

NANDHA ENGINEERING COLLEGE

(An Autonomous Institution affiliated to Anna University Chennai and approved by AICTE, New Delhi)
Erode - 638 052, Tamilnadu, India, Phone: 04294 - 225585



Curriculum and Syllabi

for

B.E - BIOMEDICAL ENGINEERING [R26]

[CHOICE BASED CREDIT SYSTEM]

[This Curriculum and Syllabi are applicable to students admitted from the academic year 2026-2027 onwards]

JULY 2026

INSTITUTE VISION AND MISSION	
VISION	• To be an Institute of excellence providing quality Engineering, Technology and Management education to meet the ever changing needs of the society
MISSION	• To provide quality education to produce ethical and competent professionals with social Responsibility • To excel in the thrust areas of Engineering, Technology and Entrepreneurship by solving real- world problems • To create a learner centric environment and improve continually to meet the changing global needs

B.E – BIOMEDICAL ENGINEERING	
VISION	• To foster academic excellence imparting knowledge in Biomedical and allied disciplines to meet the ever growing needs of the society
MISSION	• To impart quality education and develop an aptitude for professional career and continuous learning with ethics and social responsibility • To provide a framework for research and innovation to meet the emerging challenges through regular interaction with healthcare industry • To create a learner centric environment by upgrading knowledge and skills to cater the needs and challenges of the society
PROGRAMME EDUCATIONAL OBJECTIVES (PEO)	The graduates of Biomedical Engineering will be PEO1: Core Competency: Successful professionals with core competency and inter-disciplinary skills to satisfy the Industrial needs PEO2: Research, Innovation and Entrepreneurship: Capable of identifying technological requirements for the society and providing innovative ideas for real time problems PEO3: Ethics, Human values and Life-long learning: Able to demonstrate ethical practices and managerial skills through continuous learning
PROGRAMME SPECIFIC OUTCOMES (PSO)	The students of Biomedical Engineering will be able to • PSO1: Design and develop the electronic systems to offer healthcare solutions by applying the knowledge of Mathematics, Life Sciences, Engineering and Technology • PSO2: Apply software skills, Information and Communication Technologies (ICT) for solving the clinical problems

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

a-l	GRADUATE ATTRIBUTES	PO No.	PROGRAMME OUTCOMES
a	Engineering knowledge	PO1	Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
b	Problem analysis	PO2	Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
c	Design/development of solutions	PO3	Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
d	Conduct investigations of complex problems	PO4	Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8)
e	Engineering tool usage	PO5	Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
f	The Engineer and The World	PO6	Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7)
g	Ethics	PO7	Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
h	Individual and Collaborative team work	PO8	Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
i	Communication	PO9	Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
j	Project management and finance	PO10	Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
k	Life-Long Learning	PO11	Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

NANDHA ENGINEERING COLLEGE (AUTONOMOUS), ERODE - 638 052

REGULATIONS - 2026 (R26)

CHOICE BASED CREDIT SYSTEM (CBCS)

B.E. BIOMEDICAL ENGINEERING

CURRICULUM : I - VIII SEMESTERS

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26MAN01	Induction Program	M						
SEMESTER: I									
1	26MYB01	Linear Algebra and Applied Calculus	BS	T	3	1	0	4	4
2	26CYB03	Biochemistry	BS	LIT	2	0	2	3	4
3	26GYA01	தமிழர் மரபு / Heritage of Tamils	HUM	T	1	0	0	1	1
4	26CSC01	C Programming	ES (G)	T	3	0	0	3	3
5	26MEC02	Engineering Graphics	ES (G)	LIT	1	0	4	3	5
6	26ECC01	Basics of Electronics and Electrical Engineering	ES (PC)	LIT	2	1	2	4	5
7	26EYP01	English Communication Lab	HUM	L	0	0	4	2	4
8	26CSP01	C Programming Laboratory	ES (G)	L	0	0	3	1.5	3
9	26GEP02	Makerspace	SD	L	0	0	4	2	4
10	26GYP01	Yoga for Youth Empowerment	HUM	L	0	0	2	1	2
TOTAL					12	2	21	24.5	35

SEMESTER: II									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26MYB04	Transform Techniques and Partial Differential Equations	BS	T	3	1	0	4	4
2	26PYB02	Medical Physics	BS	T	3	0	0	3	3
3	26CYB04	Climate Change and Sustainability	BS	T	2	0	0	2	2
4	26GYA02	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	HUM	T	1	0	0	1	1
5	26CSC02	Data Structures	ES (G)	T	3	0	0	3	3
6	26EEC05	Circuit Theory	ES (PC)	LIT	3	0	2	4	5
7	26EYP02	English Proficiency Lab	HUM	L	0	0	2	1	2
8	26PYP01	Physics Laboratory	BS	L	0	0	2	1	2
9	26CSP02	Data Structures Laboratory	ES (G)	L	0	0	3	1.5	4
10	26GEP01	Foundation Laboratory	SD	L	0	0	4	2	4
11	26GEP03	Life Skills for Engineers	ES (G)	-	1	0	2	1	3
12	26GEA01	Analytical Skills - I	ES (G)	T	2	0	0	1	2
TOTAL					18	1	15	24.5	35

SEMESTER: III									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Probability and Stochastic Processes	BS	T	3	1	0	4	4
2	XXXX	Analog and Digital Electronics	ES (PC)	T	3	0	0	3	3
3	XXXX	Anatomy and Human Physiology	ES (PC)	T	3	0	0	3	3
4	XXXX	Sensors and Measurements	ES (PC)	T	3	0	0	3	3
5	XXXX	Signals and Systems	ES (PC)	T	3	0	0	3	3
6	XXXX	English Competency Lab	HUM	L	0	0	2	1	2
7	XXXX	Analog and Digital Electronics Laboratory	ES (PC)	L	0	0	3	1.5	3
8	XXXX	Anatomy and Human Physiology Laboratory	ES (PC)	L	0	0	3	1.5	3
9	XXXX	Sensors and Measurements Laboratory	ES (PC)	L	0	0	3	1.5	3
10	XXXX	Analytical Skills - II	ES (G)	T	2	0	0	1	2
11	XXXX	Design Thinking	ES (G)	T	2	0	0	2	2
12	XXXX	Disaster Management and Preparedness	M	T	2	0	0	0	2
TOTAL					21	1	11	24.5	33

SEMESTER: IV									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Microprocessors & Microcontrollers	ES (PC)	T	3	0	0	3	3
2	XXXX	Biomedical Instrumentation	ES (PC)	T	3	0	0	3	3
3	XXXX	Biosignal Processing	ES (PC)	T	3	0	0	3	3
4	XXXX	Physiological Control System	ES (PC)	T	3	0	0	3	3
5	XXXX	Biomaterials and Tissue Interaction	ES (PC)	T	3	0	0	3	3
6	XXXX	Workplace English Lab	HUM	L	0	0	2	1	2
7	XXXX	Microprocessors & Microcontrollers Laboratory	ES (PC)	L	0	0	3	1.5	3
8	XXXX	Biomedical Instrumentation Laboratory	ES (PC)	L	0	0	3	1.5	3
9	XXXX	Biosignal Processing Laboratory	ES (PC)	L	0	0	3	1.5	3
10	XXXX	Analytical Skills - III	ES (G)	T	2	0	0	1	2
11	XXXX	Micro Project	SD	L	0	0	4	2	4
12	XXXX	Personality and Character Development	SD	-	0	0	1	0	1
TOTAL					17	0	16	23.5	33

SEMESTER: V									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Introduction to Medical Standards and Regulation	ES (PC)	T	1	0	0	1	1
2	XXXX	Biomechanics	ES (PC)	T	3	0	0	3	3
3	XXXX	Embedded System in Healthcare	ES (PC)	T	3	0	0	3	3
4	XXXX	Radiology Equipment	ES (PC)	T	3	0	0	3	3
5	XXXX	Diagnostic and Therapeutic Equipment	ES (PC)	T	3	0	0	3	3
6	XXXX	Elective - I	ES (PE)	T	3	0	0	3	3
7	XXXX	Elective - II	ES (PE)	T	3	0	0	3	3
8	XXXX	Elective - III	ES (PE/OE)	T	3	0	0	3	3
9	XXXX	Diagnostic and Therapeutic Equipment Laboratory	ES (PC)	L	0	0	3	1.5	3
10	XXXX	Indian Knowledge System	M	T	2	0	0	0	2
TOTAL					24	0	3	23.5	27

FOR HONOURS									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Capstone Design Project – Level I	SD	GDP	0	0	12	6	12
OR									
1	XXXX	Honours Elective – I		T	3	0	0	3	3
2	XXXX	Honours Elective – II		T	3	0	0	3	3
FOR MINORS									
1	XXXX	Minor Elective – I		T	3	0	0	3	3
2	XXXX	Minor Elective – II		T	3	0	0	3	3

SEMESTER: VI									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Innovation, Start-up and Entrepreneurship	HUM	LIT	2	0	2	3	4
2	XXXX	Rehabilitation Engineering	ES (PC)	T	3	0	0	3	3
3	XXXX	Medical Image Processing and Analysis	ES (PC)	T	3	0	0	3	3
4	XXXX	Introduction to AI in Healthcare	ES (PC)	T	3	0	0	3	3
5	XXXX	Elective – IV	ES (PE)	T	3	0	0	3	3
6	XXXX	Elective - V	ES (PE)	T	3	0	0	3	3
7	XXXX	Elective - VI	ES (PE/OE)	T	3	0	0	3	3
8	XXXX	Medical Image Processing and Analysis Laboratory	ES (PC)	L	0	0	3	1.5	3
9	XXXX	Mini Project	SD	L	0	0	4	2	4
10	XXXX	Comprehension	SD	T	2	0	0	2	2
TOTAL					22	0	9	26.5	31

FOR HONOURS									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Capstone Design Project – Level II	SD	GDP	0	0	12	6	12
OR									
1	XXXX	Honours Elective – III		T	3	0	0	3	3
2	XXXX	Honours Elective – IV		T	3	0	0	3	3
FOR MINORS									
1	XXXX	Minor Elective – III		T	3	0	0	3	3
2	XXXX	Minor Elective – IV		T	3	0	0	3	3

SEMESTER: VII									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Healthcare Informatics	ES (PC)	T	3	0	0	3	3
2	XXXX	Elective - VII	ES (PE)	T	3	0	0	3	3
3	XXXX	Elective - VIII	ES (PE)	T	3	0	0	3	3
4	XXXX	Elective - IX	ES (OE)	T	3	0	0	3	3
5	XXXX	Internship / Industrial Training	SD					2	
6	XXXX	Research Paper Writing^	M						2
TOTAL					12	0	0	14	14

^ Audit Course

FOR HONOURS									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Capstone Design Project – Level III	SD	GDP	0	0	12	6	12
OR									
1	XXXX	Honours Elective – V		T	3	0	0	3	3
2	XXXX	Honours Elective – VI		T	3	0	0	3	3
FOR MINORS									
1	XXXX	Minor Elective – V		T	3	0	0	3	3
2	XXXX	Minor Elective – VI		T	3	0	0	3	3

SEMESTER: VIII									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Project Work / Internship cum Project Work	SD	PW	0	0	16	8	8
TOTAL					0	0	16	8	8

Humanities and Social Sciences including Management courses (HUM)									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26GYA01	தமிழர் மரபு / Heritage of Tamils	HUM	T	1	0	0	1	1
2	26EYP01	English Communication Lab	HUM	L	0	0	4	2	4
3	26GYP01	Yoga for Youth Empowerment	HUM	L	0	0	2	1	2
4	26GYA02	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	HUM	T	1	0	0	1	1
5	26EYP02	English Proficiency Lab	HUM	L	0	0	2	1	2
6	XXXX	English Competency Lab	HUM	L	0	0	2	1	2
7	XXXX	Workplace English Lab	HUM	L	0	0	2	1	2
8	XXXX	Innovation, Start-up and Entrepreneurship	HUM	LIT	2	0	2	3	4

Basic Science Courses (BS)									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26MYB01	Linear Algebra and Applied Calculus	BS	T	3	1	0	4	4
2	26CYB03	Biochemistry	BS	LIT	2	0	2	3	4
3	26MYB04	Transform Techniques and Partial Differential	BS	T	3	1	0	4	4

		Equations							
4	26PYB02	Medical Physics	BS	T	3	0	0	3	3
5	26CYB04	Climate Change and Sustainability	BS	T	2	0	0	2	2
6	26PYP01	Physics Laboratory	BS	L	0	0	2	1	2
7	XXXX	Probability and Stochastic Processes	BS	T	3	1	0	4	4

Engineering Science Courses - General (ES(G))

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26CSC01	C Programming	ES (G)	T	3	0	0	3	3
2	26MEC02	Engineering Graphics	ES (G)	LIT	1	0	4	3	5
3	26CSP01	C Programming Laboratory	ES (G)	L	0	0	3	1.5	3
4	26CSC02	Data Structures	ES (G)	T	3	0	0	3	3
5	26CSP02	Data Structures Laboratory	ES (G)	L	0	0	3	1.5	4
6	26GEP03	Life Skills for Engineers	ES (G)	-	1	0	2	1	3
7	26GEA01	Analytical Skills - I	ES (G)	T	2	0	0	1	2
8	XXXX	Analytical Skills - II	ES (G)	T	2	0	0	1	2
9	XXXX	Design Thinking	ES (G)	T	2	0	0	2	2
10	XXXX	Analytical Skills - III	ES (G)	T	2	0	0	1	2

Engineering Science Courses - Programme Core (ES(PC))

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26ECC01	Basics of Electronics and Electrical Engineering	ES (PC)	LIT	2	1	2	4	5
2	26EEC05	Circuit Theory	ES (PC)	LIT	3	0	2	4	5
3	XXXX	Analog and Digital Electronics	ES (PC)	T	3	0	0	3	3
4	XXXX	Anatomy and Human Physiology	ES (PC)	T	3	0	0	3	3

5	XXXX	Sensors and Measurements	ES (PC)	T	3	0	0	3	3
6	XXXX	Signals and Systems	ES (PC)	T	3	0	0	3	3
7	XXXX	Analog and Digital Electronics Laboratory	ES (PC)	L	0	0	3	1.5	3
8	XXXX	Anatomy and Human Physiology Laboratory	ES (PC)	L	0	0	3	1.5	3
9	XXXX	Sensors and Measurements Laboratory	ES (PC)	L	0	0	3	1.5	3
10	XXXX	Microprocessors & Microcontrollers	ES (PC)	T	3	0	0	3	3
11	XXXX	Biomedical Instrumentation	ES (PC)	T	3	0	0	3	3
12	XXXX	Biosignal Processing	ES (PC)	T	3	0	0	3	3
13	XXXX	Physiological Control System	ES (PC)	T	3	0	0	3	3
14	XXXX	Biomaterials and Tissue Interaction	ES (PC)	T	3	0	0	3	3
15	XXXX	Microprocessors & Microcontrollers Laboratory	ES (PC)	L	0	0	3	1.5	3
16	XXXX	Biomedical Instrumentation Laboratory	ES (PC)	L	0	0	3	1.5	3
17	XXXX	Biosignal Processing Laboratory	ES (PC)	L	0	0	3	1.5	3
18	XXXX	Introduction to Medical Standards and Regulation	ES (PC)	T	1	0	0	1	1
19	XXXX	Biomechanics	ES (PC)	T	3	0	0	3	3
20	XXXX	Embedded System in Healthcare	ES (PC)	T	3	0	0	3	3
21	XXXX	Radiology Equipment	ES (PC)	T	3	0	0	3	3
22	XXXX	Diagnostic and Therapeutic Equipment	ES (PC)	T	3	0	0	3	3
23	XXXX	Diagnostic and Therapeutic Equipment Laboratory	ES (PC)	L	0	0	3	1.5	3
24	XXXX	Rehabilitation Engineering	ES (PC)	T	3	0	0	3	3
25	XXXX	Medical Image Processing and Analysis	ES (PC)	T	3	0	0	3	3
26	XXXX	Introduction to AI in Healthcare	ES (PC)	T	3	0	0	3	3
27	XXXX	Medical Image Processing and Analysis Laboratory	ES (PC)	L	0	0	3	1.5	3

28	XXXX	Healthcare Informatics	ES (PC)	T	3	0	0	3	3
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Skill Development Courses (SD)

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26GEP02	Makerspace	SD	L	0	0	4	2	4
2	26GEP01	Foundation Laboratory	SD	L	0	0	4	2	4
3	XXXX	Micro Project	SD	L	0	0	4	2	4
4	XXXX	Personality and Character Development	SD	-	0	0	1	0	1
5	XXXX	Mini Project	SD	L	0	0	4	2	4
6	XXXX	Comprehension	SD	T	2	0	0	2	2
7	XXXX	Internship / Industrial Training	SD					2	
8	XXXX	Project Work / Internship cum Project Work	SD	PW	0	0	16	8	8

Mandatory Courses (M)

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26MAN01	Induction Program	M						
2	XXXX	Disaster Management and Preparedness	M	T	2	0	0	0	2
3	XXXX	Indian Knowledge System	M	T	2	0	0	0	2
4	XXXX	Research Paper Writing^	M						2

SEMESTER WISE CREDIT DISTRIBUTION

SEMESTER	HUM	BS	ES (G)	ES(PC)	ES(PE)	ES(PE/OE)	ES(OE)	SD
I	4	7	7.5	4				2
II	2	10	6.5	4				2
III	1	4	3	16.5				
IV	1		1	19.5				2
V				14.5	6	3		
VI	3			10.5	6	3		4
VII				3	6		3	2
VIII								8
Total	11	21	18	72	18	6	3	18

Credits Total: 169

INDUCTION PROGRAMME (Common to All Branches)							
Course Code:		IP3151				CIA	-
Course Type: (Theory/Practical/Integrated)						ESE	-
L:T:P:C		0	0	0	0	Total Marks	Nil
Total Hours of Pedagogy		2 Weeks				Exam Hours	-
Prerequisite		Nil					
Course Objectives							
1. To recognize the importance of holistic development, professional ethics, human values, and social responsibility in engineering education. 2. To develop positive interpersonal relationships, adapt effectively to the academic environment and participate responsibly in institutional and societal activities.							
Course Outcomes The students will be able to						Cognitive Level	Weightage of COs in ESE
CO 1	Explain the objectives of the Induction Programme and the role of engineering in addressing societal and national needs.					U	-
CO 2	Demonstrate self-discipline, healthy lifestyle practices, and awareness of universal human values in day-to-day activities.					Ap	
CO 3	Participate effectively in creative, literary, physical, and department-specific activities to enhance personal and professional skills.					Ap	
CO 4	Analyze the significance of teamwork, communication, and ethical behavior in building positive relationships within the institution and society.					An	
CO 5	Develop innovative ideas and create simple solutions or models through department-specific activities, fostering creativity and a maker mindset.					C	

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1						3	2				3		
CO 2						2	3	2	3	2	3		
CO 3							2	3	3	2	3		
CO 4						2	3	3	3	2	3		
CO 5						1		2	3	2	3		
CO (W.A)						2	3	3	3	2	3		

(i) Physical Activity

This would involve a daily routine of physical activity with games and sports, yoga, gardening, etc.

(ii) Creative Arts

Every student would choose one skill related to the arts, whether visual arts or performing arts. Examples are painting, sculpture, pottery, music, dance, etc. The student would pursue it every day for the duration of the programme. These would allow for creative expression. It would develop a sense of aesthetics and also enhance creativity which would, hopefully, grow into engineering design later.

(iii) Universal Human Values

This is the anchoring activity of the Induction Programme. It gets the student to explore oneself and allows one to experience the joy of learning, stand up to peer pressure, take decisions with courage, be aware of relationships with colleagues and supporting stay in the hostel and department, be sensitive to others, etc. A module in Universal Human Values provides the base. Methodology of teaching this content is extremely important. It must not be through do's and don'ts, but get students to explore and think by engaging them in a dialogue. It is best taught through group discussions and real life activities rather than lecturing.

Discussions would be conducted in small groups of about 20 students with a faculty mentor each. It would be effective that the faculty mentor assigned is also the faculty advisor for the student for the full duration of the UG programme.

(iv) Literary Activity

Literary activity would encompass reading, writing and possibly, debating, enacting a play, etc.

(v) Proficiency Modules

This would address some lacunas that students might have, for example, English, computer familiarity, etc.

(vi) Lectures by Eminent People

Motivational lectures by eminent people from all walks of life should be arranged to give the students exposure to people who are socially active or in public life.

(vii) Visits to Local Area

A couple of visits to the landmarks of the city, or a hospital or orphanage could be organized. This would familiarize them with the area as well as expose them to the under privileged.

(viii) Familiarization to Dept./Branch & Innovations

They should be told about what getting into a branch or department means what role it plays in society, through its technology. They should also be shown the laboratories, workshops & other facilities.

(ix) Department Specific Activities

About a week can be spent in introducing activities (games, quizzes, social interactions, small experiments, design thinking, etc.) that are relevant to the particular branch of Engineering/Technology/Architecture that can serve as a motivation and kindle interest in building things (become a maker) in that particular field. This can be conducted in the form of a workshop. For example, CSE and IT students may be introduced to activities that kindle computational thinking, and get them to build simple games. ECE students may be introduced to building simple circuits as an extension of their knowledge in Science, and so on. Students may be asked to build stuff using their knowledge of science.

Induction Programme is totally an activity based programme and therefore there shall be no tests / assessments during this programme.

Total (2 weeks)

References

Guide to Induction program from AICTE



LINEAR ALGEBRA AND APPLIED CALCULUS (Common to All Branches)							
Course Code:	26MYB01				CIA	40	
Course Type: (Theory/Practical/Integrated)	Theory				ESE	60	
L:T:P:C	3	1	0	4	Total Marks	100	
Total Hours of Pedagogy	60				Exam Hours	3	
Prerequisite	Nil						
Course Objectives							
1. To provide fundamental knowledge of Linear Algebra, Calculus, and Differential Equations to develop problem-solving skills for engineering and scientific applications. 2. To develop analytical skills in multivariable functions, optimization, vector calculus, and multiple Integrals for solving engineering problems involving area and volume.							
Course Outcomes					Cognitive Level	Weightage of COs in ESE	
CO 1	Apply the concepts of eigen values, eigen vectors, and the Cayley–Hamilton theorem to solve matrix-related problems.				Ap	20%	
CO 2	Analyze single and multivariable functions using limits, continuity, derivatives, and optimization techniques.				An	20%	
CO 3	Evaluate double and triple integrals to determine area and volume.				Ap	20%	
CO 4	Compute higher order linear differential equations using analytical methods.				Ap	20%	
CO 5	Apply vector calculus concepts and integral theorems in engineering and physical applications.				Ap	20%	

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3				2						2		
CO 2		3			2						2		
CO 3	3				2						2		
CO 4	3				2						2		
CO 5	3				2						2		
CO (W.A)	3	3			2						2		

Unit- I : Linear Algebra	(9+3)
Eigen values and Eigen vectors of a real matrix- Properties of Eigen values and Eigen vectors (without proof)- Cayley Hamilton Theorem (excluding proof) and its applications.	
Unit- II : Calculus of Single and Several Variables	(9+3)
Limit of a function, Continuity, Limits at infinity, Maxima and Minima of functions of single variable, Mean value theorem - Partial derivatives-Total Derivative-Euler's theorem on homogeneous function- Maxima and Minima of functions of two variables.	
Unit- III : Multiple Integration in Cartesian Coordinates	(9+3)
Double integration in Cartesian Co-ordinates-Change of order of integration-Area as double integral- Triple Integration in Cartesian Co-ordinates-Volume as triple integrals.	
Unit- IV : Linear Differential Equations of Second Order	(9+3)
Higher order linear differential equations with constant coefficients - Method of variation of parameters - Cauchy's and Legendre's linear equations.	
Unit- V : Vector Differentiation and Integration	(9+3)
Divergence and Curl – Irrotational and solenoidal vector fields – Line integral over a plane curve – Surface integral and volume integral - Green's, Gauss divergence Theorem (Excluding Proofs) and Stokes Theorem(Excluding Proofs).	
Total (L:45+T:15)	

Suggested Learning Resources
Text Books :
1. Erwin Kreyszig, Advanced Engineering Mathematics, 11th Edition, Wiley India, 2025.
2. B.S. Grewal, Higher Engineering Mathematics, 45th Edition, Khanna Publishers, 2023.
Reference Books:
1. H.K. Dass and Er. Rajnish Verma, Higher Engineering Mathematics, 3 rd Revised Edition, S. Chand Publishing, 2023.
2. T.K.V. Iyengar, B. Krishna Gandhi, S. Ranganatham and M.V.S.S.N. Prasad, Engineering Mathematics, Volume I & II, S. Chand Publishing, 2022.
3. N.P. Bali and Manish Goyal, A Textbook of Engineering Mathematics, Laxmi Publications, 2019.
4. B. V. Ramana, Higher Engineering Mathematics, 11th Edition, McGraw Hill Education, 2017.
5. Gilbert Strang, Linear Algebra and Its Applications, 4th Edition (Indian Reprint), Cengage Learning, 2022.



BIOCHEMISTRY (For BME Branch Only)							
Course Code:		26CYB03			CIA		50
Course Type: (Theory/Practical/Integrated)		Integrated			ESE		50
L:T:P:C		2	0	2	3	Total Marks	100
Total Hours of Pedagogy		60 (L : 30 + P : 30)			Exam Hours		3
Prerequisite		NIL					
Course Objectives							
1. To enable students to apply the principles of water treatment, electrochemistry, and corrosion in solving engineering problems. 2. To facilitate students in applying knowledge of biomolecules such as carbohydrates, lipids, and enzymes to understand their functions and practical applications.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply water treatment methods for domestic and industrial applications.					Ap	20%
CO 2	Analyze electrochemical processes and corrosion mechanisms for material protection.					An	20%
CO 3	Examine the structure and biological significance of carbohydrates.					An	20%
CO 4	Assess the properties and biological functions of lipids and fatty acids.					E	20%
CO 5	Evaluate enzyme kinetics and inhibition mechanisms for biochemical applications.					E	20%

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	2										2		
CO 2			2			2							
CO 3	2					2					2		
CO 4	2					2							
CO 5	2					2							
CO (W.A)	2		2			2					2		

UNIT- I : WATER TREATMENT	6
Hardness - temporary hardness - permanent hardness - municipal water treatment - disinfection methods - UV - ozonation - chlorination - desalination of brackish water - reverse osmosis - boiler troubles - scale - sludge - caustic embrittlement - treatment of boiler feed water - internal treatment - carbonate - phosphate - calgon conditioning - external treatment - demineralization process - importance and applications of AI in water treatment.	
UNIT- II : ELECTROCHEMISTRY AND CORROSION SCIENCE	6
Electrode potential - Nernst equation - derivation and problems - reference electrodes - calomel electrode - glass electrode - corrosion - chemical corrosion - mechanism - electrochemical corrosion - mechanism.	
UNIT- III : CARBOHYDRATES	6
Carbohydrate - classification of carbohydrates - monosaccharides - nomenclature of monosaccharides - disaccharides - sucrose - oligosaccharides - raffinose - polysaccharides - starch - chemical properties of carbohydrates - role of AI in carbohydrates.	
UNIT- IV : LIPIDS	6
Lipids - classification of lipids - simple - triglycerides - complex - phospholipids - derived lipids - steroids - fatty acids - nomenclature of fatty acids - saturated fatty acids - unsaturated fatty acids - physical and chemical properties of fat - biological functions of lipids.	
UNIT- V : ENZYMES	6
Enzymes - kinetics of enzymes - Michaelis - Menten equation - factors affecting enzymatic activity - temperature - pH - substrate concentration - enzyme concentration - product concentration - activators - enzyme inhibitors - reversible inhibitors - competitive - non competitive - irreversible inhibitors - active site directed irreversible inhibitors - suicide inhibitors - difference between reversible and irreversible inhibitors.	

List of Experiments:	30 Hours
1. Determination of total, temporary and permanent hardness of water by EDTA method. 2. Estimation of alkalinity in water sample. 3. Determination of chloride content of water sample by Argentometric method. 4. Determination of DO content of water sample by Winkler's method. 5. Estimation of copper in brass by EDTA. 6. Conductometric titration using barium chloride and sodium sulphate. 7. Estimation of iron content of the given solution using potentiometer. 8. Determination of strength of given hydrochloric acid using pH meter.	
Total (L : 30 + P : 30)	

Suggested Learning Resources

Text Books :

1. Dr.Ravikrishnan A., "Applied Chemistry - II", First Edition, Sri Krishna Hitech Publishing Company Pvt. Ltd., Chennai, 2025.
2. Nelson, D. L., Cox, M. M., and Hoskins, A. A., Lehninger Principles of Biochemistry, 8th Edition, Macmillan Learning, New York, USA, 2021.

Reference Books:

1. Jain P C. and Monica Jain, "Engineering Chemistry", Volume I and II, 17th Edition, Dhanpat Rai Publishing Company, New Delhi 2025.
2. Donald Voet and Judith G. Voet, Biochemistry, 4th Edition, John Wiley & Sons, New York, USA, 2021.
3. Jaya Shree Anireddy, Text Book of Engineering Chemistry, John Wiley & Sons (India) Pvt. Ltd., New Delhi, 2023.
4. David L. Nelson and Michael M. Cox, Lehninger Principles of Biochemistry, 9th Edition, W. H. Freeman and Company, New York, USA, 2025.
5. Victor W. Rodwell, David A. Bender, Kathleen M. Botham, Peter J. Kennelly and P. Anthony Weil, Harper's Illustrated Biochemistry, 32nd Edition, McGraw Hill LLC, New York, USA, 2021.

தமிழர்மரபு - HERITAGE OF TAMILS
(Common to all branches)

Course Code:	26GYA01				CIA	40
Course Type: (Theory/Practical/Integrated)	Theory				ESE	60
L:T:P:C	1	0	0	1	Total Marks	100
Total Hours of Pedagogy	15				Exam Hours	3
Prerequisite	Nil					
பாடத்திட்டத்தின்நோக்கம் :						
பழந்தமிழரிடமிருந்தஅறம், இசை, கலைநுட்பம், வாணிபம், கட்டுமானம், மருத்துவம், வீரம், வாழ்வுமுறைஇவற்றைமாணவர்களுக்குஉணர்த்துவது.						
Course Outcomes					Cognitive Level	Weightage of COs in ESE
CO1	தமிழ்மொழியின்தொன்மை, பகுத்துண்டுவாழ்தல், மேலாளருக்கானதகுதிகள்,மாணவர்களின்தனித்திறனைவளர்த்தல்.				R	20%
CO2	பண்பாட்டுவிழுமியங்கள், மனிதவளம், நம்பிக்கைகள்ஆகியவற்றைஅறிதல்.				U	20%
CO3	குழுமனப்பான்மை, கலைநுட்பங்கள், இசைவடிவங்களைஅறிதல்.				U	20%
CO4	வாணிபத்தொடர்பு, ஒழுக்ககோட்பாடுகள், சமூகத்தொடர்புஇவற்றைஅறிதல்.				R	20%
CO5	பழந்தமிழரின்வீரம், மருத்துவமுறைகள், தமிழ்பிராமியஎழுத்துவடிவங்கள்ஆகியவற்றைஅறிதல்.				An	20%

அலகு1 – மொழி மற்றும் இலக்கியம்	3
திராவிடமொழிகள் – தமிழ்ஒருசெம்மொழி – சங்கஇலக்கியத்தின்சமயச்சார்பற்றதன்மை – சங்கஇலக்கியத்தில்கிர்தல்அறம்–திருக்குறளில்மேலாண்மைகருத்துக்கள் – இக்காலஇலக்கியங்கள்	
அலகு 2 –பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை	3
நடுகல் முதல் நவீன சிற்பங்கள் வரை–பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள் – தேர்–குமரி முனையில் திருவள்ளுவர் சிலை – இசைக்கருவிகள்–தமிழர்களின் சமூக பொருளாதார வாழ்வில் கோவில்களின் பங்கு	
அலகு 3 –நாட்டுப்புறக் கலைகள் மற்றும் வீரவிளையாட்டுகள்.	3
தெருக்கூத்து – கரகாட்டம் – வில்லுப்பாட்டு – ஒயிலாட்டம்–தோல்பாவைகூத்து - சிலம்பாட்டம் – வளரி–தமிழர்களின்விளையாட்டுகள்	
அலகு 4 –தமிழர்களின் திணைக் கோட்பாடுகள்	3

தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள்-சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும் கல்வியும்-சங்ககாலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி-கடல்கடந்த நாடுகளில் சோழர்களின் வெற்றி	
அலகு 5 –இந்தியதேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு.	3
இந்திய விடுதலைப் போரில் தமிழர்களின் பங்கு – சுயமரியாதை இயக்கம் – இந்தியமருத்துவத்தில் சித்தமருத்துவத்தின் பங்கு – கல்வெட்டுக்கள் – ஓலைச்சுவடிகள்	
TOTAL(L:15)	

Suggested Learning Resources
Text Books – CUM- Reference Books 1. கே.கே.பிள்ளை-தமிழக வரலாறு-மக்களும் பண்பாடும்-வெளியீடு தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம். 2. முனைவர் இல.சுந்தரம் - கணினித்தமிழ்-விகடன்பிரசுரம் 3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம்- தொல்லியல் துறை வெளியீடு 4. பொருளை-ஆற்றங்கரை நாகரிகம்-தொல்லியல் துறை வெளியீடு 5. Dr.K.K.Pillay - Social life of Tamils, A join publication of TNTB & ESC and RMRL - (in print) 6. Dr.K.K.Pillay - Studies in the History of India with special reference to Tamil Nadu.(Published by: The Author) 7. Keeladi – ‘Sangam City Civilization on the Banks of River Vaigai’ (Jointly published by : Department of Archaeology & Tamil Nadu Text Book and Educational Service Corporation, Tamilnadu) 8. Dr. S. V. Subrahmanian, Dr.K.D. Thirunavvukarasu - Historical Heritage of Tamils - Published by : International Institute of Tamil Studies



C PROGRAMMING							
(Common to AI&DS, IT, CSE, CSE(CS), CSE(IoT), ECE,EEE and BME Branches)							
Course Code:		26CSC01				CIA	40
Course Type: (Theory/Practical/Integrated)		Theory				ESE	60
L:T:P:C		3	0	0	3	Total Marks	100
Total Hours of Pedagogy		45				Exam Hours	3
Prerequisites		Nil					
Course Objective							
To provide students with a strong foundation in computational thinking and structured programming for solving engineering problems.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply computational thinking principles and fundamental concepts of C programming to develop simple programs.					Ap	20%
CO 2	Implement decision-making and looping constructs in C to solve computational problems.					Ap	20%
CO 3	Apply knowledge of arrays and pointers for data storage and manipulation.					Ap	20%
CO 4	Develop modular programs using functions, recursion, and strings.					Ap	20%
CO 5	Apply the use of structures, file handling and dynamic memory allocation in C programs.					Ap	20%

Mapping of Cos with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3	3			3							3	
CO 2	3	3			3							3	3
CO 3	3	2			3							3	3
CO 4	3	3	3		3						3	3	3
CO 5	3	3	2	2	3						3	3	3
CO (W.A)	3	2.8	2.5	2	3						3	3	3

UNIT- I : COMPUTATIONAL THINKING AND INTRODUCTION TO C PROGRAMMING	9
Computational Thinking and Problem Solving – Problem Definition and Analysis – Steps in Problem Solving – Characteristics of an Algorithm – Algorithms and Pseudo code – Flowchart Representation with Examples – Introduction to C Programming – Features and Applications of C – Structure of a C Program – Compilation and Execution Process – Types of Errors – Tokens – Character Set – Keywords – Identifiers – Data Types – Constants and Variables – Input and Output Statements – Type Conversion and Type Casting – Operators and Expressions.	
UNIT - II : DECISION CONTROL AND LOOPING STATEMENTS	9
Decision Making Statements – if Statement – if-else Statement – Nested if-else Statement – else-if Ladder – switch Statement – Looping Constructs: while Loop – do-while Loop – for Loop – Nested Loops – Jump Statements: break, continue and goto – Simple Programs using Control Structures.	
UNIT - III : ARRAYS AND POINTERS	9
Arrays – One Dimensional Arrays – Two Dimensional Arrays – Multidimensional Arrays – Array Operations and Applications – Introduction to Pointers – Pointer Declaration and Initialization – Types of Pointers – Pointer Arithmetic – Relationship between Arrays and Pointers – Array of Pointers – Pointer to Pointer.	
UNIT - IV : STRINGS AND FUNCTIONS	9
Strings – String Handling Functions – User Defined Functions – Function Declaration and Definition – Function Prototypes – Function Call Mechanism – Passing Arguments to Functions – Passing Arrays and Pointers to Functions – Recursive Functions – Scope and Lifetime of Variables – Storage Classes.	
UNIT - V : STRUCTURES, UNION AND FILES	9
Structures – Defining and Accessing Structures – Array of Structures – Nested Structures – Pointers to Structures – Unions– File Handling: Text and Binary Files – File Operations: open, read, write, append and close – Dynamic Memory Allocation using malloc(), calloc(), realloc() and free().	
Total (L : 45)	

Suggested Learning Resources

Text Books :

1. E. Balagurusamy, "Programming in ANSI C", 9th Edition, McGraw Hill, 2024.
2. Ashok N. Kamthane and Amit Ashok Kamthane, "Programming in C", 4th Edition, Pearson Education, 2025.

Reference Books:

1. S. Sridhar, S. S. Sridhar and V. M. Hariharan, "Problem Solving and Programming in C: A Computational Thinking Approach", 1st Edition, Pearson Education, 2025.
2. Yashavant Kanetkar, "Let Us C", 20th Edition, BPB Publications, 2025.
3. Stephen G. Kochan, "Programming in C", 5th Edition, Pearson Education, 2024.
4. Behrouz A. Forouzan and Hamidreza Afyouni, "Computer Science: A Structured Programming Approach in C", 4th Edition, Cengage Learning, 2023.
5. Noel Kalicharan, "Learn to Program with C: An Introduction to Programming Using the C Language", Apress, 2022.



Engineering Graphics							
(Common to BME and ECE)							
Course Code:	26MEC02				CIE	60	
Course Type: (Theory/Practical/Integrated)	Integrated				ESE	40	
L:T:P:C	1	0	4	3	Total Marks	100	
Total Hours of Pedagogy	75 (L :15 + P :60)				Exam Hours	3 Hrs	
Pre-requisites	Nil						
Course Objectives							
• To Impart engineering drawing standards and construct plane curves for industrial use. • To solve multi-view projection problems of lines and planes as per BIS standards. • To visualize and project 3D solids onto principal planes using systematic methods. • To interpret sectional views and develop surface layouts for manufacturing applications. • To utilize AutoCAD 2D for precision dimensioning, isometric drawing and GD&T notation.							
Course Outcomes					Cognitive Level	Weightage of COs in ESE	
The students will be able to							
CO 1	Apply engineering drawing standards to construct 2D plane curves and conic sections by using Modeling Software.				Ap	20 %	
CO 2	Solve projection problems of points, lines and planes using first angle projection by using Modeling Software.				Ap	20 %	
CO 3	Visualize and construct projections of simple solids inclined to principal planes by using Modeling Software.				An	20 %	
CO 4	Interpret sectional views and develop lateral surfaces of solids for manufacturing applications by using Modeling Software.				An	20 %	
CO 5	Utilize Modeling 2D to create isometric drawings and apply GD&T notation as per BIS/ISO standards.				Ap	20 %	

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3	3	2		3			2	2		1		
CO 2	3	3	2		3			2	2		1		
CO 3	3	3	2		3			2	2		1		
CO 4	3	3	2		3			2	2		1		
CO 5	3	3	2		3			2	2		1		
CO (W.A)	3	3	2		3			2	2		1		

Unit- I :PLANE CURVES	3 + 12
Basic geometrical constructions, curves used in engineering practices - conics - construction of ellipse, Parabola and hyperbola by eccentricity method.	
UNIT - II: PROJECTION OF LINES AND PLANES	3 + 12
Principal planes - first angle projection - projection of points - projection of straight lines (only first angle projections) inclined to both the principal planes - determination of true lengths and true inclinations by rotating line method - projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method.	
Unit- III: PROJECTION OF SOLIDS	3 + 12
Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to anyone of the principal plane and parallel to another by rotating object method.	
Unit- IV : SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES	3 + 12
Sectioning of solids (prism, cube, pyramid, cylinder and cone) in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other - obtaining true shape of section - development of lateral surfaces of simple solids - prisms, pyramids cylinder and cone.	
Unit- V :ORTHOGRAPHIC & ISOMETRIC PROJECTIONS	3 + 12
Introduction to theory of projection – principle of first angle orthographic projection – layout of views (front, top and side) – orthographic views from given isometric views of simple objects. Isometric projection of prism, pyramid, cone and cylinder.	

List of Experiments:
1. Drawing of ellipse/ parabola / hyperbola by eccentricity method. 2. Projection straight lines inclined to HP and VP. 3. Determination of true length and true inclination of straight lines by rotating line method. 4. Projection of polygonal / circular plane surface inclined to both the principal planes. 5. Projection of simple solids such as prism / pyramid / cylinder / cone with axis inclined to any one principal plane. 6. Drawing the true shape of sections obtained from sectioned solids. 7. Development of lateral surfaces of prism / pyramid / cylinder / cone. 8. Projection of orthographic views of the given isometric view of the objects.
Total :L :15 + P :60 = 75

Suggested Learning Resources

Text Books:

1. K.Venugopal and V.Prabhu Raja, "Engineering Graphics", New Age International (P) Limited, 2022.
2. N.S. Parthasarathy and Vela Murali, "Engineering Drawing", Oxford University Press, 2015.

Reference Books:

1. N.D.Bhatt and V.M.Panchal, "Engineering Drawing", Charotar Publishing House, 53rd Edition, 2014.
2. K.R.Gopalakrishna., "Computer Aided Engineering Drawing" (Vol I and II combined) Subhas Stores, Bangalore, 2017.
3. K. V.Natarajan, "A text book of Engineering Graphics", Dhanalakshmi Publishers, Chennai, 2018.
4. Luzzader, Warren.J., and Duff, John M, "Fundamentals of Engineering Drawing with an introduction to Interactive Computer Graphics for Design and Production", Eastern Economy Edition, Prentice Hall of India Pvt Ltd, New Delhi, 2005.
5. M.B.Shah and B.C.Rana, "Engineering Drawing", Pearson, 2nd Edition, 2009.



Basics of Electronics and Electrical Engineering (Common to BME and ECE)			
Course Code:	26ECC01	CIE	50
Course Type: (Theory/Practical/Integrated)	Integrated	ESE	50
L:T:P:C	3:0:2:4	Total Marks	100
Total Hours of Pedagogy	75	Exam Hours	3
Pre-requisites	-	Credits	4
Course Objectives			
- To provide fundamental knowledge of electrical machines such as DC machines and transformers, including their construction, operating principles and applications. - To introduce basic semiconductor devices including diodes, transistors and special electronic devices and understand their characteristics and applications in electronic circuits.			
Course Outcomes		Cognitive Level	Weightage of COs in ESE
CO 1	Demonstrate the principles and equations of DC machines to determine the performance of DC generators and DC motors for engineering applications.	Ap	20%
CO 2	Use transformer equations and equivalent circuit concepts to evaluate the performance, efficiency, and voltage regulation of single-phase transformers.	Ap	20%
CO 3	Analyze the characteristics of PN junction diodes to determine the performance of half-wave, full-wave, and bridge rectifier circuits.	Ap	20%
CO 4	Illustrate the operation of BJTs and FETs by interpreting their characteristics and transistor configurations in electronic circuits.	Ap	20%
CO 5	Select suitable special semiconductor devices based on their operating characteristics for practical electronic applications.	Ap	20%

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	2											2	
CO 2		2										2	
CO 3		2										2	
CO 4		3										2	
CO 5	3											2	
CO (W.A)	2.5	2.3										2	

UNIT I - D.C. MACHINES	(9)
Introduction to DC Machines, DC Generators: Constructional details – Principle of operation – EMF Equation – Applications – DC Motor: Constructional details – Principle of operation – Torque Equation – Applications.	
UNIT II - TRANSFORMERS	(9)
Single phase Transformers: Constructional details – Principle of operation – EMF Equation – Transformation ratio – Equivalent circuit – Efficiency and Voltage Regulation – Applications.	
UNIT III - PN DIODE AND ITS APPLICATIONS	(9)
PN junction diode – Working principle – VI characteristics – PN diode currents – Drift and Diffusion current - Rectifier: Half wave, Full wave and Bridge rectifier.	
UNIT IV – BJT AND FET	(9)
NPN and PNP transistors – Current equations – Input and Output characteristics of CE, CB, CC Configurations, JFET – Drain and Transfer Characteristics - MOSFET – Characteristics.	
UNIT V – SPECIAL DIODES	(9)
Zener diode, Varactor diode, Tunnel diode, PIN diode, LED, Photo diode, LDR and Solar cell.	

List of Experiments:	30 Hours
1. Study of Electrical Machines and Transformers 2. Plot the V-I Characteristics of PN Junction Diode and Zener Diode. 3. Plot the Input-Output characteristics of Common Base and common Emitter configuration. 4. Plot the Drain and Transfer Characteristics of FET. 5. Plot the V-I Characteristics of LED.	

Suggested Learning Resources
Text Books :
1. Kothari DP and I.J.Nagrath, “Basic Electrical and Electronics Engineering”, 2nd Edition, McGraw Hill Education, 2020. 2. S.K. Bhattacharya, “Basic Electrical and Electronics Engineering”, Pearson Education, Second Edition, 2018.
Reference Books:
1. Robert L. Boylestad, Louis Nashelsky, “Electronic Devices and Circuit Theory”, 2nd ed., Pearson Education, 2019. 2. David A. Bell, “Electronic Devices and Circuits”, Oxford University Press, Fifth Edition, 2008.



ENGLISH COMMUNICATION LAB (Common to all branches)							
Course Code:		26EYP01				CIA	60
Course Type: (Theory/Practical/Integrated)		Practical				ESE	40
L:T:P:C		0	0	4	2	Total Marks	100
Total Hours of Pedagogy		60				Exam Hours	3
Prerequisite		Nil					
Course Objectives							
1. Apply listening, speaking, reading, and writing skills in professional communication contexts. 2. Express ideas effectively in real-world professional scenarios using integrated LSRW skills.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Employ effective Communication in academic and professional environments.					Ap	20%
CO 2	Demonstrate improved listening, speaking, reading, and writing competencies.					Ap	20%
CO 3	Participate confidently in interpersonal, workplace, and group interactions.					Ap	20%
CO 4	Apply digital and AI-assisted tools for professional communication tasks.					Ap	20%
CO 5	Develop ideas clearly and perform effectively in real-world communication scenarios.					C	20%

Mapping of Cos with POs / PSOs													
COs	Pos											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1								2	3	-	2		
CO 2								2	3	-	2		
CO 3								2	3	-	2		
CO 4								2	3	-	2		
CO 5								2	3	-	2		
CO (W.A)								2	3	-	2		

Module - I :COMMUNICATION FOUNDATIONS	12
Grammar –Adjectives - Listening -Audio-Based Diagram Interpretation and Labelling – Speaking - Structured Self-Introduction– Reading -Reading and Interpreting Motivational and Inspirational Passages – Writing -Drafting Formal Permission Letters (Industrial Visit / In-Plant Training Requests)	
Module - II :PROFESSIONAL CORRESPONDENCE	12
Grammar –Verbs- Listening - Listening to Iconic Speeches and Transcript Preparation – Speaking -Flash Speak (JAM – Just A Minute) – Reading -Critical Reading of Newspaper Editorials – Writing -Professional E-mail Writing	
Module - III :COMMUNICATION IN PRACTICE	12
Grammar –Tenses- Listening -Audio-Visual News Analysis and Reporting English Marathon – 30 Day Speaking Challenge – Speaking - Engineering Problem Identification and Solution Presentation– Reading – Inferential and Analytical Reading Practice– Writing -Writing Instructions and Procedural Guideline	
Module - IV :INTERPERSONAL COMMUNICATION	12
Grammar –WH and Yes/No Questions - Listening - Listening for Specific Information – Gap Filling Activities – Speaking - Role Play for Workplace and Real-Life Situations– Reading - Cloze Reading for Language Accuracy and Contextual Understanding – Writing -Developing Hints into Structured Paragraphs	
Module - V : PROFESSIONAL PRESENTATION SKILLS	12
Grammar –Discourse Markers- Listening -Listening to TED Talks and Expert Presentations - Note-Making and Idea Summarization – Speaking –Elevator Pitch - Professional Storytelling Techniques – Reading - Visual Interpretation and Information Analysis - Reading Infographics, Charts, and Visual Data – Writing - Engineering Process Description.	
Total (P : 60)	

Suggested Learning Resources
Text Books : 1. Meenakshi Raman and Sangeeta Sharma. "Professional Communication", Oxford University Press, 2023. 2. Rizvi M. Ashraf. "Effective Technical Communication", McGraw Hill Education (India) Pvt. Ltd., 2021.
Reference Books:
1. Guffey Mary Ellen and Loewy Dana. "Essentials of Business Communication", Cengage Learning, 2023. 2. Raman M. and Sharma S. "Technical Communication: Principles and Practice", Oxford University

Press, 2022.

3. Murphy Raymond. "English Grammar in Use", Cambridge University Press, 2022.
4. Butterfield Jeff. "Soft Skills for Everyone", Cengage Learning, 2021.
5. TyagiKavita and Misra Padma. "Advanced Technical Communication", PHI Learning Pvt. Ltd., 2020.



C PROGRAMMING LABORATORY							
(Common to AI&DS, IT, CSE, CSE(CS), CSE(IoT), ECE,EEE and BME Branches)							
Course Code:		26CSP01				CIA	60
Course Type: (Theory/Practical/Integrated)		Practical				ESE	40
L:T:P:C		0	0	3	1.5	Total Marks	100
Total Hours of Pedagogy		45				Exam Hours	3
Prerequisites		Nil					
Course Objective							
To develop programming skills in C by implementing programs based on fundamental concepts and constructs of the language.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Develop simple C programs using basic programming constructs, input/output statements, operators, and type conversion.					Ap	20%
CO 2	Implement decision-making and looping constructs to solve computational problems effectively.					Ap	20%
CO 3	Apply arrays and pointers for efficient data storage and memory manipulation.					Ap	20%
CO 4	Develop modular C programs using string handling techniques and functions, recursion.					Ap	20%
CO 5	Apply structures, unions, file handling and dynamic memory allocation to solve real-world problems.					Ap	20%

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3	3			3							3	3
CO 2	3	3			3							3	3
CO 3	3	2			3							3	3
CO 4	3	3	3		3					3		3	3
CO 5	3	3	3		3					3		3	3
CO (W.A)	3	2.8	3		3					3		3	3

List of Experiments:

1. Programs to perform formatted input/output operations, arithmetic operations, operators, expressions and type conversion.
2. Programs to demonstrate the usage of decision-making statements.
3. Programs to demonstrate the various looping statements.
4. Programs to perform operations using one-dimensional and two-dimensional arrays.
5. Programs to demonstrate pointer operations and array manipulation using pointers.
6. Program to perform string operations.
7. Programs to demonstrate user-defined functions, parameter passing, and recursion.
8. Programs to demonstrate the use of structures and unions.
9. Programs for reading and writing data in text and binary files.
10. Programs to demonstrate dynamic memory allocation.

Total (P : 45)

Hardware / Software

Hardware Requirements

Computer/Desktop with 4 GB RAM or above
Intel Core i3 Processor or equivalent

Software Requirements

C Compiler (GCC / Turbo C or equivalent)
Operating System: Windows/Linux



Makerspace (Product Design and Manufacturing Laboratory)							
(Common to All Branches)							
Course Code:		26GEP02			CIA		100
Course Type: (Theory/Practical/Integrated)		Practical			ESE		-
L:T:P:C		0	0	4	2	Total Marks	100
Total Hours of Pedagogy		60			Exam Hours		-
Pre-requisites		Nil					
Course Objectives							
To apply the basic knowledge of Computer-Aided Design (CAD), manufacturing processes, and 3D printing technology to develop a functional prototype model through hands-on practice.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
The students will be able to							
CO 1	Sketch and develop basic component designs from innovative ideas.					Ap	-
CO 2	Develop 3D CAD models for digital prototyping.					Ap	-
CO 3	Operate basic fabrication tools and equipment safely to develop simple prototype components.					Ap	-
CO 4	Perform machining and manufacturing operations to produce prototype parts with specified dimensions.					Ap	-
CO 5	Fabricate and assemble components to produce functional prototype models.					Ap	-

Mapping of Cos with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3		3		2			2			2		
CO 2	3		3		3			2			2		
CO 3	2		3		2			2		2	2		
CO 4	3		3		2			2		2	2		
CO 5	2		3		2			3	3	2	2		
CO (W.A)	2.6		3		2.2			2.2	3	2	2		

List of Experiments:

PART A – Product Design Lab

1. Select a simple product idea.
2. Prepare freehand sketches (top, front, and side views) with component detailing.
3. Develop 3D CAD models of the components using CAD software.
4. Convert the CAD model to STL format and perform engineering analysis.
5. Fabricate the component using a 3D printer.
6. Perform post-processing to improve the quality, appearance, and functionality of the printed component.

PART B – Manufacturing Lab

1. Product Ideation and Design.
 - Select a simple innovative product.
 - Prepare freehand sketches with component detailing.
2. Manufacturing of Components.
 - Prepare a simple process plan and select suitable materials.
 - Manufacture components using appropriate workshop machines (CO₂ laser cutter, CNC wood router, lathe-cum-milling machine, and power tools).
3. Joining and Assembly.
 - Join the components using suitable joining processes (welding, riveting, or adhesive bonding).
 - Assemble the components into a functional product.
4. Testing and Evaluation.
 - Perform basic performance evaluation.
 - Conduct functional testing of the assembled product.

Total = P : 60

Suggested Learning Resources

Text Books:

- 1) Wang, W. (2010). Reverse engineering: Mechanisms, structures, systems & materials. CRC Press.
- 2) Stephen Christena, Learn to Weld: Beginning MIG Welding and Metal Fabrication Basics, Crestline Books, 2014.
- 3) H. Lipson, Fabricated - The New World of 3D Printing, Wiley, 1st edition, 2013.

Reference Books:

1) Makerspace (Product Design and Manufacturing Laboratory Manual)

Software:

1) Fusion 360



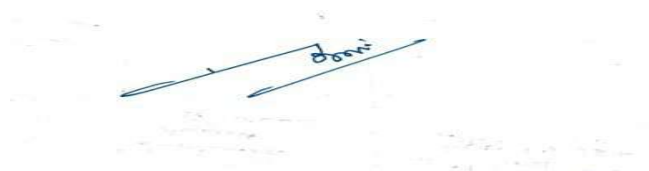
YOGA FOR YOUTH EMPOWERMENT (Common to All Branches)							
Course Code:	26GYP01				CIA	100	
Course Type: (Theory/Practical/Integrated)	Practical				ESE	-	
L:T:P:C	0	0	2	1	Total Marks	100	
Total Hours of Pedagogy	30				Exam Hours	-	
Prerequisite	Nil						
Course Objectives							
3. To develop students' character and ethical values through value-based education. 4. To apply yogic principles and healthy lifestyle practices to enhance physical well-being and maintain youthfulness.							
Course Outcomes The students will be able to					Cognitive Level	Weightage of COs in ESE	
CO 1	Apply yoga and physical exercises for a healthy life.				Ap	Internal Assessment	
CO 2	Explain the principles of Kayakalpa for maintaining health and youthfulness.				U		
CO 3	Practice meditation techniques for mental well-being.				Ap		
CO 4	Demonstrate individual and social values in daily life.				Ap		
CO 5	Analyze the importance of introspection and moral values for personal development				An		

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1						2	1				2		
CO 2										2	3		
CO 3						2	1	2			3		
CO 4						2	2	3	2	2	3		
CO 5										2	3		
CO (W.A)						2	1	2	1	2	3		

Unit- I : Physical Health	6
Sky – Introduction – Education as a means for Youth Empowerment – Greatness of Education – Yoga for Youth Empowerment. Simplified Physical Exercise Explanation – Hand, Leg, Breathing and Eye exercises – Kapalabathi, Makarasanam, Massaging, Acupressure and Relaxation practices – Benefits, Pranayamam: Nadi Saddhi – Clearance – Explanation Benefits.	
Unit- II : Strengthening Life Force	6
Reasons for Diseases: Natural Reasons – Artificial Reasons, Philosophy of Kayakalpa – Physical Body – Serminal Fluid – Life Force – Biomagnetism – Mind, Maintaining Youthfulness – Postponing Aging – Transformation of food into Seven Body Constitutes Greatness of Serminal fluid, Limit and method in five factors - Managing infatuation, Kayakalpa Practice – Toning up of nerves – Ojas Breathing – Benefits.	
Unit- III : Wellness of Mind	6
Classification of mind waves – Agna Meditation - Benefits, Shanthi meditation – Benefits, Thuriya meditation – Benefits. Blessing and its benefits : Auto suggestion – Blessing the family and others – Blessing the World – Divine Protection.	
Unit- IV : Virtues : Individual virtues	6
Self Control – Self Confidence – Speaking truth, Contentment - Humility – Mind Control., Tolerance – Adjustment – Sacrifice – Forgiveness, Cleanliness - External, Mental, Inner Cleanliness. Societal Virtues: Ahimsa – Service, Patriotism – Equality, Respecting the parents and elders – Caring for them – Respecting Teachers, Punctuality – Time management.	
Unit- V : Morals	6
Importance of Introspection : I and Mine, Six temperaments: Greed – Anger – Miserliness – Immoral Sexual Passion – Inferior Superior Complex – Vengeance, Manovering the Six Temperaments: Contentment – Tolerance - Charity – Parity – Forgiveness, Five important Benefits of Meditation, Perspicacity – Magnanimity – Adaptability – Receptivity – Creativity, Enhancing Memory – Effective Examination Preparation.	
Total (P : 30)	

Web links and Video Lectures (e-Resources):

www.vethathiri.edu.in



TRANSFORMS, PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS (Common to BME & ECE Branches)							
Course Code:		26MYB04				CIA	40
Course Type: (Theory/Practical/Integrated)		Theory				ESE	60
L:T:P:C		3	1	0	4	Total Marks	100
Total Hours of Pedagogy		60				Exam Hours	3
Prerequisite		Nil					
Course Objectives							
1. To provide knowledge of Fourier series, Fourier transforms, Z-transforms, and difference equations for the analysis of continuous and discrete systems. 2. To develop the ability to solve partial differential equations and apply transform techniques to model and analyze engineering problems in signal processing and communication systems.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply Fourier series techniques to represent periodic functions and signals.					Ap	20%
CO 2	Apply Fourier transforms to solve signal processing and communication problems.					Ap	20%
CO 3	Compute difference equations using Z-transform methods.					Ap	20%
CO 4	Solve partial differential equations using standard analytical techniques.					Ap	20%
CO 5	Analyze analytic functions using Cauchy's theorems, series expansions, and residue theorem for evaluating complex integrals.					An	20%

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3				2						2		
CO 2	3				2						2		
CO 3	3				2						2		
CO 4	3				2						2		
CO 5		3			2						2		
CO (W.A)	3	3			2						2		

Unit- I : Fourier Series	(9+3)
Dirichlet's conditions – General Fourier series – Odd and even functions – Half-range Sine and Cosine series – Parseval's identity – Harmonic Analysis	
Unit- II : Fourier Transform	(9+3)
Fourier integral theorem – Fourier transform pair - Fourier sine and cosine transforms – Properties – Transform of elementary functions - Convolution theorem (without proof) – Parseval's identity.	
Unit- III : Z – Transform and Difference Equations	(9+3)
Z-transform – Elementary properties – Inverse Z-transform – Convolution theorem – Initial and final value theorems – Formation of difference equation – Solution of difference equation using Z- transform.	
Unit- IV : Partial Differential Equations	(9+3)
Formulation of partial differential equations by eliminating arbitrary constants and functions – Lagrange's linear equations – Solution of homogeneous linear partial differential equation of higher order with constant coefficient of homogeneous types.	
Unit- V : Complex Analysis	(9+3)
Analytic functions – Necessary and sufficient conditions for analyticity in Cartesian coordinates –Cauchy's integral theorem–Cauchy's integral formula–Taylor's and Laurent's series –Residues–Cauchy Residue theorem.	
Total (L:45+T:15)	

Suggested Learning Resources
Text Books :
1. James Ward Brown and Ruel V. Churchill, Complex Variables and Applications, 9th Edition, McGraw Hill Education, New York, 2014. 2. R. K. Jain and S. R. K. Iyengar , Transforms and Partial Differential Equations , Narosa Publishing House, 5th Edition, 2021.
Reference Books:
1. Erwin Kreyszig, Advanced Engineering Mathematics ,Wiley India, 11th Edition, 2025. 2. P. Kandasamy, K. Thilagavathy and K. Gunavathi, Transforms and Partial Differential Equations, 3rd Edition, S. Chand & Company Ltd., New Delhi, 2013. 3. S. P. Gupta and R. S. Aggarwal, Mathematical Methods, Sultan Chand & Sons, Revised Edition, 2014. 4. Dennis G. Zill and Warren S. Wright , Advanced Engineering Mathematics, McGraw Hill Education, 6th Edition, 2018. 5. Lars V. Ahlfors, Complex Analysis, 3rd Edition, McGraw Hill Education, (AMS Chelsea Publishing), 2021.



MEDICAL PHYSICS							
Course Code:		26PYB02				CIA	40
Course Type: (Theory/Practical/Integrated)		Theory				ESE	60
L:T:P:C		3	0	0	3	Total Marks	100
Total Hours of Pedagogy		45				Exam Hours	3
Prerequisite		Nil					
Course Objectives							
1. To introduce the fundamentals of biophysics, biomaterials, biomechanics, medical electronics, biomedical sensors, fiber optics, and medical imaging techniques relevant to healthcare. 2. To familiarize students with radiation physics, therapeutic technologies, nanotechnology, quantum concepts, and emerging smart healthcare systems.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply the principles of biophysics and biomaterials in biomedical engineering applications.					Ap	20%
CO 2	Analyze semiconductor devices, biomedical sensors, and medical instrumentation used in healthcare systems.					An	20%
CO 3	Illustrate fiber optics and medical imaging techniques for diagnostic and communication applications.					Ap	20%
CO 4	Examine radiation physics and therapeutic techniques employed in modern medical treatments.					An	20%
CO 5	Implement nanotechnology, quantum concepts, AI, and smart healthcare technologies in biomedical systems.					Ap	20%

Mapping of Cos with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3	2											
CO 2	3	3		1			1						
CO 3	3	2											
CO 4	3	3	1										
CO 5	3	2					1						
CO (W.A)	3	2	1				1						

Unit- I : Low Energy Electromagnetic Spectrum and its Medical Application	9
Physics of light, Intensity of light, limits of vision and color vision an overview, Non-ionizing Electromagnetic Radiation: Overview of non-ionizing radiation effects-Tissue as a leaky dielectric-Low Frequency Effects- Higher frequency effects- Thermography– Application.	
Unit- II : Medical Electronics and Sensors	9
Semiconductor Physics for Biomedical Devices-Semiconductor basics and PN junction devices, Photodiodes, LEDs and biosensors, Optoelectronic devices in medicine. Biomedical Sensors- Temperature, pressure and blood flow sensors, ECG, EEG and EMG electrodes, Piezoelectric and MEMS sensors. Instrumentation-Signal acquisition and transducers, biomedical instrumentation basics	
Unit- III : Fiber Optics and Medical Imaging	9
Fiber Optics: Principle of optical fibers, Numerical aperture and optical losses, Fiber optic communication basics. Medical Imaging Techniques: X-ray physics and radiography, Ultrasonics and ultrasound imaging, MRI and CT scan principles. Fiber Optic Sensors: Endoscopy and minimally invasive diagnostics, Optical biosensors and medical probes.	
Unit- IV : Radiation Physics	9
Dose and Exposure measurements – Units (SI), Inverse square law, Maximum permissible exposure, relationship between the dosimetric quantities, Radiation biology – effects of radiation, concept of LD 50, Stochastic and Non-stochastic effects, Radiation Syndrome.	
Unit- V : Modern Physics and Emerging Biomedical Technologies	9
Nanotechnology in Medicine: Nano materials and nano particles, Drug delivery systems, Nano biosensors. Quantum and Computational Technologies: Basics of quantum computing concepts, AI and machine learning in healthcare, Biomedical data processing. Smart Healthcare Technologies: Internet of Medical Things (IoMT),Wearable and implantable devices, Smart diagnostic systems	
Total (L : 45)	

Suggested Learning Resources
Text Books : 1. Charles Kittel, (2012), Introduction to Solid State Physics, 8th Edition, Wiley India. . 2. R. S. Khandpur, (2020), Handbook of Biomedical Instrumentation, 4th Edition, McGraw Hill Education.
Reference Books: 1. G. B. Saha, (2013), Physics and Radiobiology of Nuclear Medicine, Springer. 2. Ehsan Samei and Donald J. Peck, (2019), Hendee's Physics of Medical Imaging, John Wiley & Sons Inc. 3. M. Maqbool, (2017), An Introduction to Medical Physics, Springer. 4. Ervin B. Podgoršak, (2016), Radiation Physics for Medical Physicists, Springer. 5. Sulabha K. Kulkarni, (2015), Nanotechnology: Principles and Practices, Springer.

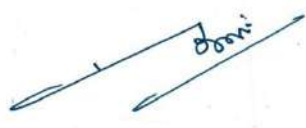
CLIMATE CHANGE AND SUSTAINABILITY (Common to All Branches)							
Course Code:		26CYB04			CIA		40
Course Type: (Theory/Practical/Integrated)		Theory			ESE		60
L:T:P:C		2	0	0	2	Total Marks	100
Total Hours of Pedagogy		30			Exam Hours		3
Prerequisite		NIL					
Course Objectives							
1. To develop students ability to analyze environmental systems, including resources, ecosystems, biodiversity, and pollution, and evaluate the impact of human activities. 2. To prepare students to design sustainable solutions using principles of conservation, environmental management, and environmental laws for addressing global and local challenges.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Evaluate natural resources and climate change impacts for sustainable conservation.					E	20%
CO 2	Examine ecosystem functions, biodiversity values and conservation strategies for ecological management.					An	20%
CO 3	Implement eco-friendly practices for pollution prevention and control.					Ap	20%
CO 4	Analyze sustainable energy and environmental management strategies for sustainable development.					An	20%
CO 5	Apply circular economy and green practices for environmental sustainability.					Ap	20%

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	2					2							
CO 2	2					2							
CO 3	2		2			2							
CO 4		2	2			2							
CO 5		2	2			2							
CO (W.A)	2	2	2			2							

UNIT- I : NATURAL RESOURCES AND CLIMATE CHANGE	6
Environment - scope and importance - Natural resources - forest resources - deforestation - causes - effects - control measures - mineral resources - environmental effects of extracting and using mineral resources - food resources - effects of modern agriculture - fertilizer - pesticide problems - role of an individual in conservation of natural resources - Climate change - causes - effects - control measures - importance and applications of AI in climate change.	
UNIT- II :ECOSYSTEM AND BIODIVERSITY	6
Ecosystem -structure and function of an ecosystem - forest ecosystem - food chains - food webs - Biodiversity - value of biodiversity - consumptive use values- productive use values - social values - ethical values - aesthetic values - hotspots of biodiversity - threats to biodiversity - habitat loss - poaching - conservation of biodiversity - In-situ - Ex-situ conservation of biodiversity - effects of climate change on ecosystem and biodiversity.	
UNIT- III : ENVIRONMENTAL POLLUTION	6
Pollution - causes - effects and control measures of air pollution - water pollution - ozone layer depletion - acid rain - solid waste management - methods of disposal of solid waste - land filling - incineration - composting - effects of climate change on environmental pollution.	
UNIT- IV : SUSTAINABILITY AND MANAGEMENT	6
Sustainable development - factors affecting development - sustainable energy techniques - hydrogen energy - solar energy - wind energy - GDP - types - nominal GDP - real GDP - components of GDP - expenditure approach - carbon credit - carbon footprint - sources – preventivemeasures - environmental management.	
UNIT- V : SUSTAINABILITY PRACTICES	6
Zero waste and R concept - circular economy concepts - green chemistry - principles - environmental impact assessment - carbon emission - sources - effects - control measures - Environmental laws and regulations - air act - water act - role of AI in sustainability practices.	
Total (L :30)	

Suggested Learning Resources
Text Books :
1. Dr. A.Ravikrishan, Environmental Science and Engineering, Sri Krishna Hitech Publishing Co. Pvt.Ltd., Chennai,15thEdition, 2023. 2. Anubha Kaushik and C. P. Kaushik's "Perspectives in Environmental Studies", 8th Edition, New Age International Publishers, 2025.
Reference Books:
1. Rajagopalan R, 'Environmental Studies-From Crisis to Cure', Oxford University Press, Fourth Edition, 2023. 2. Erach Bharucha "Textbook of Environmental Studies for Undergraduate Courses" Orient Blackswan Pvt. Ltd. 2025.

3. G. Tyler Miller Jr. and Scott Spoolman, Environmental Science, 17th Edition, Cengage Learning, Boston, 2024.
4. Bala Krishnamoorthy, Environmental Management: Text and Cases, 2nd Edition, PHI Learning Pvt. Ltd., New Delhi, 2023.
5. Paul T. Anastas and John C. Warner, Green Chemistry: Theory and Practice, Oxford University Press, New York, Reprint Edition, 2023.



தமிழரும் தொழில்நுட்பமும்- TAMILS AND TECHNOLOGY
(Common to All Branches)

Course Code:	26GYA02				CIA	40
Course Type: (Theory/Practical/Integrated)	Theory				ESE	60
L:T:P:C	1	0	0	1	Total Marks	100
Total Hours of Pedagogy	15				Exam Hours	3
Prerequisite	Heritage of Tamils					

பாடத்திட்டத்தின்நோக்கம்

1. பழந்தமிழிடமிருந்த அறிவியல் தொழில்நுட்பங்களை மாணவர்களுக்கு உரைத்தல்.

Course Outcomes		Cognitive Level	Weightage of COs in ESE
CO 1	நூல்நூற்றல், சாயமிடல், பானைவனைதல், தமிழ்பிராமிஎழுத்துவடிவங்களைமாணவர்களுக்குஉணர்த்துதல்.	An	20%
CO 2	வீடு, கோவில், கட்டுமானவடிவமைப்பு, காலந்தோறும்மாறிவரும்நுட்பங்களைஅறிதல்.	U	20%
CO 3	இரும்புபயன்பாடு, நாணயவடிவமைப்பு, மணிஉருவாக்குதலின்தொழில்நுட்பங்களைஅறிதல்.	U	20%
CO 4	நீர்மேலாண்மை, பயிர்சாகுபடி, கடல்வளம்உணர்த்தல்.	R	20%
CO 5	தமிழ்மொழியைகணினிவழிபயன்படுத்தும்தகைகளைதெரிந்துகொள்ளுதல்.	U	20%

அலகு 1 நெசவுமற்றும்பாணைத்தொழில்நுட்பம்	3
நெசவுத்தொழில்-பாணைத்தொழில்நுட்பம்-கருப்புசிவப்புபண்டங்கள் - பாண்டங்களில்கீறல்குறியீடுகள்	
அலகு 2 வடிவமைப்புமற்றும்கட்டிடத்தொழில்நுட்பம்	3
சங்ககாலத்தில்வடிவமைப்புமற்றும்கட்டுமானங்கள் - சிலப்பதிகாரத்தில்மேடைஅமைப்பு- மாமல்லபுரம்சிற்பங்களும்கோவில்களும்-தஞ்சைபெரியகோயில்-மதுரைமீனாட்சிஅம்மன்ஆலயம் - செட்டிநாட்டுவீடுகள்-சென்னையில்இந்தோசாரோசெனிக்கட்டிடக்கலை	
அலகு 3 உற்பத்தித்தொழில்நுட்பம்	3
கப்பல்கட்டும்கலை-இரும்புஉருக்குதல்-நாணயங்கள்அச்சடித்தல் - கல்மணிகள், கண்ணாடிமணிகள், சுடுமண்மணிகள், சங்குமணிகள்-தொல்லியல்	
அலகு 4 வேளாண்மைமற்றும்நீர்பாசனத்தொழில்நுட்பம்	3
கல்லணை - சோழர்காலகுமிழித்தூம்பு - வேளாண்மைமற்றும்வேளாண்மைசார்ந்தசெயல்பாடுகள்- கடல்சார்அறிவு - முத்துக்குளித்தல்	

அலகு 5 அறிவியல்தமிழ்மற்றும்கணினித்தமிழ்	3
அறிவியல்தமிழின்வளர்ச்சி-தமிழ்மென்பொருட்கள்உருவாக்கம்-தமிழ்மின்னூலகம்- இணையத்தில்தமிழ்அகராதிகள்-சொற்குவைத்திட்டம் – தமிழும்செயற்கைநுண்ணறிவும்	
TOTAL(L:15)	

Suggested Learning Resources
Text Books – CUM- Reference Books 1. கே.கே.பிள்ளை-தமிழகவரலாறு – மக்களும்பண்பாடும்- வெளியீடு : தமிழ்நாடுபாடநூல் மற்றும் கல்வியியல் பணிகள்கழகம் 2. முனைவர் இல.சுந்தரம்-கணினித்தமிழ்- விகடன்பிரசுரம் 3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம்-தொல்லியல்துறை வெளியீடு- 4. பொருநை – ஆற்றங்கரை நாகரிகம்-தொல்லியல்துறை வெளியீடு 5. Dr.K.K.Pillay - Social life of Tamils, A join publication of TNTB & ESC and RMRL - (in print) 6. Dr.K.K.Pillay - Studies in the History of India with special reference to Tamil Nadu.(Published by: The Author) 7. Keeladi – ‘Sangam City Civilization on the Banks of River Vaigai’ (Jointly published by : Departmental Archaeology& Tamil Nadu text book and Educational Service Corporation, Tamilnadu) 8. Dr. S. V. Subrahmanian, Dr.K.D. Thirunavvukarasu - Historical Heritage of Tamils - Published by : International Institute of Tamil Studies 9. Dr. K.S. Kuppusamy, A I Vasiyak kalai – Zero Degree Publishing, 2025.

சுனி

DATA STRUCTURES							
(Common to AI&DS, IT, CSE, CSE(CS), CSE(IoT), ECE,EEE and BME Branches)							
Course Code:		26CSC02			CIA		40
Course Type: (Theory/Practical/Integrated)		Theory			ESE		60
L:T:P:C		3	0	0	3	Total Marks	100
Total Hours of Pedagogy		45			Exam Hours		3
Prerequisites		Nil					
Course Objective							
To provide knowledge of linear and non-linear data structures and their applications in problem solving.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply the concepts of Abstract Data Types (ADT) and implement linear data structures for solving computational problems.					Ap	20%
CO 2	Implement linear data structures such as linked lists, stacks, queues, and hashing techniques.					Ap	20%
CO 3	Apply tree-based data structures and heap operations to solve computational problems.					Ap	20%
CO 4	Apply trie structures and hashing techniques for efficient data storage and retrieval.					Ap	20%
CO 5	Apply graph traversal algorithms and their applications to solve computational problems.					Ap	20%

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3	2	2								2	3	2
CO 2	3	3	2		2						2	3	3
CO 3	3	3	3	2	2						2	3	3
CO 4	2	3	3	2	3						2	2	3
CO 5	3	3	3	2	3						3	3	3
CO (W.A)	2.8	2.8	2.6	2	2.5						2.2	2.8	2.8

Unit- I : FOUNDATIONS OF DATA STRUCTURES AND LINEAR LISTS	9
Abstract Data Types (ADT) - Basic concept of Data Structures - Array-based implementation - Linked list implementation - Singly, Doubly, Circular linked lists - Applications of lists - Polynomial ADT.	
Unit- II : STACKS AND QUEUES	9
Stack ADT – Operations and Applications – Balancing Symbols – Expression Evaluation – Infix to Postfix Conversion – Function Calls and Recursion – Queue ADT – Array-based Queue – Linked Queue – Circular Queue – Double-ended Queue (Deque).	
Unit- III : TREES	9
Tree ADT – Tree Traversals - Binary Tree ADT – Expression trees – Binary Search Tree ADT – AVL Trees – Priority Queue (Heaps) – Binary Heap.	
Unit- IV : TRIES AND HASHING	9
Tries: Standard Tries, Compressed Tries, Binary Tries– Introduction to Hashing – Hash Functions – Collision Resolution Techniques: Separate Chaining and Open Addressing – Applications of Hashing.	
Unit- V : GRAPHS	9
Definitions – Representation of Graphs – Types of Graph – Graph Traversal: Depth-First Search (DFS) – Breadth-First Search (BFS) – Topological Sort – Applications of DFS: Bi-connectivity – Euler Circuits – Finding Strongly Connected Components – Applications of BFS: Bipartite Graph.	
Total(L : 45)	

Suggested Learning Resources
Text Books : Mark Allen Weiss, “Data Structures and Algorithm Analysis in C”, Pearson Education, 2014. Gilberg, R. F., & Forouzan, B. A, “Data Structures: A Pseudocode Approach”, Cengage Learning India Private Limited, 2023. Ellis Horowitz and Sartaj Sahni, “Fundamentals of Data Structures”, Universities Press, 2014.
Reference Books:
1. Thomas H. Cormen et al., “Introduction to Algorithms”, MIT Press, 2022. Robert Lafore, “Data Structures and Algorithms in Java”, Sams Publishing, 2017. Michael T. Goodrich et al., “Data Structures and Algorithms in Python”, Wiley India, 2016. Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, “Data Structures and Algorithms”, Pearson, 2001. D.S. Malik, Data Structures Using C++, 2nd Edition, Cengage, 2012.

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Circuit Theory							
(Common to BME and ECE)							
Course Code:		22ECC02				CIE	50
Course Type: (Theory/Practical/Integrated)		Integrated				ESE	50
L:T:P:C		3	0	2	4	Total Marks	100
Total Hours of Pedagogy		75 (L : 45 + P : 30)				Exam Hours	3
Pre-requisites		Nil					
Course Objectives							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply Kirchhoff's laws and node/mesh analysis techniques to solve linear electrical circuits.					Ap	20%
CO 2	Analyze electrical networks using fundamental network theorems.					Ap	20%
CO 3	Evaluate the steady-state response of AC circuits using phasor and complex power concepts.					Ap	20%
CO 4	Analyze the transient response of first- and second-order RL, RC and RLC circuits.					Ap	20%
CO 5	Determine two-port network parameters and apply network transformations for the analysis of complex electrical circuits.					An	20%

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1													
CO 2													
CO 3													
CO 4													
CO 5													
CO (W.A)													

Unit- I : Fundamentals of Circuit Analysis	9
Basic circuit variables and elements – Independent and dependent sources – Ohm's Law – Kirchhoff's Current Law (KCL) – Kirchhoff's Voltage Law (KVL) – Series and parallel circuits – Voltage and current division – Source transformation – Node Voltage Analysis – Mesh Current Analysis – Circuit analysis using matrix formulation.	
Unit- II : Network Theorems	9
Linearity and superposition principle – Superposition Theorem – Thevenin's Theorem – Norton's Theorem – Source equivalence – Maximum Power Transfer Theorem (DC and AC circuits) – Reciprocity Theorem – Millman's theorem – Applications of network theorems in circuit analysis.	
Unit- III : Sinusoidal Steady-State Analysis	9
Sinusoidal signals and phasor representation – Complex impedance and admittance – Phasor analysis of RL, RC and RLC circuits – Series and parallel resonance – Complex Power – Active, Reactive and Apparent Power – Power factor and power factor improvement – Maximum power transfer in AC circuits.	
Unit- IV : Transient Analysis of Linear Circuits	9
Initial and final conditions – Natural and forced responses – Time constants – First-order RL and RC circuits – Response to step, impulse and exponential inputs – Second-order RLC circuits – Underdamped, critically damped and overdamped responses – Time-domain analysis using differential equations.	
Unit- V : Linear Two-Port Networks and Network Transformations	9
Linear two-port networks – Open-circuit impedance (Z) parameters – Short-circuit admittance (Y) parameters – Hybrid (h) parameters – Transmission (ABCD) parameters – Interrelationships among two-port parameters – Applications of two-port networks – Star (Y)-Delta (Δ) and Delta (Δ)-Star (Y) transformations – Analysis of bridge and resistive networks using network transformations.	

List of Experiments:	30 Hours
1. Verification of Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL). 2. Verification of Superposition Theorem. 3. Verification of Thevenin's and Norton's Theorems. 4. Verification of Maximum Power Transfer Theorem. 5. Verification of Reciprocity Theorem. 6. Transient response of RC and RL circuits.	
Total (L : 45 + P : 30)	

Suggested Learning Resources

Text Books:

1. Hayt, W. H., Kemmerly, J. E., & Durbin, S. M. (2024), Engineering circuit analysis, McGraw Hill Education.
2. Alexander, C. K., & Sadiku, M. N. O. (2017), Fundamentals of electric circuits, McGraw Hill Education.

Reference Books:

1. Boylestad, R. L. (2014). Introductory circuit analysis, Pearson Education India.
2. Kuo, F. F. (2012), Network analysis and synthesis, Wiley India.



ENGLISH PROFICIENCY LAB (Common to All Branches)							
Course Code:		26EYP02				CIA	60
Course Type: (Theory/Practical/Integrated)		Practical				ESE	40
L:T:P:C		0	0	2	1	Total Marks	100
Total Hours of Pedagogy		30				Exam Hours	3
Prerequisite		26EYP01					
Course Objectives							
3. To improve real-time communication and interaction skills							
4. To enhance digital, collaborative, and workplace communication							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Communicate effectively in collaborative and workplace situations.					Ap	20%
CO 2	Demonstrate fluency in professional and interpersonal interactions.					Ap	20%
CO 3	Respond effectively to real-world communication contexts.					Ap	20%
CO 4	Apply creative and analytical thinking in communication tasks.					Ap	20%
CO 5	Create clear oral and written communications for academic, social, and professional purposes.					C	20%

Mapping of Cos with POs / PSOs													
Cos	Pos											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1								2	3	-	2		
CO 2								2	3	-	2		
CO 3								2	3	-	2		
CO 4								2	3	-	2		
CO 5								2	3	-	2		
CO (W.A)								2	3	-	2		

Module - I :Interactive Communication Skills	6
Grammar –If Conditional Clauses - Listening - Listening to Engineering Project Briefings and Response Analysis- Speaking - Expressing Opinions through Agree–Disagree Circles	
Module - II :Workplace Communication	6
Grammar –Active and Passive Voice - Reading - Reading Corporate Communication Samples – Writing - Drafting LinkedIn Profile Summaries	

Module - III :Real-World Communication	6
Grammar – Synonyms & Antonyms - Listening - Listening to Travel Vlogs and Experience Narration – Speaking –Tech-Talk Video Presentation	
Module - IV : Technical Communication	6
Grammar – Articles– Reading - Reading Technology Blogs – Writing - Writing Captions for Technical Posters	
Module - V :Professional Interaction Skills	6
Grammar –Confusable Words - Listening - Listening to Interview Experiences and Career Talks – Speaking – Resolving a conflict in a team project	
Total (P: 30)	

Suggested Learning Resources
Text Books :
1. Sanjay Kumar and PushpLata, "Communication Skills", Oxford University Press, Third Edition, 2023.
2. Meenakshi Raman and Sangeeta Sharma, "Professional Communication", Oxford University Press, Third Edition, 2022.
Reference Books:
1. Barun K. Mitra, "Personality Development and Soft Skills", Oxford University Press, Second Edition, 2023.
2. Flatley, Marie E. and Rentz, Kathryn. "Business Communication: Connecting in a Digital World", McGraw Hill Education, 2022.
3. Murphy, Herta A., Hildebrandt, Herbert W. and Thomas, Jane P. "Effective Business Communication", McGraw Hill Education, 2022.
4. Raman, Meenakshi and Sharma, Sangeeta. "Technical Communication: Principles and Practice", Oxford University Press, 2021.
5. D. Sudha Rani, "English for Professional Communication", Pearson Education, Second Edition, 2021.



PHYSICS LABORATORY (Common to All Branches)							
Course Code:		26PYP01				CIA	60
Course Type: (Theory/Practical/Integrated)		Theory				ESE	40
L:T:P:C		0	0	2	1	Total Marks	100
Total Hours of Pedagogy		30				Exam Hours	2
Prerequisite		Nil					
Course Objectives							
1. To infer the practical knowledge by applying the experimental methods to correlate with the Physics theory. 2. To introduce different experiments to test basics of physics concepts applied in optics and electronics.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply elasticity concepts to determine mechanical and thermal properties of materials using experimental methods.					Ap	20%
CO 2	Evaluate optical phenomena using laser, diffraction, and interference techniques.					Ev	20%
CO 3	Apply semiconductor concepts to determine band gap energy and solar cell characteristics.					Ap	20%
CO 4	Analyze electrical and magnetic properties using Ohm’s law and B–H curve experiments.					An	20%
CO 5	Apply modern physics concepts to determine Planck’s constant using electroluminescence.					Ap	20%

Mapping of Cos with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3	2		1									
CO 2	3	3											
CO 3	3	3	1	1									
CO 4	3	2											
CO 5	3	2											
CO (W.A)	3	2	1	1									

LIST OF EXPERIMENTS:

1. Determination of Young's modulus by non-uniform bending method.
2. Determination of (a) wavelength and (b) particle size using Laser.
3. Determination of thermal conductivity of a bad conductor – Lee 's Disc method.
4. Determination of wavelength of mercury spectrum – spectrometer grating.
5. Determination of band gap of a semiconductor.
6. Determination of thickness of a thin wire – Air wedge method.
7. Determination of V-I characteristics of solar cell.
8. Experiments on electromagnetic induction B-H Curve experiment to determine magnetic parameter.
9. Verify Ohm's law – Series and parallel Connection.
10. Determination of Planck's constant using electroluminescence process.

TOTAL (P:30)



DATA STRUCTURES LABORATORY							
(Common to AI&DS, IT, CSE, CSE(CS), CSE(IoT), ECE,EEE and BME Branches)							
Course Code:		26CSP02				CIA	60
Course Type: (Theory/Practical/Integrated)		Practical				ESE	40
L:T:P:C		0	0	3	1.5	Total Marks	100
Total Hours of Pedagogy		45				Exam Hours	3
Pre-requisites		Programming Skills					
Course Objective							
To develop skills in implementing and applying linear and non-linear data structures for efficient problem-solving.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply List ADT and linked list concepts to perform basic operations.					Ap	20
CO 2	Implement stack and queue operations to solve computational problems.					Ap	20
CO 3	Demonstrate binary tree, BST, and AVL tree operations and traversals.					Ap	20
CO 4	Analyze hash functions and priority queue operations for efficient data handling.					An	20
CO 5	Analyze graph traversal techniques to solve computational problems.					An	20

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3	2			3							3	2
CO 2	3	3	2		3							3	3
CO 3	3	3	2		3							3	3
CO 4	2	3	2		3						2	3	3
CO 5	2	3	2		3						2	3	3
CO (W.A)	2.6	2.8	2		3						2	3	2.8

List of Experiments:

1. Implementation of List ADT using arrays and linked lists.
2. Implementation of Singly, Doubly, and Circular Linked Lists and their operations.
3. Implementation of Stack ADT and its applications.
4. Implementation of Queue ADT using arrays and linked lists.
5. Implementation of Circular Queue and Double-ended Queue (Deque).
6. Implementation of Binary Trees and its Tree Traversals.
7. Implementation of Binary Search Tree (BST) and AVL Tree operations.
8. Implementation of Priority Queue.
9. Implementation of Hash functions and Hashing operations.
10. Implementation of Graph representation and Graph Traversals (BFS and DFS).

Total (P : 45)

Hardware / Software

Hardware Requirements

Computer/Desktop with 4 GB RAM or above
Intel Core i3 Processor or equivalent

Software Requirements

C Compiler (GCC / Turbo C or equivalent)/ Python IDLE



ANALYTICAL SKILLS – I (Common to All Branches)							
Course Code:	26GEA01				CIA	100	
Course Type: (Theory/Practical/Integrated)	Theory				ESE	-	
L:T:P:C	2	0	0	1	Total Marks	100	
Total Hours of Pedagogy	30				Exam Hours	2.5	
Prerequisite	Nil						
Course Objectives							
1. To develop students' proficiency in quantitative aptitude by strengthening their understanding of number systems, arithmetic concepts, mathematical applications, and problem-solving techniques required for academic, competitive, and placement examinations. 2. To enhance students' logical reasoning and analytical thinking skills by enabling them to identify patterns, solve reasoning problems, analyze relationships, and apply spatial visualization techniques for effective decision-making and logical problem-solving.							
Course Outcomes The students will be able to					Cognitive Level	Weightage of COs in CIA	
CO 1	Understand and apply fundamental number theory techniques to solve quantitative aptitude efficiently.				U	20%	
CO 2	Solve basic mathematical and word problems accurately and efficiently.				AP	20%	
CO 3	Analyze and solve real-life and aptitude-based arithmetic problems effectively.				Ap	20%	
CO 4	Develop logical thinking and analytical reasoning skills for solving reasoning problems effectively.				An	20%	
CO 5	Apply analytical and spatial reasoning skills and solve analogy and image-based reasoning problems effectively.				An	20%	

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	2	2											
CO 2	2	2											
CO 3		2	2										
CO 4		2									2		
CO 5		2									2		
CO (W.A)	2	2	2								2		

Unit- I : Number Theory and Divisibility Rules	6
Place and Face Value – Types of Numbers – Divisibility Rule – Unit Digit Concept – Remainder Theorem - Problems on HCF and LCM - Arithmetic Progression - Geometric Progression.	

Unit- II : Basic Arithmetic and Word Problems	6
BODMAS – Simplification – Problems on Numbers – Math Puzzle.	
Unit- III : Fundamentals of Arithmetic Applications	6
Percentage - Ratio and Proportion – Ages – Average.	
Unit- IV : Pattern Analysis and Logical Thinking	6
Number series - Alphabetical Series – Alphanumeric – Odd man out - Coding and Decoding.	
Unit- V : Analogy and Spatial Visualization	6
Analogy – Mirror Images –Water Images – Pattern Completion.	
Total (P : 30)	

Suggested Learning Resources
Reference Books:
1. Aggarwal R S. “Quantitative Aptitude for Competitive Examinations”, S. Chand Publishing Company Ltd(s)., 2022. 2. Sharma, Arun. “How to Prepare for Quantitative Aptitude for the CAT”, Tata McGraw – Hill Publishing, 2024. 3. Dr. R. S. Aggarwal. “A Modern Approach to Logical Reasoning”, S. Chand Publishing., 2024–2025 (revised editions used for competitive exams).
Web links and Video Lectures (e-Resources):
1. https://www.geeksforgeeks.org/aptitude/quantitative-aptitude/ 2. https://aspirantzone.in/study-materials/subject-wise-study-materials/quantitative-aptitude-study-material-practice/ 3. https://www.testmocks.com/blog/quantitative-aptitude-mock-test/ 4. https://letsstudytogether.co/quantitative-aptitude-topic-wise-questions-and-answers-pdf-download/

