brief History of Astronomy till 1700 CE <i>Astronomy in India:</i> Astronomy in the <i>Vedas</i>, Important Indian astronomers and their contributions <i>Astronomy outside India:</i> Brief overview of Babylonian, Hellenistic, Aristotelian, and Greco-Roman astronomy <i>Birth of modern astronomy:</i> Astronomy before Copernicus, Heliocentric model of Copernicus; Kepler's laws; Galileo's arguments; Newton and universal gravitation; Basic principles of telescopes	7	1	R U A1 A2 E C
Unit II	The Solar System <i>The Sun:</i> Structure and properties, Solar phenomena, Solar cycle and its effects on Earth <i>The Earth and Moon:</i> Earth - composition and properties, Tectonic plates, Rotation and revolution, The seasons; Moon - composition and properties, Craters, Tides, Phases, Solar and lunar eclipses, Theories of lunar origin;	8	2	R U A1 A2 E C

	Solar, lunar, and lunisolar calendars <i>The terrestrial planets:</i> Mercury, Venus and Mars, Possibility of life and human colonization on Mars <i>The gas giants:</i> Jupiter and Saturn, Great Red Spot, The Galilean moons, Saturn's Rings and their origin, Titan <i>The ice giants:</i> Uranus and Neptune, Rings, Axial tilt of Uranus, Great Dark Spot <i>Dwarf planets and the outer regions:</i> The asteroid belt, Meteors and meteorites, Trans-Neptunian objects, Comets, Dwarf planets, The Oort cloud, Planet 9 <i>The edges of our existence:</i> The boundaries of the Solar System, The Voyager missions, Exoplanets			
Unit III	Stars and Galaxies <i>Setting the stage:</i> Important stars and constellations, Einstein's energy-mass equivalence <i>The birth and evolution of a star:</i> Protostars, Brown dwarfs, Main sequence stars, Fusion processes, White dwarfs, Red giants <i>The "death" of a star:</i> Supergiants, Supernovae, Neutron stars and pulsars, Black holes and wormholes, The origin and fate of the Solar System <i>Deciphering objects far away:</i> Measuring cosmological distances, Morphological types of galaxies and properties <i>How galaxies behave:</i> Evolution of galaxies, Clusters and groups, Superclusters, Filaments, Overview of the Milky Way and the Local Group	11	6	R U A1 A2 E C
Unit IV	Cosmology <i>Setting the stage:</i> Spacetime, Overview of Einstein's special and general relativity, Time	13	3, 4	R U A1 A2

	dilation <i>The Universe in motion:</i> Discovery of the expanding Universe, The Big Bang; The formation of matter; The Dark Ages; The first stars and galaxies; The present state of the Universe <i>What can we detect but not see?</i> Dark matter and dark energy <i>How will all things “end”:</i> The fate of the Universe: Big Crunch, eternal expansion, Big Rip scenarios <i>Are we alone in the Universe?</i> The Drake equation, Astrobiology and biosignatures, The Goldilocks zone, Possible candidates in the Solar System and among exoplanets, The Fermi paradox			E C
Unit V	Space Organizations and Missions <i>India:</i> ISRO: History and activities, <i>Aryabhata</i>, <i>Chandrayaan</i>, MOM <i>Abroad:</i> NASA and ESA: the Hubble Space Telescope, the James Webb Space telescope, the Kepler Telescope, ISS, important telescopes in India and abroad <i>Space missions and probes:</i> <i>Sputnik I</i>, <i>Vostok I</i>, <i>Apollo 11</i>, <i>Soyuz T-11</i>, <i>Cassini-Huygens</i>, <i>Curiosity</i>, <i>New Horizons</i> (instructor may add or remove topics as they see fit)	6	5	R U A1 A2 E C

Learning Resources:

Text Books

1. Weinberg, S. (2015). *To explain the world: The discovery of modern science*. HarperCollins
2. Fox, K. C. (2002). *The Big Bang theory: What it is, where it came from, and why it works*. Jossey Bass
3. Ouellette, J (2006). *Black bodies and quantum cats: Tales of pure genius and mad science*. Oneworld Publications
4. Comins, N. F., & Kaufmann, W. J. (2005). *Discovering the Universe* (7th ed.). W.H. Freeman & Co.
5. Coles, P. (2014). *Cosmology: A very short introduction*. Oxford University Press

Suggested readings

1. Buchwald, J., & Fox, R. (Eds.). (2017). *The Oxford handbook of the history of physics*. Oxford University Press
2. Simonyi, K. (2012). *A cultural history of physics*. CRC Press

3. Maran, S. (2017). *Astronomy for dummies* (4th ed.). Wiley
4. Chaisson, E., & McMillan, S. (2014). *Astronomy today* (8th ed.). Pearson.
5. Griffiths, D. J. (2012). *Revolutions in Twentieth-century physics*. Cambridge University Press

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** be present for and score a minimum of 40% in the Summative Assessment, (ii) the student must be present for Formative Assessment II (Mid-Semester Examinations), and (iii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: 50 marks distributed across three different forms of Assessment. Evaluated as per the Assessment & Evaluation Framework Document of Salesian College.

Summative Assessment: The Summative Assessment will be a written examination of 50 marks of at least 2 hours duration, using the RBT categorization and scheme.

Section	Marks per question	No. of questions to be answered	No. of questions given	Total marks for Section
A	2	5	8	10
B	5	4	6	20
C	10	2	4	20
			Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment	50	100%	50
Formative Assessment I	20	50%	10
Formative Assessment II	50		25
Formative Assessment III	20		10
Attendance	5	100%	5
		Total	100

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Mr. Bikramjit Chandra	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYVAC101 - Quantum Crossroads I

2. Course Description

Course Code	23PHYVAC101	
Course Title	Quantum Crossroads I	
Credits	1	
Total Hours	30	
Hours per Week	2	
Course Type	Value Added Course	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Physics	
Regulation	2023	
Course Overview	This course: a. Trains a student to plan, rehearse and present technical and mathematical information to an audience of their peers b. Provides students with an avenue to express technical information in an academic or professional environment. c. Trains students to comport themselves vocally and physically while presenting in front of an audience. d. Teaches students the use of digital aids such as slideshow software and projectors for the use of dissemination of information.	
Prerequisite	Students must be majoring in Physics. Students must have a reasonable command of English	
Course Objectives	A student will be able to: i. Read and understand technical information from a paper, article or other specialized manuals. ii. Analyze and break down the given information and assimilate with pre-existing knowledge. iii. Construct and present technical knowledge to an audience of their peers in a clear and lucid manner. iv. Critically evaluate and argue for or against the thesis of the paper.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the details of the paper being presented	R
CO2	Interpret the paper and relate it to their pre-existing knowledge	U
CO3	Present the knowledge in a clear and lucid manner to an audience of their peers	A1

CO4	Appraise and break down the information being presented.	A2		
CO5	Critique and argue for or against the thesis of the paper.	E		
CO6	Design and construct a presentation that disseminates knowledge from the paper to an audience.	C		
Course Structure				
Session Number	Content	Total Hours	COs	RBT
1	Hours 1 & 2: Introduction to the Course	2	-	-
2-10	Hour 1: Presentation by one 3rd year student Hour 2: Summarized report on the presentation	18	1,2,4	R U A2 E
11	Hour 1: Demo presentation by faculty Hour 2: Report on demo presentation	2	1,2,4	R U A2 E
12-14	Hour 1: Learning Google Slides and on using Google Scholar Hour 2: Practical class for the same	6	1,2,4	R U A2 E
15	Hour 1: How to present oneself in front of an audience Hour 2: Practice session for the same	2	3	A1 C
Learning Resources: None				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** submit the final report for Summative Assessment, and (ii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: Students have to present a written report for each presentation that they attend, and also write reports for all the practical work done in the tutorial classes. Each report will be graded out of 10 and finally converted to a fraction of 20 marks.

Summative Assessment: The Summative Assessment will be a final assignment of 25 marks.

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment	25	100%	25

Formative Assessment	10 times the number of reports	variable	20
Attendance	5	100%	5
		Total	50

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Mr. Bikramjit Chandra	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

SEMESTER – II

23PHYMAJ103 - Electricity and Magnetism

2. Course Description

Course Code	23PHYMAJ103
Course Title	Electricity and Magnetism
Credits	4
Total Hours	75
Hours per Week	5
Course Type	Major
Semester	II
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Physics
Regulation	2023
Course Overview	This course: - The course focuses on the distribution of fields near static electric charge configurations. It gives the students a basic understanding of conductors, dielectrics, polarization, and electrostatic energy. - It helps to introduce the students to magnetic force, steady current, and magnetic phenomena. It aims to help understand the fundamentals of magnetization in matter and assess the magnetic properties of materials. - It teaches the basics of electromagnetic induction due to time-varying fields and magnetostatic energy. - It focuses on understanding the behaviour of the electric and magnetic fields in an electromagnetic wave.
Prerequisite	Students must have an introductory knowledge of electrostatics, magnetostatics, and electrodynamics. Students must have completed the PHYMAJ101 course
Course Objectives	A student will be able to: - Understanding the basic properties of static electricity and applying their concepts and mathematical techniques to different cases. - Applications of electrostatics in conductors and dielectrics, such as capacitors, and their practical uses. - Understand the causes of magnetic phenomena and their properties, such as the Biot-Savart law, Ampere's law, etc. - Applications of magnetic properties to matter such as susceptibility, permeability, etc. - Identifying the connection between electricity & magnetism and allied phenomena such as electromagnetic induction. - Studying electromagnetic theory using Maxwell's equations and applying it to electromagnetic waves in different media.
Course Outcomes based on RBT and Cognitive Level Mapping	

At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Define the electric field & electric potential and describe the relation of electrostatics to various aspects of electrical charge.	R		
CO2	Explain the concepts of electromagnetic induction and its applications.	U		
CO3	Calculate the magnetic field, magnetic vector potential and energy stored for various steady-current carrying systems using various methods.	A1		
CO4	Examine the wave equations from Maxwell's equations for different media and categorize the electromagnetic waves & their properties.	A2		
CO5	Evaluate various types of magnetism, such as dia-, para-, and ferro-magnetism, and draw conclusions on their properties.	E		
CO6	Formulate the electric field, electric potential, and energy stored for discrete and continuous charge systems using suitable methods.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Electric Field and Electric Potential: Electric field: Electric field lines. Electric flux. Coulomb's law. Gauss' Law with applications to charge distributions with spherical, cylindrical and planar symmetry. Conservative nature of Electrostatic Field. Electrostatic Potential. Laplace's and Poisson equations. Electrostatic boundary value problem and Method of Images: Uniqueness theorem, Laplace's equation , Method of images.	12	1	R U A1 A2 E C

Unit II	Electrostatics in Conductors and Dielectrics: Conductors and Dielectrics, Electric Dipole, Dielectric Polarization, Gauss's law in Dielectric medium, Boundary Conditions. Electrostatic Energy and Capacitor: Electrostatic energy of a system of charged conductors, capacitors and their combinations, energy stored in a charged capacitor.	10	6	R U A1 A2 E C
Unit III	Magnetic Field: Magnetic force between current elements and definition of Magnetic Field B. Biot-Savart's Law and its simple applications: straight wire and circular loop. Current Loop as a Magnetic Dipole and its Dipole Moment. Ampere's Circuital Law and its application to (1) infinite straight wire, (2) Infinite planar surface current and (3) Solenoid. Properties of B: curl and divergence. Axial vector property of B and its consequences. Magnetic Vector Potential. Magnetic Force on (1) point charge (2) current carrying wire (3) between current elements. Torque on a current loop in a uniform Magnetic Field. Magnetic Scalar Potential.	8	2	R U A1 A2 E C
Unit IV	Magnetic Properties of Matter: Magnetization vector (M). Magnetic Intensity (H). Magnetic Susceptibility and permeability. Relation between B, H, M. Comparison of Dia-, Para- and Ferromagnetism. B-H curve and hysteresis loss.	5	3	R U A1 A2 E C
Unit V	Electromagnetic Induction: Faraday's law. Self-Inductance and Mutual Inductance. Neumann's Formula. Reciprocity Theorem. Energy stored in a Magnetic Field. Electromagnetic Theory: Maxwell's equations, Poynting's vector and Poynting's theorem. Wave equation in free space, dielectric medium and conducting medium. Polarization of plane electromagnetic waves, Methods of producing plane polarized light: simple reflection, double reflection and dichroism, Malus law.	10	4, 5	R U A1 A2 E C
Learning Resources:				

Text Books

1. Ghosh, B. (2008). *Foundations of electricity and magnetism* (3rd rev. ed.). Books & Allied (P) Limited
2. Murugesan, R. (2019). *Electricity and magnetism* (10th ed.). S. Chand & Co.
3. Griffiths, D. J. (2015). *Introduction to electrodynamics* (4th ed.). Cambridge University Press
4. Sadiku, M. N. O. (2018). *Elements of electromagnetics* (7th ed.). Oxford University Press
5. Subrahmanyam, N., Lal, B., & Avadhanulu, M. N. (2006). *A textbook of optics* (23rd rev. ed.). S. Chand & Co.
6. Gupta, A. B. (2013). *Modern optics* (3rd ed.). Books & Allied (P) Limited

Suggested readings

1. Purcell, E. M., & Morin, D. J. (2013). *Electricity and magnetism* (3rd ed.). Cambridge University Press
2. Manohara, S. R., & Shubha A. (2018). *Electricity, magnetism and electromagnetic theory*. S. Chand & Co.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Practicals

Course Code	23PHYMAJ103
Course Title	Electricity and Magnetism
Credits	4
Total Hours	75
Hours per Week	5
Course Type	Major
Semester	II
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Physics
Regulation	2023
Course Overview	This course: a. The course provides the knowledge to measure various physical quantities through a scientific approach. b. It aims to help in estimating various electric and magnetic properties of materials using scientific apparatus. c. It focuses on giving training in the use of precision measurements, calibration, and error analysis.
Prerequisite	Students must have an introductory knowledge of electrostatics, magnetostatics, and electrodynamics. Students must have completed the PHYMAJ101 course
Course Objectives	A student will be able to: i. Enabling the students to determine unknown resistances by applying the principles of the potentiometer and Carey Foster's bridge.

	ii. Enabling students to compute magnetic field strength and its gradient and determine energy losses from the hysteresis. iii. Enabling students to produce and detect plane polarized light and graphically construct patterns to prove polarization laws. iv. Enabling students to analyze plane polarized light and to map it graphically v. Enabling students to record experimental data in a systematic manner and hence construct the experiment report on paper. vi. Computing experimental results from the working formulae and graphs and interpreting the results.			
Course Outcomes based on Dave’s Psychomotor Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Replicate the steps required to familiarize themselves with experiments and instruments related to the study of electricity and magnetism.	I		
CO2	Recreate any previously imitated experiment on the study of electricity and magnetism.	M		
CO3	Demonstrate skilled use of common measuring instruments such as galvanometers, Wheatstone bridges, polarizers, etc.	P		
CO4	Be proficient in the setup and use of experimental apparatus used for the study of electricity and magnetism.	P		
CO5	Adapt or modify previously imitated experiments to analyze new properties from electricity and magnetism.	A		
Course Content				
Units	Content	Lecture Hours	COs	Dave’s
Unit I	List of Experiments: 1. To determine an unknown Low Resistance using Potentiometer. 2. To determine an unknown Low Resistance using Carey Foster’s Bridge. 3. Measurement of field strength B and its variation in a solenoid (determine dB/dx)	30	1, 2, 3,4,5	I M P A

	4. To determine self-inductance of a coil by Anderson's bridge. 5. To study polarization of light by reflection and determine the polarizing angle for air-glass interface. 6. To verify Malus law for plane polarized light. 7. To draw the BH curve of Fe using Solenoid & determine energy loss from Hysteresis. 8. To verify Brewster's law for plane polarized light. 9. To determine internal resistance of a cell using (a) potentiometer and (b) voltmeter & ammeter. 10. To measure large EMF by means of a potentiometer. <i>A minimum of EIGHT (8) experiments is to be performed</i>			
Learning Resources: Text Books 1. Chattopadhyay, D., & Rakshit, P. C. (2011). <i>An advanced course in practical physics</i>. New Central Book Agency (P) Limited 2. Raychaudhuri, D. P. (n.d.). <i>Manual of practical physics</i>. Allied Book Agency 3. Dasgupta, C.R. (1985). <i>A handbook of practical physics</i>. Book Syndicate Private Limited 4. Singh, H., & Hemne, P.S. (2022). <i>B.Sc. practical physics</i>. S. Chand & Co.				

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** be present for and score a minimum of 40% in the Summative Assessment for theory and practical **each**, (ii) the student must be present for Formative Assessment II (Mid-Semester Examinations), and (iii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: 50 marks distributed across three different forms of Assessment. Evaluated as per the Assessment & Evaluation Framework Document of Salesian College.

Summative Assessment (Theory): The Summative Assessment will be a written examination of 50 marks of at least 2 hours duration, using the RBT categorization and scheme.

Section	Marks per question	No. of questions to be answered	No. of questions given	Total marks for Section
A	2	5	8	10
B	5	4	6	20
C	10	2	4	20
			Total	50

Summative Assessment (Practical): The Summative Assessment will be an examination of 50 marks of at least 3 hours duration. The student will be made to perform one or more experiments chosen at random from the topics given in the syllabus.

Sl. No.	Component	Marks per component
1	Practical Examination	30
2	Viva-voce	10
3	Lab notebook or Lab assignment	10
	Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment (Theory)	50	50%	25
Summative Assessment (Practical)	50		25
Formative Assessment I	20		10
Formative Assessment II	50		25
Formative Assessment III	20		10
Attendance	5	100%	5
		Total	100

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Ms. Sujata Sinha (Signature) Dr. Digvijay Kharga	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYMAJ104 - Waves and Optics

3. Course Description

Course Code	23PHYMAJ104
Course Title	Waves and Optics
Credits	4
Total Hours	75
Hours per Week	5
Course Type	Major
Semester	II
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Physics
Regulation	2023
Course Overview	This course: - The course helps students get familiarised with important aspects of waves and oscillations and hence study different optical phenomena. - It helps students study the nature of waves in a generic manner. - It helps students describe the course of waves through different materials. - It makes students acquainted with the history of development of light, with brevity. - It helps students describe different optical phenomena like interference and diffraction. - It helps the students to build a strong background for different experiments. - It bolsters the drawing skills (ray diagrams, experimental setups, fringe patterns, etc.) of the students.
Prerequisite	Students must have an introductory knowledge of oscillations, waves, superpositions, and light. Students must have completed the PHYMAJ101 and MATMIN101 courses.
Course Objectives	A student will be able to: - Introduce the basic concepts of superposition principle, Lissajous figures, wave motion, coherence, interference, and diffraction phenomena. - Apply the superposition principle and Huygen's principle to explain important phenomena in waves and optics. - Describe the workings of interferometers and judge their relative importance in physics. - Explain the motion of waves in different media with the help of key concepts and mathematics. - Draw and explain interference and diffraction patterns.

	vi. Explain the setup for important experiments like Melde's experiment and Young's double-slit experiments, and hence describe the significance of the results.			
Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Describe waves of various kinds and their properties in terms of differential equations and their solutions.	R		
CO2	Summarize the wave theory of light and explain the concept of waveguides.	U		
CO3	Apply the concept of fringe formation and calculate the wavelength of light.	A1		
CO4	Differentiate between interference and diffraction phenomena of light.	A2		
CO5	Select optical instruments such as standard light sources, spectrometers, grating, slits, etc. for the purpose of evaluating various optical properties.	E		
CO6	Use the superposition principle to formulate the resultant displacement in various kinds of physical situations.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Superposition of Harmonic oscillations Collinear: Linearity and Superposition Principle. Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats). Superposition of N collinear Harmonic Oscillations with (1) equal phase differences and (2) equal frequency differences. Perpendicular: Graphical and Analytical	7	1, 3, 6	R U A1 A2 E C

	Methods. Lissajous Figures with equal and unequal frequency and their uses.			
Unit II	Wave Motion Plane and Spherical Waves. Longitudinal and Transverse Waves. Plane Progressive (Travelling) Waves. Wave Equation. Particle and Wave Velocities. Differential Equation. Pressure of a Longitudinal Wave. Energy Transport. Intensity of Wave. Water Waves: Ripple and Gravity Waves Velocity of Waves Velocity of Transverse Vibrations of Stretched Strings. Velocity of Longitudinal Waves in a Fluid in a Pipe. Newton's Formula for Velocity of Sound. Laplace's Correction.	8	1,2,3,5, 6	R U A1 A2 E C
Unit III	Superposition of Two Harmonic Waves Standing (Stationary) Waves in a String: Fixed and Free Ends. Analytical Treatment. Phase and Group Velocities. Changes with respect to Position and Time. Energy of Vibrating String. Transfer of Energy. Normal Modes of Stretched Strings. Plucked and Struck Strings. Melde's Experiment. Longitudinal Standing Waves and Normal Modes. Open and Closed Pipes. Superposition of N Harmonic Waves.	7	1,3,4	R U A1 A2 E C
Unit IV	Nature of Light A brief history of light, the corpuscular and wave theories of light, electromagnetic nature of light (qualitative discussions only), Definition and properties of wave front. Huygens Principle. Temporal and Spatial Coherence. Introduction to Interference: Coherence (brief qualitative discussion), Young's double-slit experiment - derivation of fringe width, conditions for observable interference Interference by Division of Wavefront: Fresnel's Biprism - qualitative analysis of fringe pattern, applications (determine of unknown wavelength and thickness of thin sheet); interference with white light	14	3,4,5,6	R U A1 A2 E C

	Interference by Division of Amplitude: Stokes' treatment, interference in thin films (wedge-shaped and parallel films), Newton's rings - analysis of interference pattern and applications Interferometers: The Michelson Interferometer - qualitative discussions on construction, formation of fringes and importance in physics; determination of wavelength of light			
Unit V	Diffraction of Light Introduction to Diffraction: Interference versus Diffraction, Classification of Diffraction types Fraunhofer Type Diffraction: Single slit and double slit diffraction - qualitative discussions on diffraction pattern and positions of maxima and minima; the theory of plane transmission grating; resolving and dispersive power of a grating Fresnel Type Diffraction: Fresnel's half period zones, zone plate theory, comparison between zone plate and convex lens, diffraction at a: circular aperture and thin wire (only qualitative discussion of the fringe patterns)	9	3, 4, 5	R U A1 A2 E C

Learning Resources:

Text Books

1. Ghatak, A. (2017). *Optics* (6th ed). McGraw Hill Education (India)
2. Gupta, A. B. (2013). *Modern optics* (4th ed.). Books and Allied (P) Ltd.
3. Bajaj, N. K. (2017). *The physics of waves and oscillations*. Tata McGraw-Hill
4. Chaudhuri, R. N. (2010). *Waves and oscillations* (2nd ed.). New Age International Publishers
5. Chattopadhyay, D., & Rakshit, P. C. (2011). *Vibrations, waves and acoustics*. Books & Allied (P) Ltd.
6. Jenkins, F. A. & White, H. E. (2017). *Fundamentals of optics* (4th Indian ed.). McGraw Hill Education.

Suggested readings

1. Parthasarathy, H. (2019). *Waves and optics*. CRC Press
2. Hecht, E. (2019). *Optics*. Pearson
3. Kumar, A., Gulati, H. R. & Khanna, D. R. (n.d.). *Fundamentals of optics*. R. Chand Publications
4. Pain, H. J. (2006). *The physics of vibrations and waves* (6th ed.). John Wiley and Sons

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Practicals

Course Code	23PHYMAJ203
Course Title	Waves and Optics
Credits	4
Total Hours	75
Hours per Week	5
Course Type	Major
Semester	II
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Physics
Regulation	2023
Course Overview	This course: - The course helps students get acquainted with different instruments (especially pertinent to the experiments of optics) and their applications and limitations. - It emphasises the necessity of hands-on experience with the measurement of physical quantities and understanding theoretical concepts through experiments. - It aims to help in estimating the quantifiers and studying important properties related to different optical phenomena through experiments. - It aims to help study important properties of waves and oscillations through experiments. - It aims to make students accustomed to working in the dark room (for optics experiments only).
Prerequisite	Students must have an introductory knowledge of oscillations, waves, superpositions, and light. Students must have completed the PHYMAJ101 and MATMIN101 courses.
Course Objectives	A student will be able to: - Enabling students to identify the important parts of an instrument and understand the significance of the constants of an instrument. - Setting up the experiment by properly assorting important components. - Enabling the students to record experimental data in a systematic manner and hence construct the experiment report on paper. - Computing the experimental results mathematically from the graphs with the help of a working formula. - Making visual representations of the experimental data, wherever necessary (primarily graphs), and hence interpreting the results.

	vi. Nurturing the scientific temperament among the students and encouraging them to reflect on their personal experiences of conducting the experiments.			
Course Outcomes based on Dave's Psychomotor Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Replicate the steps required to familiarize themselves with experiments and instruments related to the study of waves and optics.	I		
CO2	Recreate any previously imitated experiment on the study of waves and optics.	M		
CO3	Demonstrate skilled use of common measuring instruments such as spectrometers, light sources, lasers, gratings, etc.	P		
CO4	Be proficient in the setup and use of experimental apparatus used for the study of waves and optics.	P		
CO5	Adapt or modify previously imitated experiments to analyze new properties from waves and optics.	A		
Course Content				
Units	Content	Lecture Hours	COs	Dave's
Unit I	List of Experiments: 1. To determine the velocity of sound through a wire using sonometer 2. To study Lissajous Figures (with phase analyses for different phases) 3. To verify the laws of transverse vibrations using Melde's apparatus 4. To determine the frequency of an electric tuning fork by Melde's experiment and verify the square of wavelength - time period law 5. To study the vibration of guitar strings 6. To determine the angle of a prism	30	1, 2, 3,4,5	I M P A

	7. To determine the refractive index of material of a prism using a sodium source 8. To determine the dispersive power and Cauchy constants of the material of a prism using a mercury source 9. To determine the wavelength of sodium light using Fresnel's Biprism 10. To determine the wavelength of sodium light using Newton's Rings method 11. To determine the refractive index of a liquid using Newton's Rings method 12. To determine the wavelength of a laser source using single slit diffraction 13. To determine the wavelength of (a) sodium light and (b) spectral lines of mercury source using a plane diffraction grating 14. To study the diffraction at a straight wire. <i>A minimum of EIGHT (8) experiments is to be performed</i>			
Learning Resources: Text Books 1. Chattopadhyay, D., & Rakshit, P. C. (2011). <i>An advanced course in practical physics</i>. New Central Book Agency (P) Limited 2. Raychaudhuri, D. P. (n.d.). <i>Manual of practical physics</i>. Allied Book Agency 3. Dasgupta, C.R. (1985). <i>A handbook of practical physics</i>. Book Syndicate Private Limited 4. Singh, H., & Hemne, P.S. (2022). <i>B.Sc. practical physics</i>. S. Chand & Co.				

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** be present for and score a minimum of 40% in the Summative Assessment for theory and practical **each**, (ii) the student must be present for

Formative Assessment II (Mid-Semester Examinations), and (iii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: 50 marks distributed across three different forms of Assessment. Evaluated as per the Assessment & Evaluation Framework Document of Salesian College.

Summative Assessment (Theory): The Summative Assessment will be a written examination of 50 marks of at least 2 hours duration, using the RBT categorization and scheme.

Section	Marks per question	No. of questions to be answered	No. of questions given	Total marks for Section
A	2	5	8	10
B	5	4	6	20
C	10	2	4	20
			Total	50

Summative Assessment (Practical): The Summative Assessment will be an examination of 50 marks of at least 3 hours duration. The student will be made to perform one or more experiments chosen at random from the topics given in the syllabus.

Sl. No.	Component	Marks per component
1	Practical Examination	30
2	Viva-voce	10
3	Lab notebook or Lab assignment	10
	Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment (Theory)	50	50%	25
Summative Assessment (Practical)	50		25
Formative Assessment I	20		10
Formative Assessment II	50		25

Formative Assessment III	20		10
Attendance	5	100%	5
		Total	100

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Dr. Prajwal Chettri (Signature) Mr. Mayukh Mazumdar	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYSEC102 - Practical Electricity

4. Course Description

Course Code	23PHYSEC102
Course Title	Practical Electricity
Credits	3
Total Hours	60
Hours per Week	4
Course Type	Skill Enhancement Course
Semester	II
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Physics
Regulation	2023
Course Overview	This course: - The course aims to provide knowledge on practical electrical circuits. - The students will have an understanding of application of resistors, inductors and capacitors in circuits. - Students will learn maintenance practices for electrical equipment and systems. - Students will learn the importance of electrical safety practices, including proper grounding, insulation, and handling of electrical hazards. - Students will develop skills in diagnosing and troubleshooting electrical problems in circuits and systems.
Prerequisite	Students must have an introductory knowledge of electromagnetic theory and electric circuits. Students must be taking PHYMAJ103 concurrently
Course Objectives	A student will be able to: - Understanding the basic concepts and laws of electrical circuits, such as voltage, current, resistance, Ohm's Law, etc., and their applications. - Developing techniques to analyze and solve electrical circuits such as Kirchhoff's laws, nodal analysis, and mesh analysis. - Identifying and understanding the characteristics of active and passive electrical components and analyzing the transient and steady-state responses of circuits. - Understanding the principles of electrical power generation, transmission, and distribution along with different types of electrical systems, such as single-phase and three-phase systems. - Introducing the student to electrical codes, standards, and regulations related to wiring and electrical installations. - Understanding the principles of electrical safety and the importance of following proper procedures.
Course Outcomes based on RBT and Cognitive Level Mapping	

At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Identify and recall the basic concepts and laws of electrical circuits, such as voltage, current, resistance, Ohm's Law, etc., and their applications.	R		
CO2	Summarize the principles of electrical power generation, transmission, and distribution along with different types of electrical systems, such as single-phase and three-phase systems.	U		
CO3	Apply techniques of analysis such as Kirchhoff's laws, nodal analysis, mesh analysis, etc., to calculate electrical circuit parameters.	A1		
CO4	Analyze various active and passive electrical components and investigate their characteristics and behaviour in electric circuits.	A2		
CO5	Recommend and argue for the correct procedure to implement in accordance with the principles of electrical safety.	E		
CO6	Propose and correctly interpret the various standards related to electrical codes and regulations related to wiring and electrical installations.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Basic Electricity Principles Voltage, Current, Resistance, and Power. Ohm's law. Series, parallel, and series-parallel combinations. Ammeters, voltmeters, galvanometers and conversion of galvanometer to either instrument. AC Electricity and DC Electricity. Ideal Constant-voltage and Constant-current Sources.	6	1, 4	R U A1 A2 E C
Unit II	Electrical Circuits AC Circuits: Kirchhoff's laws for AC circuits. Resistors, inductors and capacitors. Diode and rectifiers. Components in Series or in shunt.	8	1, 3, 4	R U A1 A2

	Response of inductors and capacitors with DC and AC sources. DC circuit theory: Kirchhoff's laws for DC circuits, voltage division, current division, Y (Wye)-delta transformations. RC and RL in DC circuits. Complex Reactance and Impedance. Series LCR Circuit: (1) Resonance, (2) Power Dissipation and (3) Quality Factor, and (4) Band Width. Parallel LCR Circuit			E C
Unit III	Network theorems Network Theorems: Thevenin theorem, Norton theorem, Superposition theorem, Reciprocity theorem, Maximum Power Transfer theorem. Applications to dc circuits.	5	3	R U A1 A2 E C
Unit IV	Generators, Motors and Transformers DC Power sources. AC/DC generators. Single-phase, three-phase & DC motors. Basic design. Speed & power of ac motor Operation of transformers.	5	1,6	R U A1 A2 E C
Unit V	Electrical Protection Relays. Fuses and disconnect switches. Circuit breakers. Overload devices. Ground-fault protection. Grounding and isolating. Phase reversal. Surge protection. Interfacing DC or AC sources to control elements (relay protection device)	6	5,6	R U A1 A2 E C

Learning Resources:

Text Books

1. Mahajan, S., & Choudhury, S. R. (2017). *Electricity, magnetism and electromagnetic theory*. Tata McGraw-Hill
2. Yarwood, J. (1973). *Electricity and magnetism*. University Tutorial Press.
<https://archive.org/details/electricitymagne0000yarw/page/n7/mode/2up>
3. Say, M. G. (2002). *Performance and design of alternating current machines* (3rd ed.). CBS Publishers and Distributors.
4. Theraja, B. L., Theraja, A. K., & Tarnekar, S. G. (2019). *A textbook of electrical technology: Basic electrical engineering* (Volume 1) (23rd rev. ed.). S Chand & Co.
5. Theraja, B. L., Theraja, A. K., & Tarnekar, S. G. (2019). *A textbook of electrical technology: AC & DC machines* (Volume 2) (23rd rev. ed.). S Chand & Co.
6. Purcell, E. M., & Morin, D. J. (2013) *Electricity and magnetism* (3rd ed.). Cambridge University Press

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Practicals

Course Code	23PHYSEC102	
Course Title	Practical Electricity	
Credits	3	
Total Hours	60	
Hours per Week	4	
Course Type	Skill Enhancement Course	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Physics	
Regulation	2023	
Course Overview	This course: 1. The course helps students get acquainted with different circuit components. 2. It focuses on hands-on experience with the measurement of physical quantities and understanding theoretical concepts through experiments. 3. It aims to help in studying important properties related to transient phenomena of electricity through experiments.	
Prerequisite	Students must have an introductory knowledge of electromagnetic theory and electric circuits. Students must be taking PHYMAJ103 concurrently	
Course Objectives	A student will be able to: i. Studying the characteristics of circuit components. ii. Proving the network theorems experimentally. iii. Analyzing and understanding the characteristics of series and parallel LCR circuits. iv. Learning about electrical protection components. v. Constructing a motion sensor for the operation of an automatic lighting system. vi. Construct a single phase DC motor and to find the average power generated by the motor.	
Course Outcomes based on Dave's Psychomotor Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Replicate the steps required to familiarize themselves with experiments and instruments related to the study of electric circuits.	I
CO2	Recreate any previously imitated experiment on the study of electric circuits.	M
CO3	Demonstrate skilled use of common electrical instruments such as multimeters, relays, bread boards, etc.	P

CO4	Be proficient in the setup and use of experimental apparatus used for the study of electric circuits.	P		
CO5	Adapt or modify previously imitated experiments to analyze new properties from electric circuits.	A		
Course Content				
Units	Content	Lecture Hours	COs	Dave's
Unit I	List of Experiments: 1. To study the characteristics of a series RC Circuit. 2. To verify the Thevenin and Norton theorems. 3. To verify the Superposition, and Maximum power transfer theorems. 4. To study the response curve of a Series LCR circuit and determine its (a) Resonant frequency, (b) Impedance at resonance, (c) Quality factor Q, and (d) Band width. 5. To study the response curve of a parallel LCR circuit and determine its (a) Anti- resonant frequency and (b) Quality factor Q. 6. To construct a single phase DC motor and to find the average power generated by the motor. 7. To construct a relay alarm in case of an overloaded circuit. 8. To construct a motion sensor for the operation of an automatic lighting system. 9. To calibrate voltmeter and ammeter using potentiometer.	30	1, 2, 3,4,5	I M P A

Learning Resources:

Text Books

1. Chattopadhyay, D., & Rakshit, P. C. (2011). *An advanced course in practical physics*. New Central Book Agency (P) Limited
2. Raychaudhuri, D. P. (n.d.). *Manual of practical physics*. Allied Book Agency
3. Dasgupta, C.R. (1985). *A handbook of practical physics*. Book Syndicate Private Limited
4. Singh, H., & Hemne, P.S. (2022). *B.Sc. practical physics*. S. Chand & Co.

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** be present for and score a minimum of 40% in the Summative Assessment for theory and practical **each**, (ii) the student must be present for Formative Assessment II (Mid-Semester Examinations), and (iii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: 50 marks distributed across three different forms of Assessment. Evaluated as per the Assessment & Evaluation Framework Document of Salesian College.

Summative Assessment (Theory): The Summative Assessment will be a written examination of 50 marks of at least 2 hours duration, using the RBT categorization and scheme.

Section	Marks per question	No. of questions to be answered	No. of questions given	Total marks for Section
A	2	5	8	10
B	5	4	6	20
C	10	2	4	20
			Total	50

Summative Assessment (Practical): The Summative Assessment will be an examination of 50 marks of at least 3 hours duration. The student will be made to perform one or more experiments chosen at random from the topics given in the syllabus.

Sl. No.	Component	Marks per component
1	Practical Examination	30

2	Viva-voce	10
3	Lab notebook or Lab assignment	10
	Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment (Theory)	50	50%	25
Summative Assessment (Practical)	50		25
Formative Assessment I	20		10
Formative Assessment II	50		25
Formative Assessment III	20		10
Attendance	5	100%	5
		Total	100

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Ms. Sujata Sinha (Signature) Dr. Prajwal Chettri	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYMIN102 - Mechanics

5. Course Description

Course Code	23PHYMIN102
Course Title	Mechanics
Credits	4
Total Hours	75
Hours per Week	5
Course Type	Major
Semester	II
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Students not from Physics
Regulation	2023
Course Overview	This course: - The course aims to train the students in the basic knowledge of Physics, and the laws governing it. - It helps to introduce the students to conservation laws and their utility in understanding the behaviour of physical systems. - It aims to introduce the student to the special theory of relativity. - It focuses on the motion of rigid bodies about any fixed point and any arbitrary axis passing through this point. - It helps the students understand the elastic properties of materials and the Physics behind the characteristics of liquids. - It helps the students develop knowledge of the central force and its characteristics, including gravitation. - It teaches the basics of harmonic motion and its characteristics. It will help the students understand the periodic motions in Nature.
Prerequisite	Students should have elementary knowledge of vectors, algebra, calculus, kinematics, linear and rotational dynamics, energy, elasticity, and oscillations.
Course Objectives	A student will be able to: - Acquire preliminary knowledge and the mathematics required for the laws of motion, the concept of Galilean invariance, the system of particles, and collisions. - Demonstrate the concepts of conservative and non-conservative forces, equilibrium, and fictitious forces that arise in non-inertial reference frames. - Understand the analogy between translational and rotational dynamics and the ability to calculate the moment of inertia of various rigid bodies. - Describe the general properties of matter and the principles of elasticity, fluid flow, viscosity, and surface tension. - Analyze the laws of gravitation and central force motion and derive Kepler's law to demonstrate the motion of planets. - Explain the phenomenon of simple harmonic motion and the properties of the systems executing it.

Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Define and identify the fundamental laws of motion and associated concepts such as collisions.	R		
CO2	Distinguish between inertial and non-inertial reference frames and interpret the physical consequences arising from them.	U		
CO3	Apply the motion of a particle under central force motion to demonstrate the properties and characteristics of gravitation.	A1		
CO4	Analyse the motion of a rigid body, including translational and rotational motion.	A2		
CO5	Evaluate the differential equation of simple harmonic motion and assess the nature of oscillations.	E		
CO6	Combine and investigate the general properties of matter and various physical constants.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Vectors: Vector Algebra, Scalar and Vector products, Derivatives of a vector with respect to a parameter, Radial and Transverse components of velocity and acceleration, Uniform Circular Motion. Ordinary Differential Equations: 1st order homogeneous differential equations, 2nd order homogeneous differential equations with constant coefficients. Fundamentals of Dynamics: Laws of motion, Galilean transformation, Conservation laws, System of particles and Centre of Mass, Motion of rockets.	10	1, 2	R U A1 A2 E C

	Collisions: Elastic and Inelastic collisions, Laboratory and Centre of Mass frames.			
Unit II	Work and Energy: Conservative and non-conservative forces, Potential Energy. Potential energy curves and equilibrium. Work done by non-conservative forces. Law of Conservation of Energy. Special Theory of Relativity: Historical background of Special Theory of Relativity, Postulates. Length contraction. Time dilation. Twin paradox. Relativistic addition of velocities. Relativistic variation of mass, mass-energy equivalence. Non-Inertial Systems: Non-inertial frames and fictitious forces. Uniformly rotating frame. Rotating coordinate systems. Centrifugal force. Coriolis force,	8	4, 6	R U A1 A2 E C
Unit III	Rotational Dynamics: Angular momentum of a particle and system of particles, Torque, Conservation of angular momentum, Rotation about a fixed axis, Rotational energy, Moment of Inertia, Theorem of perpendicular axis and Theorem of parallel axes. Flywheel, theory of compound pendulum and determination of acceleration due to gravity. Gravitation and Central Force Motion: Law of Gravitation. Gravitational potential energy, potential, and field intensity. Motion of a particle under a central force field and Kepler's Laws (statement only). Satellites in circular and geosynchronous orbits.	12	3, 4	R U A1 A2 E C
Unit IV	Elasticity: Stress-Strain diagram, Relation between Elastic constants – Young's modulus, Bulk's modulus and modulus of rigidity. Poisson's ratio. Work done in stretching and in twisting a wire, twisting torque on a cylinder or wire.	9	6	R U A1 A2 E C

	Viscosity: Streamline and Turbulent flow, Equation of Continuity, Coefficient of Viscosity. Surface Tension: Relation between surface tension and surface energy. Angle of Contact and capillary ascent.			
Unit V	Oscillations: Simple Harmonic Motion, its differential equation and solution. Vertical oscillations of the light loaded spring, expression for force constant and determination of acceleration due to gravity. Energy and their time-average values. Damped oscillations (Overview).	6	5	R U A1 A2 E C

Learning Resources:

Text Books

1. Mathur, D.S. (2000). *Mechanics*. S. Chand & Co.
2. Lal B. & Subrahmanyam N. (2002). *Properties of matter*. S. Chand & Co
3. Murugesan R. (2010). *Elements of properties of matter*. S. Chand & Co.
4. Chatterjee, H. & Sengupta, R. (2010). *A treatise on general properties of matter* (7th rev. ed.). New Central Book Agency (P) Limited

Suggested readings

1. Kittel, K., Knight, W. D., Ruderman, M. A., Helmholz, A. C., & Moyer, B. J. (2011). *Mechanics*. Tata McGraw-Hill
2. Halliday, D., Resnick, R., & Walker, J. (2007) *Fundamentals of physics*. John Wiley & Sons
3. Kleppner, D. & Kolenkow, R. J. (2017) *An introduction to mechanics*. McGraw Hill Education

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Practicals

Course Code	23PHYMIN101
Course Title	Mechanics
Credits	4
Total Hours	75
Hours per Week	5
Course Type	Major
Semester	II
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	Students not from Physics
Regulation	2023

Course Overview	This course: a. The course helps introduce students to different measuring instruments and their applications and significance. b. It emphasises the need to have hands-on experience with the measurement of physical quantities and understand the theoretical concepts through practical means. c. It aims to help in estimating the physical properties of rigid bodies and the elastic and mechanical properties of different materials using scientific instruments. d. It aims to help in assessing the properties of liquids through simple experiments.	
Prerequisite	Students should have elementary knowledge of vectors, algebra, calculus, kinematics, linear and rotational dynamics, energy, elasticity, and oscillations.	
Course Objectives	A student will be able to: i. Identify, choose, and calibrate appropriate measuring instruments for a particular experiment. ii. Record experimental data in a systematic manner and compute the results using the right physical or mathematical procedures. iii. Interpret and communicate their results in an appropriate manner using written reports with the necessary data visualizations. iv. Check the credibility of theoretical claims from experiments. v. Nurture their scientific temperament and encourage them to build upon their experience gained from conducting experiments.	
Course Outcomes based on Dave's Psychomotor Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Replicate the steps required to familiarize themselves with experiments and instruments related to the study of mechanical and elastic properties.	I
CO2	Recreate any previously imitated experiment on the study of mechanical and elastic properties.	M
CO3	Demonstrate skilled use of common measuring instruments such as callipers, gauges, measuring telescopes, etc.	P
CO4	Be proficient in the setup and use of experimental apparatus used for the study of mechanical and elastic properties.	P
CO5	Adapt or modify previously imitated experiments to analyze new mechanical and elastic properties.	A
Course Content		

Units	Content	Lecture Hours	COs	Dave's
Unit I	List of Experiments: 1. Measurements of length/ diameter using vernier calliper, screw gauge and travelling microscope 2. Determination of g and velocity of freely falling body using digital timing technique 3. To study the motion of a spring and calculate (a) its spring constant, (b) modulus of rigidity of the spring material and (c) value of g. 4. To determine the value of g using a bar pendulum 5. To determine the surface tension of a liquid by capillary tube method 6. To determine the modulus of rigidity of the material of a wire by dynamical method 7. To determine the modulus of rigidity of the material of a wire by Maxwell's needle 8. To determine the Young's modulus of the material of a wire by optical lever method 9. To determine the moment of inertia of a flywheel <i>A minimum of EIGHT (8) experiments is to be performed</i>	30	1, 2, 3,4,5	I M P A
Learning Resources: Text Books 1. Chattopadhyay, D., & Rakshit, P. C. (2011). An advanced course in practical physics. New Central Book Agency (P) Limited 2. Raychaudhuri, D. P. (n.d.). Manual of practical physics. Allied Book Agency 3. Dasgupta, C.R. (1985). A handbook of practical physics. Book Syndicate Private Limited 4. Singh, H., & Hemne, P.S. (2022). B.Sc. practical physics. S. Chand & Co. 5. Chandra, B. (2023). <i>PHY MINOR:Mechanics - Lab guidebook for practicals.</i> (n.p.)				

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** be present for and score a minimum of 40% in the Summative Assessment for theory and practical **each**, (ii) the student must be present for Formative Assessment II (Mid-Semester Examinations), and (iii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: 50 marks distributed across three different forms of Assessment. Evaluated as per the Assessment & Evaluation Framework Document of Salesian College.

Summative Assessment (Theory): The Summative Assessment will be a written examination of 50 marks of at least 2 hours duration, using the RBT categorization and scheme.

Section	Marks per question	No. of questions to be answered	No. of questions given	Total marks for Section
A	2	5	8	10
B	5	4	6	20
C	10	2	4	20
			Total	50

Summative Assessment (Practical): The Summative Assessment will be an examination of 50 marks of at least 3 hours duration. The student will be made to perform one or more experiments chosen at random from the topics given in the syllabus.

Sl. No.	Component	Marks per component
1	Practical Examination	30
2	Viva-voce	10
3	Lab notebook or Lab assignment	10
	Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment (Theory)	50		25

Summative Assessment (Practical)	50	50%	25
Formative Assessment I	20		10
Formative Assessment II	50		25
Formative Assessment III	20		10
Attendance	5	100%	5
		Total	100

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Dr. Digvijay Kharga (Signature) Mr. Mayukh Mazumdar (Signature) Dr. Prajwal Chettri	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYMDC102 - Quantum Physics for the Curious

3. Course Description

Course Code	23PHYMDC102
Course Title	Quantum Physics for the Curious
Credits	3
Total Hours	45
Hours per Week	3
Course Type	Multi-Disciplinary Course
Semester	II
Intended Level	Certificate
Issue(s) Addressed	
Course Offered to	All Students (except students who have studied Physics)
Regulation	2023
Course Overview	This course: - Introduce a student to the physics of the very small at a qualitative level without any mathematical or technical prerequisites. - Introduce the student to the history of the development of quantum theory and its effect on physics - Give the student a qualitative overview of the Standard Model of particle physics and the experimental apparatus required. - Briefly acquaint the student with the practical applications of quantum theory. - Give the student an overview of the modern fields of quantum computing and quantum cryptography.
Prerequisite	Students must have graduated from higher secondary school. Students cannot have studied physics in classes 11 & 12.
Course Objectives	A student will be able to: - Understanding the history and reasons for the development of quantum theory. - Identifying the main ideas and developments in old quantum theory. - Identifying the main ideas and developments during the first quantum revolution and its impact on the foundations of physics. - Outlining the basic principles of the Standard Model of Particle Physics and its major components, and identifying the major experiments devoted to the field, e.g., CERN. - Outlining the important practical applications of quantum theory in electronics, chemistry, telecommunications, and imaging. - Familiarizing themselves with the ideas of quantum entanglement and its extension into the modern fields of quantum cryptography and quantum computing.
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:	

COs	Statements	Cognitive Level Mapping		
CO1	Describe the history and identify the reasons for the development of quantum theory.	R		
CO2	Discuss the basic principles of the Standard Model of particle physics and summarize the major experiments devoted to the field.	U		
CO3	Qualitatively present the ideas of quantum entanglement and its applications.	A1		
CO4	Appraise the main ideas and developments during the first quantum revolution and analyze its impact on the foundations of physics.	A2		
CO5	Critique the main ideas and developments in old quantum theory and the first quantum revolution.	E		
CO6	Generate the important practical applications of quantum theory in electronics, chemistry, telecommunications, and imaging.	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
Unit I	Old Quantum Theory <i>Background information:</i> The nature of waves; Einstein's special theory of relativity; The spectral lines of hydrogen; the ultraviolet catastrophe <i>Physics becomes confusing:</i> The introduction of quanta and the photon; early atomic models; the wave-particle duality of light. <i>Lights in the darkness:</i> Matter waves; exclusion principle	12	1,5	R U A1 A2 E C
Unit II	The First Quantum Revolution <i>The birth of quantum mechanics:</i> Schrodinger's equation; Heisenberg's uncertainty principle; Dirac's antimatter prediction	11	4,5	R U A1 A2 E C

	<i>The death of classical physics:</i> The probabilistic nature of quantum theory; deterministic vs probabilistic schools of thought <i>A philosophical interlude:</i> The measurement problem; the Many-World's interpretation and the multiverse			
Unit III	The Standard Model of Particle Physics <i>The most fundamental of all things:</i> Discoveries of the electron, proton and neutron; overview of the current Standard Model <i>Discovering the building blocks:</i> Particle accelerators: CERN, LIGO, IndIGO, and other examples	8	2	R U A1 A2 E C
Unit IV	Applications of Quantum Mechanics <i>Revolutions in technology:</i> The electronics revolution; lasers, holography and the telecommunications revolution; MRIs; next generation microscopes; superconductivity and exotic states of matter (brief overview)	7	6	R U A1 A2 E C
Unit V	The Second Quantum Revolution <i>Quantum entanglement is weird:</i> quantum entanglement and its experimental verification <i>Present day revolutions:</i> Quantum information; overview of quantum cryptography and quantum computing	7	3	R U A1 A2 E C
Learning Resources:				

Text Books

1. Gribbin, J. (1985). *In search of Schrodinger's cat: Quantum physics and reality*. Black Swan
2. Gamov, G. & Stannard, R. (2001). *The new world of Mr Tompkins* (3rd rev. ed.). Cambridge University Press
3. Rae, A. (2005). *Quantum physics: Beginner's guide*. Pan MacMillian India
4. Baggott, J. (2011). *The quantum story: A history in 40 moments*. Oxford University Press
5. Oerter, R. (2006). *The theory of almost everything: The Standard Model, the unsung triumph of modern physics*. Plume
6. Zeilinger, A. (2023). *Dance of the photons: Einstein, entanglement and quantum teleportation*. Penguin

Suggested readings

1. Simonyi, K. (2012). *A cultural history of physics*. CRC Press
2. Brush, S. (2015). *Making 20th Century science: How theories became knowledge*. Oxford University Press
3. Kumar, M. (2011). *Quantum: Einstein, Bohr and the great debate about the nature of reality*. W.W. Norton & Co.
4. Buchwald, J., & Fox, R. (Eds.). (2017). *The Oxford handbook of the history of physics*. Oxford University Press
5. Zukav, G. (2009). *The dancing Wu Li masters*. HarperOne
6. Baggott, J. (2020). *Quantum reality*. Cambridge University Press
7. Schumm, B. A. (2004). *Deep down things: The breathtaking beauty of particle physics*. The Johns Hopkins University Press
8. Gilder, L. (2009). *The age of entanglement: When quantum physics was reborn*. Knopf

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** be present for and score a minimum of 40% in the Summative Assessment, (ii) the student must be present for Formative Assessment II (Mid-Semester Examinations), and (iii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: 50 marks distributed across three different forms of Assessment. Evaluated as per the Assessment & Evaluation Framework Document of Salesian College.

Summative Assessment: The Summative Assessment will be a written examination of 50 marks of at least 2 hours duration, using the RBT categorization and scheme.

Section	Marks per question	No. of questions to be answered	No. of questions given	Total marks for Section
A	2	5	8	10

B	5	4	6	20
C	10	2	4	20
			Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment	50	100%	50
Formative Assessment I	20	50%	10
Formative Assessment II	50		25
Formative Assessment III	20		10
Attendance	5	100%	5
		Total	100

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Mr. Bikramjit Chandra	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

23PHYVAC102 - Quantum Crossroads II

4. Course Description

Course Code	23PHYVAC102	
Course Title	Quantum Crossroads II	
Credits	1	
Total Hours	30	
Hours per Week	2	
Course Type	Value Added Course	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Physics	
Regulation	2023	
Course Overview	This course: a. Trains a student to plan, rehearse and present technical and mathematical information to an audience of their peers b. Provides students with an avenue to express technical information in an academic or professional environment. c. Trains students to comport themselves vocally and physically while presenting in front of an audience. d. Teaches students the use of digital aids such as slideshow software and projectors for the use of dissemination of information.	
Prerequisite	Students must be majoring in Physics. Students must have a reasonable command of English	
Course Objectives	A student will be able to: i. Read and understand technical information from a paper, article or other specialized manuals. ii. Analyze and break down the given information and assimilate with pre-existing knowledge. iii. Construct and present technical knowledge to an audience of their peers in a clear and lucid manner. iv. Critically evaluate and argue for or against the thesis of the paper.	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the details of the paper being presented	R
CO2	Interpret the paper and relate it to their pre-existing knowledge	U
CO3	Present the knowledge in a clear and lucid manner to an audience of their peers	A1

CO4	Appraise and break down the information being presented.	A2		
CO5	Critique and argue for or against the thesis of the paper.	E		
CO6	Design and construct a presentation that disseminates knowledge from the paper to an audience.	C		
Course Structure				
Session Number	Content	Total Hours	COs	RBT
1	Hours 1 & 2: Introduction to the Course	2	-	-
2-8	Hour 1: Presentation by one 2nd year student Hour 2: Summarized report on the presentation	14	1,2,4	R U A2 E
9	Hour 1: Demo presentation by faculty Hour 2: Report on demo presentation	2	1,2,4	R U A2 E
10-15	Hour 1: Presentation by 1st year student Hour 2: Summarized report on the presentation	12	1,3,4, 5,6	R A1 A2 E C
Learning Resources: None				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

2. Assessment

The student **must** score a minimum of 40% of the total maximum marks assigned to the entire paper to pass the course, subject to the following restrictions: (i) the student **must** make a presentation of their own and submit the report of the same assessment, and (ii) the student should have a **minimum** of 75% attendance for the entire course.

Formative Assessment: The Formative Assessment will be of 50 marks and will be based on their individual presentations. This grade will then be converted out of 20.

Summative Assessment: The Summative Assessment will consist of a written report by the student for each presentation that they attend. Each report will be graded out of 10 and finally converted to a fraction of 25 marks.

Sl. No.	Category	Score
1	Organization	15
2	Content Knowledge	25

3	Style	5
4	Delivery	5
	Total	50

Evaluation Scheme of the entire Course

Component	Marks	Final Weightage	Final Marks
Summative Assessment	10 times the number of reports	variable	25
Formative Assessment	50	40%	20
Attendance	5	100%	5
		Total	50

Prepared by:	Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Mr. Bikramjit Chandra	(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

The curriculum document for the Department of Physics have been carefully examined and approved by the undersigned:

Checked and verified by:	Approved by:	External Experts - Board of Studies
(Signature) Dr. Prajwal Chettri Head of the Department	(Signature) Mr. Subhajit Paul Dean of Sciences	(Signature) Dr. Ranjan Sharma Associate Professor Department of Physics Coochbehar Panchanan Barma University (Signature) Dr. Amitabha Bhattacharyya Associate Professor Department of Physics Sikkim University Gangtok, Sikkim (Signature) Mr. Tamanash Das Supervisor (Retd.) Draughtsman Civil Trade ITI Tollygunge Kolkata (Signature) Mr. Aaush Pradhan (Alumnus) 2018 batch

3. Course Description

Course Code	23POSSEC201
Course Title	Human Resource and Management
Credits	03
Lecture hours	45
Hours/Week	03
Course Type	Skill Enhancement Course (SEC)
Semester	III
Intended Level	Diploma
Issue(s) Addressed	
Course Offered to	Political Science
Regulation	2023
Course Overview:	This course: a) Defines and explains the key concepts and functions of Human Resource Management (HRM). b) Explains the strategic role of HRM in achieving organizational goals. c) Demonstrates proficiency in recruitment and selection processes. d) Understands the mathematical models used in game theory and their application to strategic decision making. e) Examines the strategic role of HRD in achieving organizational objectives.
Prerequisites	A general familiarity with administrative theories and management theories can be beneficial for understanding the course.
Course Objectives:	The students will be able to – i. Define and explain the role of HRM within an organization. ii. Learn the process of recruitment and selection including job analysis, sourcing, screening and interview. iii. Understand effective communication within the workplace. iv. Analyze and model decision-making in competitive situations where the outcome for each participant

	depends not only on their own actions but also on the actions of others.
	v. Explain the key concepts, theories, and frameworks related to Human Resource Development.

Course Outcomes based on RBT and Cognitive Level Mapping

At the end of this course, a student will be able to:

COs	Statements	Cognitive Level Mapping
CO1	Articulate the strategic role of Human Resource Management in achieving organizational goals and competitive advantages.	R
CO2	Learn the basics of acquiring Human resource.	U
CO3	Analyze the basics of establishing effective communication for better HRM.	A1
CO4	Understand the models of game theory and their application in strategic decision making.	A2
CO5	Evaluate the effectiveness of HRD programs using various metrics and assessment tools.	E

UNITS	CONTENT	HOURS	COs	Revised Bloom's Taxonomy
Unit-I	Introduction to Human Resource Management (HRM) 1) Meaning, Nature and Importance of HRM 2) Evolution of HRM, Difference between HRM and Personnel Management 3) HR Policy and Environment in India	10	CO1 CO2	R U A1 A2 E C
Unit-II	Acquiring of Human Resources 1) Human Resource Planning: Concept, Importance and Process 2) Recruitment and Selection: Concept, Process and Sources 3) Placement and Induction	10	CO3	R U A1 A2 E C

Unit III	Human Resource Development (HRD) 1) HRD: Concept, scope and importance 2) Learning Theories: Individual and Group, Self-directed learning and Behaviour Modeling 3) Training: On-the-job & Off-the-job training, Simulation, Vestibule Training 4) Industrial Relations and Labour Laws	15	CO4	R U A1 A2 E C
Unit IV	Communication & Feedback 1) Definition, Process of communication (Personal and Interpersonal) 2) Formal & Informal communication, rumour & grapevine. 3) Effective Communication: Challenges & Solutions	15	CO5	R U A1 A2 E C
Unit V	Case Study A Case study on the process of recruitment, training and placement of various personnel at Union/State level/Local level	10	CO6	R U A1 A2 E C
Learning Resources: • Venkata Raman, C.S & Srivastava, B.K. (1991). Personnel Management and Human Resource Management. Tata Mc Grawhill Publishing Co. Delhi. • Decenzo, David. A and P. Robbins, Stephen. (1997). Personnel and Human Resource Management. Printice Hall India. New Delhi. • Monappa, Arun. (2015). Managing Human Resource. Trinity Press. Laxmi Publications. • Arya, P.P and Tandon, B.B. (1995). Human Resource Development. Deep and Deep Publications. New Delhi. • D.Fisher, Cynthia, Schoenfeldt, Lyle F. and Shaw, James B. Shah. (1999). Human Resource Management. Dreamtech Press. • Singh, N.K. (1999). Human Resource Management. Excel Books. New Delhi. • Prasad, Lallan and Banerjee, A.M. (1994). Management of Human Resource. Sterling Publishers. New Delhi. • Mamoria, C.B and Gankar, S.V. (2011). Personal Management. Himalaya Publishing				

House.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Assessment

- i) *Formative Assessment*: 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- ii) *Summative Assessment*: 50 marks
 - a) Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks)
 - b) Four Short Questions to be answered out of eight given from lower order of RBT – (20 Marks)
 - c) Two Long Questions to be answered out of four set from higher order of RBT - (20 Marks).Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Jeetendra Sah Signature:	Name: Signature:	Name: Signature:

1. Course Description

Course Code	24PLSSEC101	
Course Title	Laws and Legal Awareness	
Credits	03	
Total Hours	45	
Hours per Week	03	
Course Type	Skill Enhancement Course(SEC)	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Political Science	
Regulation	2024	
Course Overview	This course: a) Gives a detail outline of judicial system and its structures in India. b) Explains various legal procedures of both civil and criminal law. c) Discusses various legal mechanisms available to Indian citizens to safeguard his/her rights.	
Prerequisite	Basic knowledge of Indian Constitution and legal system of India	
Course Objectives	The students will be able to – i. Understand various legal structures of India with emphasis on Judiciary, its structures, its role and jurisdictions. ii. Attain sufficient knowledge on various laws of our country hence to enable him/her to make use of it positively for one’s protection of individual rights as well as to prevent anyone from committing acts that aims to hamper rights equally available to others. iii. Understand various legal mechanisms available to an individual in our country to safeguard his/her rights and privileges.	
Course Outcomes based on RBT and Cognitive Level Mapping At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Outline the judicial structure and the legal system of India	R
CO2	Explain key legal concepts under the Indian Legal System	U
CO3	Apply various civil, criminal and personal laws to address various day to day issues arising in the society.	A1&A2
CO4	Develop clear understanding on the legal mechanisms in India.	C
CO5	Evaluate legal arguments by doing case studies.	E
Course Content		

Units	Content	Lecture Hours	COs	RBT
Unit-I	Brief introduction to the Judicial system in India a) System of Courts b) Civil and Criminal Courts c) Juvenile Justice Courts d) Mahila Courts e) Lok Adalat f) Debt Recovery Tribunal g) Lokpal and Lokayukta	9	CO1	R U A E C
Unit-II	Understanding Laws applicable in India a. Laws relating to Criminal Procedure: i. FIR, ii. Arrest; rights of the prisoners iii. Bail (Bailable and Non-Bailable) iv. Cognizable and Non-Cognizable Offences v. Notice under Section 35 (1)/(2) of Bharatiya Nagarik Suraksha Sanhita b. Provisions related to search and seizure. c. Right to Information Act (RTI) d. Public Interest Litigation (PIL)	15	CO2	R U A E C
Unit-III	General Laws in India a) Crime against Women under Section 74 to 78 of Bharatiya Nyaya Sanhita (BNS) 2023. b) Protection of Women from Domestic Violence Act 2005 c) Laws relating to atrocities on Scheduled Castes/Tribes. d) Laws relating to consumer rights	18	CO3	R U A E C

	e) Laws relating to cyber crime f) Personal Laws: Divorce and Inheritance			
Unit-IV	Case Study Visit a court or a legal aid center setup by the legal service authority or an NGO or a Lok Adalat or to interview a litigant or a person being counseled	3	CO4 CO5	A C

Learning Resources

- Agarwala, S.K. (1985). *Public Interest Litigation in India*. K.M. Memorial Lecture, Second Series, Indian Law Institute, Delhi.
- Aggarwal, N. (2002). *Women and Law in India*. New Century, Delhi.
- Agnes, F. (1997). *Law and Gender Equality*. OUP.
- Bajpai, A. (2003). *Child Rights in India: Law, Policy, and Practice*. Oxford University Press, New Delhi.
- Indian Social Institute, New Delhi. *Legal Literacy Series Booklets*.
- Institute of Life Long Learning (Delhi University). (n.d.). *Legal Literacy: Available Amongst Interdisciplinary Courses on Institute of Life Long Learning (Delhi University) Virtual Learning Portal*. Retrieved from vle.du.ac.in
- Multiple Action Research Group. (n.d.). *Our Laws* (Vols. 1-10). Delhi. Available in Hindi also.
- Rao, P. C. & Sheffield, W. (2002). *Alternative Dispute Resolution: What It Is and How It Works*. Universal Law Books and Publishers, Delhi.
- Sagade, J. (1996). *Law of Maintenance: An Empirical Study*. ILS Law College, Pune.
- Sankaran, K., & Singh, U. (Ed.). (2007). *Creating Legal Awareness*. Delhi: OUP.
- Sathe, S.P. (1993). *Towards Gender Justice*. Research Centre for Women's Studies, SNDT Women's University, Bombay.
- Shukla, V.N. (2001). *V.N. Shukla's Constitution of India*. Eastern Book Co. 10th edition.
- Sing, P. (1981-82). *Access to Justice and the Indian Supreme Court*. *Delhi Law Review*, 10(1), 156.
- Wadhera, B.L. (2003). *Public Interest Litigation: A Handbook*. University of Delhi.

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Assessment

- Formative Assessment*: 50 marks as per Assessment & Evaluation Framework Document of Salesian College
- Summative Assessment*: 50 marks
 - Five Short Questions to be answered out of eight given from lower order of RBT – (10 Marks)
 - Four Short Questions to be answered out of six given from lower order of RBT – (20 Marks)
 - Two Long Questions to be answered out of four set from higher order of RBT - (20 Marks).

Summative Assessment Time: 2 Hours for pen and paper test

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Sangam Ghatani Signature:	Name: Signature:	Name: Signature:

Course Code	23SOWMAJ104	
Course Title	Field Work Practicum- 2	
Credits	4	
Total Hours	120	
Hours per Week	4	
Course Type	Major	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Social Work	
Regulation	2023	
Course Overview	This course: a. Is a practical training course designed to provide students with hands-on experience in their respective fields of study. b. Aims to bridge the gap between theoretical knowledge acquired in the classroom and real-world applications.	
Prerequisite	• Ability to communicate with people. • Ability to record keeping and documentation • Basic photography and videography skills	
Course Objectives	A student will be able to: i. Orient themselves with Social Work lexicon and prepare themselves with requisite value orientation ii. To develop understanding of field and field work; and role of various types of agencies iii. To Develop understanding of social structure and social systems iv. Understand the challenges faced by NGOs v. Understand the difference between Social Work and social service	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
Cos	Statements	Cognitive Level Mapping
CO1	Demonstrate the ability to apply theoretical concepts and principles learned in the classroom to real-world situations encountered during the fieldwork placement.	R
CO2	Demonstrate Professionalism: Exhibit professionalism, ethical behaviour, and cultural sensitivity while interacting with individuals in the fieldwork environment	U
CO3	Execute the role of professional Social Work	A1
CO4	Analyse and interpret the data collected during the fieldwork to draw meaningful conclusions and make informed recommendations.	A2
CO5	Critique various social policies	E

CO6	Apply appropriate methods and techniques in the fieldwork setting to collect relevant data and information	C		
Course Content				
Units	Content	Lecture Hours	COs	RBT
FW I	Orientation program to NGOs	12	CO1	RU A1 A2 EC
FW II	Agency/ Community Visit	12	CO2	RU A1 A2 EC
FW III	Understanding Agency Structures, Organizational Activities	12	CO3	RU A1 A2 EC
FW IV	Perspectives Building Workshop & Social Sensitization Workshop	12	CO3	RU A1 A2 EC
FW V	Report Writing and documentation	12	CO4, CO5 & CO6	RU A1 A2 EC

Course Code	23SOWMAJ102	
Course Title	Field Work Practicum- 1	
Credits	4	
Total Hours	120	
Hours per Week	4	
Course Type	Major	
Semester	I	
Intended Level	Certificate	
Issue(s) Addressed		
Course Offered to	Social Work	
Regulation	2023	
Course Overview	This course: a. Is a practical training course designed to provide students with hands-on experience in their respective fields of study. b. Aims to bridge the gap between theoretical knowledge acquired in the classroom and real-world applications.	
Prerequisite	• Ability to communicate with people. • Ability to record keeping and documentation • Basic photography and videography skills	
Course Objectives	A student will be able to: i. Orient themselves with Social Work lexicon and prepare themselves with requisite value orientation ii. To develop understanding of field and field work; and role of various types of agencies iii. To develop understanding of social structure and social systems iv. Understand the challenges faced by NGOs v. Understand the difference between Social Work and social service	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
Cos	Statements	Cognitive Level Mapping
CO1	Demonstrate the ability to apply theoretical concepts and principles learned in the classroom to real-world situations encountered during the fieldwork placement.	R
CO2	Demonstrate Professionalism: Exhibit professionalism, ethical behaviour, and cultural sensitivity while interacting with individuals in the fieldwork environment	U

CO3	Execute the role of professional Social Work	A1		
CO4	Analyse and interpret the data collected during the fieldwork to draw meaningful conclusions and make informed recommendations.	A2		
CO5	Critique various social policies	E		
CO6	Apply appropriate methods and techniques in the fieldwork setting to collect relevant data and information	C		
Course Content				
Units	Content	Lecture Hours	Cos	RBT
FW I	Orientation program to NGOs.	12	CO1	R U A1 A2 E C
FW II	Agency/ Community Visit.	12	CO2	R U A1 A2 E C
FW III	Understanding Agency Structures and Organizational Activities.	12	CO3	R U A1 A2 E C
FW IV	Perspective Building, Workshop & Social Sensitization Workshop.	12	CO3	R U A1 A2 E C
FW V	Report Writing and Documentation.	12	CO4, CO5 & CO6	R U A1 A2 E C

LEVEL : SEMESTER III
COURSE : SW 306
TITLE OF THE PAPER (FW): FIELD WORK
PRACTICUM-III MARKS100
CREDITS 8

Objectives:

- ☐ Give exposure to the students to various social welfare and development programmes and services.
- ☐ Develop sensitivity towards the needs and problems of individuals & families, groups and communities.
- ☐ Develop an understanding of agency's structure, function and service delivery system.

Course Description:

1. Orientation Programme:

Three-day orientation programme will be organized at the commencement of the course of semester-3 before starting concurrent field work.

Orientation visits to welfare agencies/communities will be an integral part of the orientation programme. Attendance in orientation programme is compulsory.

2. Concurrent Field Work:

Concurrent field work will be required to be done simultaneously with class-room teaching of theory papers from the very beginning of the semester of second year and shall continue till the preparation leave before the commencement of the examinations.

Two days in a week will be allotted to the students to perform concurrent field work. The students may be placed in social welfare agencies or open community settings to initiate and participate in the direct service delivery.

A minimum of 15 hours (including report writing) per week of concurrent field work will be required for each student.

4. Skill Development Workshops:

The skill development workshop is a platform in which the values, principles, methods, techniques, tools etc. are translated into practice skills, that is, 'learning by doing'. Through the experimental learning in the workshop, insights are acquired to develop the personal self and the professional self. The main aim of skill workshop is to build the confidence and strengthen knowledge, skills, aptitude and the attitudinal base of students through the workshops and special sessions. The activities that may be taken under skill workshop are: (i) Role Plays; (ii) Use of motivational songs and other interactive visual media; (iii) Preparation for street plays including script writing/street theatre; (iv) Simulation exercises; (v) Films screening; (vi) Practice of counseling techniques; (vii) Practice of participative techniques; (viii) Workshops on communication; (ix) Mock interviews; and (x) Strategic planning for advocacy.

LEVEL	: SEMESTER IV
COURSE	: SW406
TITLE OF THE PAPER (FW)	: FIELD WORK
PRACTICUM -IV MARKS	100
CREDITS	8

Objectives:

1. Give an opportunity to learn to make use of professional relationship and referrals to deal with human problems.
2. Imbibe the ethics and values of social work profession including attributes for the same.
3. Develop an ability to narrate of experience/learning, assessment of services & resources and participate in service delivery.

Course Description:

1. Concurrent Field Work:

- Concurrent field work will be required to be done simultaneously with class-room teaching of theory papers from the very beginning of the semester of second year and shall continue till the preparation leave before the commencement of the examinations.
- Two days in a week will be allotted to the students to perform concurrent field work.
- The students may be placed in social welfare agencies or open community settings to initiate and participate in the direct service delivery.
- A minimum of 15 hours (including report writing) per week of concurrent field work will be required for each student.

2. Skill Development Workshops:

The skill development workshop is a platform in which the values, principles, methods, techniques, tools etc. are translated into practice skills, that is, 'learning by doing'. Through the experimental learning in the workshop, insights are acquired to develop the personal self and the professional self. The main aim of skill workshop is to build the confidence and strengthen knowledge, skills, aptitude and the attitudinal base of students through the workshops and special sessions. The activities that may be taken under skill workshop are: (i) Role Plays; (ii) Use of motivational songs and other interactive visual media; (iii) Preparation for street plays including script writing/street theatre; (iv) Simulation exercises; (v) Films screening; (vi) Practice of counseling techniques; (vii) Practice of participative techniques; (viii) Workshops on communication; (ix) Mock interviews; and (x) Strategic planning for advocacy.

LEVEL	: SEMESTER V
COURSE	: SW- FW 506
TITLE OF THE PAPER (FW)	: FIELD WORK
PRACTICUM-V MARKS	100
CREDITS	8

Objectives:

- ☐ Develop sensitivity towards the issues related to social justice and human rights for marginalized groups.
- ☐ Develop ability to critically analyze the service delivery system of agency, problems and issues in execution.
- ☐ Develop ability to plan, organize and implement the activities within agency/community framework.

Course Description:

1. Orientation Programme:

- Three-day orientation programme will be organized at the commencement of the course of semester-7 before starting concurrent field work.
- Orientation visits to welfare agencies/communities will be an integral part of the orientation programme. Attendance in orientation programme is compulsory.

2. Concurrent Field Work:

- Concurrent field work will be required to be done simultaneously with class-room teaching of theory papers from the very beginning of the semester of third year and shall continue till the preparation leave before the commencement of the examinations.
- Two days in a week will be allotted to the students to perform concurrent field work.
- The students may be placed in social welfare agencies or open community settings to initiate and participate in the direct service delivery.
- A minimum of 15 hours (including report writing) per week of concurrent field work will be required for each student.

3. Skill Development Workshops:

The skill development workshop is a platform in which the values, principles, methods, techniques, tools etc. are translated into practice skills, that is, 'learning by doing'. Through the experimental learning in the workshop, insights are acquired to develop the personal self and the professional self. The main aim of skill workshop is to build the confidence and strengthen knowledge, skills, aptitude and the attitudinal base of students through the workshops and special sessions. The activities that may be taken under skill workshop are: (i) Role Plays; (ii) Use of

motivational songs and other interactive visual media; (iii) Preparation for street plays including script writing/street theatre; (iv) Simulation exercises; (v) Films screening; (vi) Practice of counselling techniques; (vii) Practice of participative techniques; (viii) Workshops on communication; (ix) Mock interviews; and (x) Strategic planning for advocacy.

4, Rural Camp: Five-day rural camp will be organized for the students of semester-5 of third year (preferably for semester-5 students) to provide exposure to the students about the socio-economic, political and cultural situations and problems of rural life. The rural camp will be organized under the guidance of the faculty members. Attendance of rural camp is compulsory. There shall be 20 marks for performance, behavior and learning in rural camp which shall be awarded by camp in charge and faculty supervising camp activities,

LEVEL	: SEMESTER VI
Course	: SW FW 606
TITLE OF THE PAPER (FW)	: FIELD WORK
PRACTICUM-VI MARKS	100
CREDITS	8

Objectives:

- ☐ Develop ability to effect changes in improving service delivery by introducing innovations in practice.
- ☐ Improve skills in communication and networking with other organizations.
- ☐ Learn to make use of practice-learning instructions.

Course Description:

1. Concurrent Field Work:

- Concurrent field work will be required to be done simultaneously with class-room teaching of theory papers from the very beginning of the semester of year and shall continue till the preparation leave before the commencement of the examinations.
- Two days in a week will be allotted to the students to perform concurrent field work.
- The students may be placed in social welfare agencies or open community settings to initiate and participate in the direct service delivery.
- A minimum of 15 hours (including report writing) per week of concurrent field work will be required for each student.

2. Skill Development Workshops:

The skill development workshop is a platform in which the values, principles, methods, techniques, tools etc. are translated into practice skills, that is, 'learning by doing'. Through the experimental learning in the workshop, insights are acquired to develop the personal self and the professional self. The main aim of skill workshop is to build the confidence and strengthen knowledge, skills, aptitude and the attitudinal base of students through the workshops and special sessions. The activities that may be taken under skill workshop are: (i) Role Plays; (ii) Use of motivational songs and other interactive visual media; (iii) Preparation for street plays including script writing/street theatre; (iv) Simulation exercises; (v) Films screening; (vi) Practice of counseling techniques; (vii) Practice of participative techniques; (viii) Workshops on communication; (ix) Mock interviews; and (x) Strategic planning for advocacy.

3. Block Field Work: At the end of semester-6 of third year, students will be required to undergo four-week block field work training in a social welfare agency or project. It is treated more as pre-employment experience. The block field work agencies/projects will be selected with the consent/choice of students. A student must be placed under the supervision of professionally qualified social worker in the agency.

A student has to start the block field work on the date specified by the department of

respective College in the placement letter. Any unreasonable delay in joining block field work or discontinuation will be treated as misconduct. If a student leaves block field work agency without prior approval of agency and/or Department or if his/her performance is found to be unsatisfactory, then he/she will have to repeat the block field work.

During block field work, a student will be expected to submit weekly reports to the Department of respective College in a prescribed manner. Leave will be allowed during the entire period of block field work mainly on the ground of sickness. Successful completion of block field work is mandatory before the Bachelor with Honours in Social Work degree can be awarded.

SEMESTER – I

Understanding Social Phenomena: A Visual Study-I

VAC-I

Hours: 30

Session: 15

Credits: 02

Objectives:

Visual is one of the crucial dimensions of social reality. As one of the senses in human body is visual which helps us to behave and act in relation to what we observe. Further, the modern technology has deeply extended the visual abilities, the experiences of the individual has also changed accordingly towards social reality.

The course aims to impart the basic knowledge of visual and its construction of social reality. It helps the students to understand the society with modern visual tools indulging them in practical experiences for unearthing various social phenomena. Meanwhile this course has designed to fulfill the criteria set by NEP for a Value-added Course (VAC).

Module:

Session 1	Introducing the visual importance for understanding the social reality through the usages of photographs, images, videos, vlog, etc. (using the phones).
Session 2	Understanding the topics in relation to social phenomena.
Session 3	Ideas for formulating the pattern for the visual trait project (including narrative writings).
Session 4	Submission of individual model of visual pattern for project.
Session (5 – 6)	Presenting (ppt) on any of the topic for understanding the ability of the students.
Session 7	Selection and finalizing of the given topic (s) with feasibility and accessibility.
Session (8 -10)	Finding the universe according to the given social reality and visually capturing the observed reality (visit to undertake topic (s) field/area).
Session (11-15)	Presentation of the compiled data with narratives on selected topic (s).

Course prepared by	Signature of Head of the Department
	 HEAD Department of Sociology Salesian College (Autonomous) Siliguri

SEMESTER-II: Understanding Social Phenomena: A Visual Study-II

VAC-II

Hours: 30

Session:15

Credits: 02

Objectives:

Visual sociology attempts to study visual images produced as part of culture. Art, photographs, film, video, fonts, advertisements, landscape, architecture, machines, fashion, makeup, hairstyle, facial expressions, tattoos, and so on are parts of the complex visual communication system produced by members of societies. The use and understanding of visual images is governed by socially established symbolic codes.

The course aims to study the social problems through some documentaries and it will help the students to write review and reflections of what they have observed to understand the social reality. Meanwhile this course has designed to fulfil the criteria set by NEP for Value-added Course (VAC-II)

Detailed Module:

Session 1	Introducing the visual importance for understanding the social reality through the uses of documentary videos, images, etc.
Session 2	Understanding the topics in relation to Social Phenomena
Session 3	Ideas of formulating the pattern for the visual traits project. (Including narrative writing, understanding their perspectives, visual importance etc.)
Session 4-7	Writing reviews and reflections
Session 8- 13	Presenting (ppt) on any of the topic individually.
Session 14-15	Submission of the final reports of all.

Course prepared by	Signature of Head of the Department
	 HEAD Department of Sociology Salesian College (Autonomous) Siliguri

Ethnicity, Kinship and Cultural Diversity in Eastern Himalayas.

VAC

Hours: 30

Session 15

Credits: 01

Objectives:

The course shall be useful in comprehending the relevance of the diverse nature of the Eastern Himalayas with special focus on the issue of ethnicity, Kinship pattern and cultural diversity. The relevance of this course rests on highlighting the multicultural dynamics of Eastern Himalayas. The students shall be able to relate to their lived experiences as well as garner knowledge about the regions and their community's rich and varied historicity.

Module:

<u>SESSION 1</u>	<u>Theoretical orientation on the conceptual terms namely: Ethnicity, Cultural diversity and Kinship</u>
<u>SESSION 2</u>	<u>Understanding Eastern Himalayas</u>
<u>SESSION 3</u>	<u>Students will be shown documentaries in understanding cultural and ethnic diversities.</u>
<u>SESSION 4</u>	<u>Discussion and critical assessment on the need for the preservation and documentation of cultural and ethnic historicity. The role of ethnography shall be discussed.</u>
<u>SESSION 5</u>	<u>Students shall identify and work in preparing a project depending on their choice of interest in any of the socio- cultural aspect of Eastern Himalayas.</u>

SEMESTER – I

MDC

Course Code	24SOCMDC101			
Course Title	BASIC CONCEPTS IN SOCIOLOGY			
Credits	03			
Lecture hours	45			
Hours/Week	3			
Category	Open Elective (MDC)			
Semester	I			
Regulation	2024			
Course Overview: This course – • Shall introduce the students to the basic concepts and nature of Sociology. • Explains the factors responsible for the growth of Sociology as a discipline. • Highlights the nature of the various social structures. • Covers the understanding and the relevance of Social Institutions. • Discusses the nature and the role of social institutions.				
Course Objectives: The students will be able to – • Define the major factors responsible for the growth of Sociology. • Discuss the primary nature and subject matter of Sociology. • Illustrate the relevance of Social Institutions. • Analyze the changing patterns of Social Institutions. • Analyze the impact of Globalization on the Social structures.				
Prerequisites: Should have a general understanding of social institutions and its agencies.				
Syllabus				
UNITS	CONTENT	HOURS	Cos	CLs
UNIT -I	Understanding Sociology: a. Emergence, Nature, Scope and Subject matter.	10	Co1	R
UNIT – II	Basic Concepts: a. Individual, Group and Community b. Association and Institution. c. Culture, Society and Personality. d. Status and Role. e. Socialization.	10	Co1 Co2 Co3 Co4 Co5 Co6	U U U U U U
UNIT -III	Social Institutions: a. Family: Meaning, functions and types. b. Kinship: Meaning, functions and types. c. Marriage: functions and types	15	Co1 Co2 Co3	A2 A3 A4

	d. Changing Dimensions of Family, Marriage and Kinship			
UNIT-IV	Social Change: Issues and Challenges: a. Globalization. b. Modernization. c. Westernization. d. Urbanization. e. Sanskritization.	10	Co1 Co2 Co3 Co4 Co5	U U U U U

Learning Resources:

1. Giddens, A. (2018). *Introduction to Sociology*. New York: W.W Norton and Co. Inc.
2. Haralambos, M., & Holborn. (2018). *Sociology: Themes and Perspectives*. Delhi: Rawat Publication.
3. Inkeles, A. (1964). *What is Sociology? : An introduction to the discipline and profession*. Prentice Hall
4. Karve, I. (1994). The Kinship Map of India. In P. Uberoi, *Family, Kinship and Marriage in India* (pp.20 -59). Delhi: Oxford University Press.
5. Mandelbaum, D. (2016). *Society in India*. Delhi: Sage Publication.
6. Gisbert, P. (2019). *Fundamentals of Sociology*. Orient Black
7. Rawat, H.K. (2010). *Sociology: Basic Concepts*. Delhi: Rawat Publication.
8. Ritzer, George. (2001). *Sociological Theory*. New York: McGraw Hill

Course Outcomes (Cos) and Cognitive Level Mapping: At the end of this course, the students will be able to

Cos	STATEMENTS	REVISED BLOOM's Level
Co1	Define the basic concepts essential for understanding the social structure.	R
Co2	Discuss the nature and subject matter of Sociology.	U
Co3	Examine the factors responsible for bringing changes in the social institutions.	A1
Co4	Examine the impact of globalization on social institution.	A1

Course prepared by	Signature of Head of the Department
	 HEAD Department of Sociology Salesian College (Autonomous) Siliguri

SEMETER – II

MDC

Couse Code	24SOCMDC102
Course Title	GENDER AND VIOLENCE
Credits	03
Lecture hours	45
Hours/Week	03
Category	MDC
Semester	II
Regulation	2024

Course Overview:

This course-

- Covers a basic sociological understanding of gendered violence and power.
- Explains the lucidity of various structural and situated violence sociologically.
- Discusses the different theories of gender – based violence.
- Critically examine the policies, programmes and legal struggle gendered violence.

Course Objectives:

The students will be able to-

- Define various concept related to gender and gender - based violence.
- Understand the lucidity of gendered violence across history.
- Examining the theories related to gender, intersectionality and power structure.
- Critique or defend the policies related to gendered violence.
- Rethink gender – based violence as a power concern.

Prerequisites: Keen interest to learn and practice when they have learnt in their everyday lives.

Syllabus

UNITS	CONTENT	HOURS	Cos	CIs
UNIT - I	Conceptual Framework for Understanding Gender and Violence: - Deconstructing Gender. - Embodiment of Violence. - Power and Violence.	15	Co1 Co2 Co3	R A1 E
UNIT – II	Structural and Situated Violence: - Caste, Gender and Violence. - Domestic and Familial Violence. - Violence, Harassment and the Workplace.	15	Co1 Co2 Co3	U U A2
UNIT- III	Violence and Politics: - Nation States and (In) Security. - Violence and Minority Concerns.	15	Co1 Co2	U A1

UNIT - IV	Policies and Programs: a. Legal Discourses on Gendered Violence. b. Human Rights and Legal Discourses on Gendered Violence: Local and Global Experiences.	15	Co1	A2
			Co2	E

Learning Resources:

1. Ann, J. (2001). *Rethinking Rape*. Cornell University Press.
2. Durfee, A. (2011). "I'm Not a Victim, She's an Abuser" Masculinity, Victimization, and Protection Orders. *Gender & Society*, 25(3), 316-334.
3. Gear, S. (2007). Behind the bars of masculinity: Male rape and homophobia in and about South African men's prisons. *Sexualities*, 10(2), 209-227.
4. Hunnicutt, G. (2009). Varieties of patriarchy and violence against women: Resurrecting "patriarchy" as a theoretical tool. *Violence against women*, 15(5), 553-573.
5. Kannabiran, V., & Kannabiran, K. (1991). Caste and gender: Understanding dynamics of power and violence. *Economic and political weekly*, 26(37), 2130-2133.
6. Merry, S. E. (2009). *Gender Violence: Cultural Perspective*. Wiley-Blackwell.
7. Merry, S. E. (2003). Rights talk and Experience of Law: Implementing Women's Human Rights to Protection from Violence. *Human Rights Quarterly*. 25, 343-381.
8. Patton, T. O. (2006). Hey girl, am I more than my hair?: African American women and their struggles with beauty, body image, and hair. *National Women's Studies Association Journal*, 18(2), 24-51.
9. Thapar-Björkert, S., Samelius, L., & Sanghera, G. S. (2016). Exploring symbolic violence in the everyday: misrecognition, condescension, consent and complicity. *Feminist review*, 112(1), 144- 162.
10. Wood, E. J. (2006). Variation in sexual violence during war. *Politics & Society*, 34(3), 307-342.

Course Outcomes (Cos) and Cognitive Level Mapping: At the end of this course, the students will be able to

Cos	STATEMENTS	REVISED BLOOM'S LEVEL
Co1	Define the concept of gender as socially constructed.	R
Co2	Understand the logic and rationality behind gendered violence across history and in contemporary society.	U

Co3	Analyze the social construction of gender across cultures as fundamental to several experiences of violence.	AQ
Co4	Examine the theories related to gender, intersectionality and power structure.	E

Course prepared by	Signature of Head of the Department
	 HEAD Department of Sociology Salesian College (Autonomous) Sitiguri

MDC

Course Code	23SOCMDC201			
Course Title	DISASTER AND SOCIAL CRISIS			
Credits	03			
Lecture hours	45			
Hours/Week	03			
Category	MDC			
Semester	III			
Regulation	2023			
Course Overview: This Course highlights the foundational premise that disasters are social in nature; revealing, or exacerbating, existing social inequalities. Analyzing a series of case studies using methodology from classical and contemporary sociology this course prepares students to better understand, plan for, and respond to disasters. The course uses a problem-based learning model in which students work in small groups to help a particular community prepare for a particular hazard.				
Course Objectives: The students will be able to– 1. Develop skills in applying sociological principles and research methodology to the practice of emergency management. 2. Acquire an introduction to current research pertaining to the social logical aspects of disaster. 3. Develop an understanding of how social science research can be used as a basis for modifying public policy related to emergency management				
Prerequisites: Should have vested interest on preliminary approach towards disaster management and its impacts on social realm.				
Syllabus				
UNITS	CONTENT	HOURS	Cos	CLs
UNIT-I	Introduction a. Disaster and Social Crisis b. Emergence of Study of c. Disaster Management and Social Crisis d. Natural Disasters; Disaster	15	CO1 CO2 CO3	R U E

	Victims; Disaster Relief System and Responses			
UNIT-II	Types, Causes and Effects of Disasters a. Earthquake and Tsunami b. Tropical Cyclones c. Droughts and Floods	10	CO1 CO2 CO4	R U A2
UNIT-III	Social Crisis and Management a. Nature and Types of Social Crisis b. Terrorism; Communalism and Casteism c. Role of the Government and NGOs in Crisis Management	10	CO1 CO2 CO3	R A2 A2
UNIT-IV	Gender and Disaster a. Gender, Sex and Gender Relations in Disasters b. Gendered Activities, Roles and Responsibilities c. Gender based violence in disasters	10	CO5	E

Learning Resources:

1. Thomas E. D. (1986). *Human System Response To Disaster: An Inventory of Sociological Findings*. Springer-Verlag.
2. Miller, J, Stephen Engelberg, and William Broad. (2001). *Germs: Biological Weapons and America's Secret War*. New York: Simon and Schuster.
3. Wilson, J and Arthur Oyola- Yemaiel. (2000). The Historical Origins of Emergency Management Professionalization. *United States Journal of American Society of Professional Emergency Planners* 7.
4. Mitchell, J. T., Deborah S.K. Thomas, Arleen A. Hill and Susan L. Cutter. (2000). Catastrophe in Reel Life Versus Real Life: Perpetuating Disaster Myth Through Hollywood Films. *International Journal of Mass Emergencies and Disasters*, 18.
5. Drabek, T. E. (2000). *The Social Factors That Constrain Human Responses To Flood Warning in Floods, I*. Routledge.
6. Gladwin, H. and Walter Gillis Peacock. (1997). Warning and Evacuation: A Night for Hard Houses. in *Hurricane Andrew: Ethnicity, Gender and the Sociology of Disasters*: Routledge.
7. Dow, K and Susan L. Cutter. (1998). Crying Wolf: Repeat Responses to Hurricane Evacuation Orders. *Coastal Management* 26:237-252.
8. Enarson, E & Chakrabarti, Dhar P.G. (2009). *Women, Gender and Disaster: Global Issues and Initiatives*. Sage Publications.

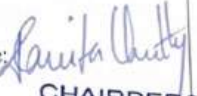
Course Outcomes (Cos) and Cognitive Level Mapping At the end of this course, the students will be able to

CO'S	STATEMENTS	REVISED BLOOM'S LEVEL
C01	Understand the concept of disaster management and its approach towards the existing issues.	U,R
C02	Identify policies in relation to disaster management.	R,U
C03	Analyze cases with reference to contemporary issues/problems/ effects of disaster on social spectrum.	A2, U, E
CO4	Evaluate differential preparation for, and response to, disaster along lines of stratification.	U, E
C05	Apply theoretical frames from classical and contemporary sociology to understand disaster from multiple perspectives.	A2,A

C06	Understand the relationship between gender and disaster management.	A2,E

Summative Assessment: 50 marks.

- a) Four short questions to be answered out of eight given from lower order of RBT - (20 Marks).
- b) Three long questions to be answered out of six set from higher order of RBT- (30 Marks). Summative Assessment Time: 2Hours for pen and paper test.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: MINGMA WANGDI SHERPA	Name: Chiranjit Dasgupta	Name: Ranita Chakraborty
Signature: Mingma W.	Signature:  HEAD Department of Sociology Salesian College (Autonomous) Siliguri	Signature:  CHAIRPERSON Board of Studies Department of Sociology Salesian College (Autonomous) Sonada & Siliguri

SEMESTER – I: Reading, Writing and Reasoning in Sociology

SEC

Course Code	23SOCSEC101
Course Title	READING, WRITING AND REASONING IN SOCIOLOGY
Credits	03
Lecture hours Hours/Week	03 45
Category	Skill Enhancement Course (SEC)
Semester	I
Regulation	2023

Course Overview:

This course –

- Provides an opportunity to enhance the reading, writing, and reasoning skills as necessary in 'doing Sociology' in everyday life.
- Aims to encourage creative thinking among the students
- Seeks to inculcate among students the habit of sociological writing

Course Objectives:

The students will be able to –

- Indicate Reading, Writing and Reasoning in Sociology as necessary skills and tools for 'doing Sociology'
- Relate the theories learnt with academic exercise of reading, writing and reasoning.
- Defend original ideas and avoid plagiarism in academic writing.
- Develop the habits of academic writing.

Prerequisites: The students must have the willingness to unlearn and question the various rote-learning and writing techniques, at the same time be open to peer discussions, classroom interactions and creative thinking.

Syllabus

UNITS	CONTENT	HOURS	Cos	CLs
UNIT -1	Introduction: - Paraphrasing - Grasping the Arguments from the Text - Reading in Sections - Recruiting extra resources	15	CO1 CO2 CO3 CO4	U A2 A1 E

UNIT – II	How to begin writing academic prose:	15	CO1	A1
	a. Framing a structure		CO2	A2
	b. Borrowing material: Quoting and Citing		CO3	A2
	c. Working with Sections, Paragraphs, Sentences			
UNIT – III	Using sociology as an academic tool:	15	CO1	U
	a. Having a Sociological Lens		CO2	A1
	b. Sociology in Academic Reading		CO3	C
	c. Thinking Sociologically by Using Theories			

References:

1. Bailey, S. (2005). *Academic writing*. Routledge Publishers.
2. Becker, H. S., & Richards, P. (2007). *Writing for social scientists*. University of Chicago Press.
3. Creme, P., & Lea, M. (2006). *Writing at University*. Open University Press.
4. Dillard, A. (1995). *The writing life*. New York, NY: Harper Perennial
5. Fairbairn, G., & Fairbairn, S. (2010). *Reading at University*. Open University Press.
6. Giddens, A., Duneier, M., Appelbaum, R., & Carr, B. (2009). *Introduction to sociology*. WW Norton & Company.
7. Mills, C.W. (2000). *The sociological imagination*. Oxford University Press.
8. Johnson, W. A. (2000). *The Sociology Student Writer's Manual*. Prentice Hall.
9. Thomson, A. (2001). *Critical Reasoning*. Routledge Publications

Course Outcomes (Cos) and Cognitive Level Mapping: At the end of this course, the students will be able to:

Cos	STATEMENTS	REVISED BLOOM's LEVEL
CO1	State the necessary skills and steps to read sociological texts	U
CO2	Combine theories and cross – cultural contexts for a writing sociologically	A1

CO3	Defend original ideas and avoid plagiarism in academic writing	E
CO4	Develop critical thinking through reflecting on various texts	C

SEMESTER – II

SEC

Course Code	24SOCSEC101*			
Course Title	VISUAL SOCIOLOGY			
Credits	03			
Lecture hours	45			
Hours/Week	03			
Category	Skill Enhancement Course (SEC)			
Semester	I			
Regulation	2024			
Course Overview:				
This course –				
• Will look into the relation of visual and sociology in understanding the social phenomena. • Will also look into the perspectives of visual sociology. • Will explore the applications of visual methodology.				
Course Objectives:				
The students will be able to –				
• Introduce visual methods as a sociological tool for understanding the social reality. • Provide insights of elementary methodological tools for inquiry. • Apply the theoretical understanding in representation of social reality.				
Prerequisites: Knowledge is the visual aspect.				
Syllabus				
UNIT - I	CONTENTS	HOURS	Cos	CLs
UNIT - I	Understanding Visual Sociology:	15		
	e. Visual concepts and Importance.		Co1	R
	f. Nature and Subject matter.			
	g. Vision, Visuality and Visual Cultures.		Co2	U
			Co3	R
	h. Methods and Tools: Sites, Production, Image, Photography, Audience, Modalities and Agency.		Co4	U
UNIT - II	Visual Sociology in Perspectives:	15		
	c. Jean Baudrillard: Simulacra and Simulacrum.		Co1	U
	d. Michel Foucault: Power/Knowledge.			
			Co2	U
UNIT - III	Project Work:	15		
	b. Documentary Photography.		Co1	C
	c. Photo Journalism.			
	d. Poster Design.		Co2	C
	e. Film Review.		Co3	C
			Co4	C

Learning Resources:

1. Barrett, T. (2000). *Criticizing Photographs: An introduction to Understanding Images (3rd Edition)*. California: Mayfield Publishing Co.
2. Baudrillard, J. (1994). *Simulacra and Simulation (The Body in Theory: Histories of Cultural Materialism)*. Ann Arbor, Michigan: University of Michigan Press.
3. Chollet, P. (n.d). *How to Make a Video Documentary: For Beginners and Amateurs with Little Equipment*. Retrieved September 3, 2023, from Academia.edu:
[https://www.academia.edu/11581352/How to make a Video Document
ary](https://www.academia.edu/11581352/How_to_make_a_Video_Documentary)
4. Edwards, S. (2006). *Photography: A Very Short Introduction*. United States: Oxford University Press.
5. Harper, D. (1998). Visual Sociology: Expanding Sociological Vision. *The American Sociologist*, 54- 70.
6. Hooks, B. (1995). In Our Glory: Photography and Black Life. In B. Hooks, *Art on My Mind: Visual Politics* (pp. 54-64). New York: New Press.
7. Kalow, N. Visual Story Telling: The Digital Video Documentary. *The Center for Documentary Studies*. Duke University, Durham, North Carolina.
8. Lutz, C., & Collins, J. (1993). *Reading National Geographic*. Chicago: University of Chicago Press.
9. Mitchell, C. (2011). *Doing Visual Research*. United states: Sage.
10. Pink, S. (2007). *Doing Visual Ethnography*. London: Sage.
11. Rose, G. (2001). *Visual Methodologies: An introduction to Interpretation of Visual Materials*. New Delhi: Sage.
12. Zelizer, B. (2010). *About to Die: How News Images Move the Public*. New York: Oxford University Press.

Course Outcomes (Cos) and Cognitive Level Mapping: At the end of this course, the students will be able to

Cos	STATEMENTS	REVISED BLOOM's LEVEL
Co1	Comprehend the visual representation with relative social relations	R
Co2	Get the idea of methodological tools that is available at hand.	U
Co3	Create the visual representation through photography, poster design etc.	A2

Course prepared by	Signature of Head of the Department
	 HEAD Department of Sociology Salesian College (Autonomous) Siliguri

SEMESTER III: SOCIOLOGY OF MASS MEDIA

SEC

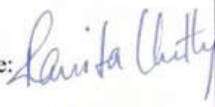
Course Code	23SOCSEC201			
Course Title	SOCIOLOGY OF MASS MEDIA			
Credits	03			
Lecture hours Hours/Week	45 03			
Category	SEC			
Semester	III			
Regulation	2023			
Course Overview: This Course introduces the students to certain major themes of outlining the interconnections between media and society. The focus specifically is on the transmission and reception of media content and thus the various sections in this paper study the production, control and reception of media and its representations.				
Course Objectives: The students will be able to– 1. Understand major themes of outlining the interconnections between media and society. 2. Be familiar with the important theories in the sociology of media. 3. Understand the process of production, control, and reception of media and its representations critically from a sociological perspective.				
Prerequisites: Should have basic understanding of the media.				
Syllabus				
UNITS	CONTENT	HOURS	Cos	CLs

UNIT-I	Mass Media and Society: Interface and Interventions a. Approaches to the study of Media: Cultural Studies, Marxist, Semiotics b. Forms of Mass Media: Folk Media, New Media, Social Media, Alternative media	15	CO1 CO2	R U
UNIT-II	Inter linkages of Mass Media and State a. State control and regulation of media b. Media, politics and the public sphere c. Genealogies of state media in India	15	CO2 CO3 CO4	U A2 E
UNIT-III	Contemporary Issues in Mass Media a. Globalization, New Technology and mass media b. Media organizations and market c. Media violence d. Gender and media	15	CO3 CO4 CO5	U A2 E
Learning resources: 1. McLuhan, M. (1968). <i>Understanding Media: Extensions of Man</i> . McGraw- Hill Book Co. 2. Braudy, L., & Cohen, M. (Eds.). (2004). <i>Film theory and criticism: Introductory readings</i> . Oxford University Press. 3. Braudy, L., & Cohen, M. (Eds.). (2004). <i>Film theory and criticism: Introductory readings</i> . Oxford University Press. 4. McRobbie, A. (2008). The aftermath of feminism: Gender, culture and social change. <i>The Aftermath of Feminism</i> , 1-192. 5. Heath, S. (1977). <i>Image-music-text</i> . Fontana, London.				

6. Thompson, J. B. (1995). *The media and modernity: A social theory of the media*. Stanford University Press.
7. Herman, E. S., & Chomsky, N. (2021). Manufacturing consent. In *Power and Inequality* (pp. 198-20). Routledge.
8. William, M., & Raminder, K. (2013). Between sedition and seduction: Thinking censorship in South Asia. In *Routledge handbook of media law* (pp. 303-319). Routledge.
9. Silverstone, R., & Williams, R. (2004). *Television: Technology and cultural form*. Routledge.
10. Wetherell, M., Taylor, S., & Yates, S. J. (Eds.). (2001). *Discourse theory and practice: A reader*. Sage.
11. Sorenson, J. (1991). Mass media and discourse on famine in the Horn of Africa. *Discourse & Society*, 2(2), 223-242.
12. Valdivia, A. N. (Ed.). (2008). *A companion to media studies*. John Wiley & Sons.
13. Bourdieu, P. (1984). *A social critique of the judgement of taste*. Routledge.
14. Said, E. W. (2008). *Covering Islam: How the media and the experts determine how we see the rest of the world (Fully revised edition)*. Random House.
15. Rajagopal, A. (2001). *Politics after television: Religious nationalism and the reshaping of the Indian public*. Cambridge University Press.
16. Said, E. W. (2008). *Covering Islam: How the media and the experts determine how we see the rest of the world (Fully revised edition)*. Random House.
17. Rajagopal, A. (2001). *Politics after television: Religious nationalism and the reshaping of the Indian public*. Cambridge University Press.

Summative Assessment: 50 marks.

- a) Four short questions to be answered out of eight given from lower order of RBT - (20 Marks).
- b) Three long questions to be answered out of six set from higher order of RBT- (30 Marks). Summative Assessment Time: 2Hours for pen and paper test.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mingma Wangdi Sherpa	Name: Chukha Lepcha	Name: Ranita Chakraborty
Signature: Mingma W	Signature:  HEAD Department of Sociology Salesian College (Autonomous)	Signature:  CHAIRPERSON Board of Studies Department of Sociology Salesian College (Autonomous) Sonada & Siliguri



Salesian College

(Autonomous)

Sonada - Siliguri

National Education Policy (NEP) 2020 Curriculum Framework

For

Physical Education (Non-Major Papers)

Department of Physical Education

Curriculum Document

2023 – 2024

Vision

To prepare Physical Education leaders of high academic calibre with a holistic development of body, mind and spirit nurtured with a strong commitment to serve humanity.

Mission

To give all students opportunities and experiences that lead to the achievement of total wellness and result in a longer and healthier life.

To develop a quality physical education program that emphasizes enjoyable participation in physical activities; to help students develop the knowledge, attitude, motor skills, social skills and confidence needed to begin and maintain a healthy physically active lifestyle for the rest of their life.

1. Programme Overview

Bachelor of Arts is a four-year degree programme with the possibility of completing the fourth year with research if a particular student secures 75% CGPA in the previous exams.

2. Programme Objectives and Outcomes (POs)

1. The curriculum would enable the pass out to select the inherited talented children for various sports activities.
2. The pass out shall be able to orient children in schools with the fundamental skills of selected sports as per their inherited potential.
3. The pass out shall be able to devise training program for athletes engaged in different sports activities
4. The curriculum shall enable them to officiate, supervise various sports tournaments and orient them in organizing sports events at all levels.
5. The curriculum would enable the pass out students to be entrepreneur (to start their own fitness centre, gym, spa etc) and device appropriate fitness program for different genders and age groups of people.
6. The curriculum would enable the pass out to devise training program for physically challenged peoples

After completion of the programme, a student will be able to:	
Knowledge	PO01: Grasp the theories of Physical Education philosophy, sociology, and psychology.
	PO02: Acquaint him/herself with the history of the Indian Physical Education system, its educational policies, commissions and committees.
	PO03: Relate his/her understanding of guidance and counselling, peace and value education in various classroom situations and societal experiences.
	PO04: Gain awareness about the various contemporary issues in Physical Education.
Skills	PO05: Demonstrate his/her communication skills through paper presentation on subject as well as various interdisciplinary themes.
	PO06: Construct instructional designs, scholastic & co-scholastic curriculum designs.
	PO07: Integrate and apply ICT in learning process
	PO08: Acquaint him/herself with the diverse current Physical education problems and other related issues like SSA, Inclusive education, unemployment, population explosion, poverty, and national disintegration.
Competence	PO09: Explore new ideas and thoughts through the application of theoretical knowledge of education subject and statistical techniques and pedagogical analysis.
	PO10: Initiate self-sufficiency, sincerity, independent thinking as education is a lifelong process for empowering the student to face all challenges in his/her future endeavours.
	PO11: Develop concern for the society, nation as well as promote the feeling of internationalism by comparing our Physical Education system with that of other developed countries.

3. Programme Specific Objectives & Outcomes (PSOs)

Knowledge	PSO1: A student develops a clear idea about the subject Physical Education and Sports, like nature, scope and aim of Physical Education, factors, different agencies of Physical Education and Sports.
	PSO2: A student gathers knowledge about Physical Education and Sports Psychology, its theories, and their implication in the field of education and education system.
	PSO3: A student develops knowledge about the detailed history of the Indian Physical Education system.
	PSO4: A student internalises the basics of Anatomy, Physiology and Exercise Physiology, relation between Anatomy and Physiology and importance of scientific analysis in the field of Physical Education.
	PSO5: A student develops knowledge about basic of Indian Sports as well as Western Sports.
	PSO6: A student develops the concept of coaching and training, various types of training and basic skills necessary for coaching.
	PSO7: A student develops the concept of research and statistics to develop skill in analysing descriptive measures, concept of Learning Curve and its uses in Physical Education, measures of relationship and organize relevant data and to represent data through graphs and to develop skill in analysing and displaying data.
	PSO8: S/he also develops knowledge about the importance of different types of sports in the field of Physical Education.
Skills	PSO1: A student will develop a clear idea about the subject Physical Education, like nature, scope and aim of Physical Education, factors, different agencies of Physical Education and Sports.
	PSO2: A student will execute the educational implications of the theories of Sports Psychology.
	PSO3: A student will construct Physical Education and Sports Instructional Designs, Scholastic and Co-Scholastic Curriculum designs.
	PSO4: A student will develop an understanding of Sports Technology, ICT and e-learning.
	PSO5: A student will advocate the importance of Coaching and Training.
	PSO6: A student will develop the skill of using computer in Physical Education and Sports, ICT & e-learning.
	PSO7: A learner will exhibit an excellent communication skill, Skill for Democratic Citizenship and related theories, teaching skills, life skill education, peace, and value education.
Competence	PSO1: A learner demonstrates competencies required to use computers in Physical Education and Sports, communication, ICT & e-learning for implementing instructional techniques and different models of teaching.
	PSO2: A student will analyse the detailed history of Indian Physical Education system.
	PSO3: A student will develop a positive attitude towards developing one's own potentials (both biological & cultural) and talents.
	PSO4: A student will be capable of self-paced and self-directed learning aimed at personal development.
	PSO5: A student will envision a society where people from all walks of life enjoy equal and equitable rights and opportunities.
	PSO6: A student will compute statistical analysis in the field of Physical Education research.
	PSO7: A student will analyse the contemporary trends in Physical Education.

4. Programme Matrix

Course Code	Course Type	Title of the Course	Credit	Lecture Tutorial Practical (L+T+P)	Total Hours	Total Marks
Semester 1						
23PEDMIN101	Minor	Introduction of Physical Education and Sports	4	3+0+1	75	100
23PEDMDC101	MDC	Fitness, Recreation and Sports Management	3	3+0+0	45	100
23PEDVAC5	VAC	Sports for Life	1	0+0+1	30	100
23PEDVAC01	VAC	Organization and Management in Sports	1	0+1+0	30	100
Total			9	6+1+2	180	400
Semester 2						
23PEDMIN102	Minor	Management of Physical Education and Sports	4	3+0+1	75	100
23PEDMDC102	MDC	Health and Fitness Education	3	3+0+0	45	100
23PEDVAC7	VAC	Sports for Life	1	0+0+1	30	100
23PEDVAC02	VAC	Contemporary Issues in Sports	1	0+1+0	30	100
Total			9	6+1+2	180	400

1. Course Description

Course Code	23PEDVAC102B			
Course Title	ORGANISATION AND MANAGEMENT IN SPORTS			
Credits	1			
Total Hours	30			
Hours per Week	2			
Course Type	VAC			
Semester	I			
Intended Level	Certificate			
Issue(s) Addressed	Professional Ethics			
Course Offered to	Sports Management			
Regulation	2023			
Course Overview	This course: a. Covers the basic concepts of Organisation Behaviour. b. Clear the concepts of sports management. c. Inbuilt the quality of sports Leadership d. Marking the International standard (400 m) running Track			
Prerequisite	Basic knowledge on Organisation and Behaviour.			
Course Objectives	A student will be able to: 1. Quote the meaning, definitions of Organisation Behaviour. 2. Outline the need of Physical Education in modern living. 3. Explain the concept of management in sports. 4. Outline the quality, role, responsibility, and personality of leaders. 5. Design the international standard Athletic track.			
Course Outcomes based on RBT and Cognitive Level Mapping				
At the end of this course, a student will be able to:				
COs	Statements	Cognitive Level Mapping		
CO1	Describe the concepts of Organisation Behaviour and Individual Behaviour	R		
CO2	Discuss the various styles and theories of Leadership.	U		
CO3	Apply the principles of Sports Management	A1		
CO4	Examine the need of Physical Education in modern living.	A2		
CO5	Evaluate the correct measurements of Athletic Track Marking.	E		
CO6	Manage Sports tournaments and events in Schools and Colleges.	C		
Course Content				
Units	Content	Lecture Hours	Cos	RBT
Session 1	Organization Behaviour meaning and its concepts.	2	CO1	R U A1 A2

				E C
Session 2	Organisation Behaviour meaning and its concepts.	2	CO1	R U A1 A2 E C
Session 3	Individual behaviour – Ability, Learning, Values, Attitudes, Personality.	2	CO1	R U A1 A2 E C
Session 4	Individual behaviour – Ability, Learning, Values, Attitudes, Personality.	2	CO1	R U A1 A2 E C
Session 5	Trait Theories of Leadership.	2	CO2	R U A1 A2 E C
Session 6	Leadership Styles and Situational theories of Leadership.	2	CO2	R U A1 A2 E C
Session 7	Concept of Sports Management.	2	CO3	R U A1 A2 E C
Session 8	Management in Physical Education and Sports.	2	CO3	R U A1 A2 E C

Session 9	Management in Physical Education and Sports.	2	CO3	R U A1 A2 E C
Session 10	Types of tournaments, preparing fixture of different types of tournaments.	2	CO6	R U A1 A2 E C
Session 11	Physical Education in our daily life.	2	CO4	R U A1 A2 E C
Session 12	Need of Physical Education in Modern living.	2	CO4	R U A1 A2 E C
Session 13	Method of Calculation of Athletic track (practical).	2	CO5	R U A1 A2 E C
Session 14	Track Marking	2	CO5	R U A1 A2 E C
Session 15	Track Marking	2	CO5	R U A1 A2 E C

LEARNING RESOURCES:

1. Govindarajulu, N., (2005) Management of Physical Education and Sports Programme, Friends Publications, India.
2. Thour, M., (2006) Camping Management in Physical Education, Friends Publications, India.
3. Singh, Y., (2005) Sports Management, Sports Publication, New Delhi.

1. Course Description

Course Code	23PEDVAC102B	
Course Title	CONTEMPORARY ISSUES IN SPORTS	
Credits	1	
Total Hours	30	
Hours per Week	2	
Course Type	VAC	
Semester	II	
Intended Level	Certificate	
Issue(s) Addressed	Professional Ethics	
Course Offered to	Sports Management	
Regulation	2023	
Course Overview	This course: a. Covers the Psychological aspect of sports. b. Gives an exposure of Anatomical body structure of sports persons. c. Gives knowledge about different type of sports training.	
Prerequisite	Basic knowledge on contemporary issues in Sports.	
Course Objectives	A student will be able to: 1. Identify the psychological aspects of Sports Training. 2. Discuss the Anatomical and Physiological functions and structure of sports person. 3. Distinguish between the Anatomical and Physiological characteristics of male & female. 4. Apply the concepts and principles of different type of sports training 5. Restate the specific major games’ rules and their interpretation and duties of officials	
Course Outcomes based on RBT and Cognitive Level Mapping		
At the end of this course, a student will be able to:		
COs	Statements	Cognitive Level Mapping
CO1	Describe the meaning and concepts of Sports Psychology, Anatomy and Physiology	R
CO2	Discuss the need and importance of Psychology in Sports	U
CO3	Apply the concept and principles of Sports Training	A1
CO4	Differentiate between the anatomical and physiological features of Male & Female	A2
CO5	Evaluate the various training methods	E
CO6	Design training programs for developing the various components of fitness.	C
CO7	Replicate the basic skills of the game	I
CO8	Re-create the fundamental skills of the game.	M
CO9	Demonstrate the fundamental skills during the game.	P
CO10	Teach the fundamental skills of the game	A
CO11	Design the fundamental skills of the game.	N

Course Content				
Units	Content	Lecture Hours	Cos	RBT
Session 1	Sports psychology.	2	CO1	R U A1 A2 E C
Session 2	Need and importance of Psychology in sports.	2	CO2	R U A1 A2 E C
Session 3	Attention and Interest	2	CO3	R U A1 A2 E C
Session 4	Anatomy and Physiology in Sports.	2	CO4	R U A1 A2 E C
Session 5	Human Skeleton System.	2	CO1	R U A1 A2 E C
Session 6	Anatomical sex difference.	2	CO5	R U A1 A2 E C
Session 7	Muscular System and the Nervous System.	2	CO1	R U A1 A2 E C

Session 8	Central and Autonomic Nervous System.	2	CO1	R U A1 A2 E C
Session 9	Concepts and Principles of Sports Training.	2	CO5	R U A1 A2 E C
Session 10	Motor fitness and its components.	2	CO6	R U A1 A2 E C
Session 11	Different exercises for developing the various components.	2	CO5 CO6	R U A1 A2 E C
Session 12	Different types of training method (Fartlek training, Interval training, Circuit training).	2	CO5 CO6	R U A1 A2 E C
Session 13	Major Specific Game (Practical).	2	CO7 CO8 CO9 CO10 C11	I M P A N
Session 14	Major Specific Game (Practical).	2	CO7 CO8 CO9 CO10 C11	I M P A N

Session 15	Indoor Games (Badminton/ Table Tennis)	2	CO7 CO8 CO9 CO10 C11	I M P A N
LEARNING RESOURCES: 1. Srivastava, A.K., (2010) Book of Rules of Games and Sports, Sports Publication, New Delhi. 2. Daniels, P., & Restak R.MD., (2014) The Body: A Complete User's Guide, National Geographic Publisher, Washington, DC. 3. Jackson, L. Jr., (2014) Racket Wars: Guide Book to all the World's Racket Sports, First Edition, BookBaby Publishers. SUGGESTED READINGS: 1. Farmer J. Petert, Mulrooney L. Aaron, Robin Ammon Jr "Sport Facility Planning and Management" Fitness Information Technology, Inc, U.S 2. Gil B. Fried, JD "Managing Sport Facilities" 4th Edition 2021. 3. DK "First Aid Manual" 11th edition (5 August 2021) 4. Gupta LC "Manual of First Aid: Management of General Injuries, Sports Injuries and Common Ailments" 2023 5. Richard. L. Irwin, William. Anthony. Sutton, Larry. M. McCarthy "Sports promotion and sales Management" Human Kinetics, 2008				

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating
I: Imitation, M: Manipulation, P: Precision, A: Articulation, N: Naturalisation

2. Assessment:

Log Books to be maintained and recorded for individual students for formative assessment.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Dean (Approved by)
Name: Mr. Rakesh Saibo Signature: 	Name: Mr. Wilson Bara Signature: 	Name: Mr Ravi Bhushan Singh Signature: 




CO-ORDINATOR
 Internal Quality Assurance Cell
 Salesian College Sonada (Autonomous)
 Darjeeling, WB - 734 209