

NANDHA ENGINEERING COLLEGE

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



Curriculum and Syllabi

for

B.E., Civil Engineering [R26]

[CHOICE BASED CREDIT SYSTEM]

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.
INSTITUTE VISION AND MISSION	
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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 – CIVIL ENGINEERING	
VISION	To foster academic excellence by imparting knowledge in civil engineering and allied disciplines to meet the ever growing needs of the society.
MISSION	- To impart quality education to produce professionals with social responsibility. - To excel in the thrust areas of civil and allied engineering to solve real world problems. - To create a learner centric environment with continual progress to meet the global engineering needs.
PROGRAMME EDUCATIONAL OBJECTIVES (PEO)	The graduates of civil engineering will be PEO1: Core Competency: Successful professionals with core competency and inter-disciplinary skills to satisfy the industrial needs. PEO2: Research, Innovation and Life-long Learning: Capable of identifying technological requirements for the society and providing innovative ideas for real time problems. PEO3: Ethics, Human values and Entrepreneurship: Able to demonstrate ethical practices and managerial skills through continuous learning.
PROGRAMME SPECIFIC OUTCOMES (PSO)	The students of civil engineering will be able to - Plan, analyze, design and prepare technical reports for civil engineering structures - Apply advanced techniques and management skills for the execution of civil engineering projects.

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 teamwork	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. CIVIL 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	26CYB01	Applied Chemistry	BS	LIT	2	0	2	3	4
3	26GYA01	தமிழர்மரபு / Heritage of Tamils	HUM	T	1	0	0	1	1
4	26ADC02	Problem Solving and Python Programming	ES (G)	LIT	3	0	2	4	5
5	26MEC01	Engineering Drawing and Graphics	ES (G)	LIT	3	0	2	4	5
6	26CEC01	Introduction to Civil Engineering	ES (PC)	T	3	0	0	3	3
7	26EYP01	English Communication Laboratory	HUM	L	0	0	4	2	4
8	26GEP02	Makerspace	SD	L	0	0	4	2	4
9	26GYP01	Yoga for Youth Empowerment	HUM	L	0	0	2	1	2
TOTAL					15	1	16	24	32

SEMESTER:II									
S.No.	Course Code	Course Title	Category	Course Type	Teaching and Learning Scheme			Credits	TCP
					L	T	P		
1	26MYB02	Fourier Analysis and Partial Differential Equations	BS	T	3	1	0	4	4
2	26PYB05	Applied Physics for Civil Engineering	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	26EEC03	Basics of Electrical and Electronics Engineering	ES (G)	T	3	0	0	3	3
6	26CEC02	Engineering Mechanics: (Statics and Dynamics)	ES (G)	T	3	1	0	4	4
7	26CEC03	Construction Materials and Practices	ES (PC)	T	3	0	0	3	3
8	26EYP02	English Proficiency Laboratory	HUM	L	0	0	2	1	2
9	26PYP01	Physics Laboratory	BS	L	0	0	2	1	2
10	26GEA01	Analytical Skills - I	ES(G)	T	2	0	0	1	2
11	26GEP01	Foundation Laboratory	SD	L	0	0	4	2	4
12	26GEP03	Life Skills For Engineers	ES(G)	-	1	0	2	2	3
TOTAL					21	2	10	27	33

SEMESTER:III									
S.No.	Course Code	Course Title	Category	Course Type	Teaching and Learning Scheme			Credits	TCP
					L	T	P		
1	XXXX	Probability, Statistics and Numerical Techniques	BS	T	3	1	0	4	4
2	XXXX	Mechanics of Solids	ES (PC)	T	3	0	0	3	3
3	XXXX	Fluid Mechanics and Hydraulics Engineering	ES (PC)	LIT	3	0	2	4	5
4	XXXX	Surveying	ES (PC)	T	3	0	0	3	3
5	XXXX	Concrete Technology	ES (PC)	LIT	3	0	2	4	5
6	XXXX	Disaster Management and Preparedness	M	T	2	0	0	0	2
7	XXXX	English Competency Laboratory	HUM	L	0	0	2	1	2
8	XXXX	Analytical Skills - II	ES(G)	T	2	0	0	1	2
9	XXXX	Material Testing Laboratory	ES (PC)	L	0	0	2	1	2
10	XXXX	Surveying Practices	ES (PC)	L	0	0	4	2	4
11	XXXX	Design Thinking	ES(G)	T	2	0	0	2	2
TOTAL					21	1	12	25	34

SEMESTER:IV									
S.No.	Course Code	Course Title	Category	Course Type	Teaching and Learning Scheme			Credits	TCP
					L	T	P		
1	XXXX	Structural Analysis	ES (PC)	T	3	0	0	3	3
2	XXXX	Soil Mechanics	ES (PC)	LIT	3	0	2	4	5
3	XXXX	Highway Engineering	ES (PC)	LIT	3	0	2	4	5
4	XXXX	Environmental Engineering	ES (PC)	LIT	3	0	2	4	5
5	XXXX	Design of Reinforced Concrete Elements	ES (PC)	T	3	0	0	3	3
6	XXXX	Introduction to Standards in Civil Engineering	ES (PC)	T	1	0	0	1	1
7	XXXX	Computer Aided Building Drawing Laboratory	ES (PC)	L	0	0	4	2	4
8	XXXX	Workplace English Laboratory	HUM	L	0	0	2	1	2
9	XXXX	Analytical Skills - III	ES(G)	T	2	0	0	1	2
10	XXXX	Micro Project	SD	PW	0	0	4	2	4
11	XXXX	Personality and Character Development	SD	-	0	0	1	0	1
TOTAL					18	0	17	25	35

SEMESTER:V									
S.No.	Course Code	Course Title	Category	Course Type	Teaching and Learning Scheme			Credits	TCP
					L	T	P		
1	XXXX	Introduction to AI and ML for Civil Engineering	BS	T	2	0	0	2	2
2	XXXX	Foundation Engineering	ES (PC)	T	3	0	0	3	3
3	XXXX	Design of Reinforced Concrete Structures	ES (PC)	T	3	0	0	3	3
4	XXXX	Water Resources and Irrigation Engineering	ES (PC)	T	3	0	0	3	3
5	E1	Elective 1	ES (PE)	T	3	0	0	3	3
6	E2	Elective 2	ES (PE)	T	3	0	0	3	3
7	E3	Elective 3	ES (PE/OE)	T	3	0	0	3	3
8	XXXX	Computer Aided Structural Analysis and Design Laboratory	ES (PC)	L	0	0	4	2	4
9	XXXX	Indian Knowledge System	M	T	2	0	0	0	2
TOTAL					22	0	4	22	26

For Honours									
S.N o.	Course Code	Course Title	Category	Course Type	Teaching and Learning Scheme			Credits	TCP
					L	T	P		
1	XXXX	Capstone Design Project – Level I	SD	CDP	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	Design of Steel Structures	ES (PC)	T	3	0	0	3	3
3	XXXX	Estimation, Costing and Valuation	ES (PC)	T	3	0	0	3	3
4	E4	Elective 4	ES (PE)	T	3	0	0	3	3
5	E5	Elective 5	ES (PE)	T	3	0	0	3	3
6	E6	Elective 6	ES (PE/OE)	T	3	0	0	3	3
7	XXXX	Industry Readiness Laboratory	ES (PC)	L	0	0	2	1	2
8	XXXX	Mini Project / Design Project	SD	PW	0	0	4	2	4
TOTAL					17	0	8	21	25

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	Remote Sensing and GIS Applications	ES (PC)	T	3	0	0	3	3
2	XXXX	Sustainable and Green Construction	ES (PC)	T	3	0	0	3	3
3	E7	Elective 7	ES (PE)	T	3	0	0	3	3
4	E8	Elective 8	ES (PE)	T	3	0	0	3	3
5	E9	Elective 9	ES (OE)	T	3	0	0	3	3
6	XXXX	Internship/ Industrial Training*	SD	L	0	0	4	2	4
7	XXXX	Research Paper Writing^	M	-	0	0	2	-	2
TOTAL					15	0	6	17	21

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	16
TOTAL					0	0	16	8	16

Total Credits: 24+27+25+25+22+21+17+8 = 169

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	தமிழர்மரபு/ Heritage of Tamils	HUM	T	1	0	0	1	1
2	26EYP01	English Communication Laboratory	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 Laboratory	HUM	L	0	0	2	1	2
6	XXXX	English Competency Laboratory	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	26CYB01	Applied Chemistry	BS	LIT	2	0	2	3	4
3	26MYB02	Fourier Analysis and Partial Differential Equations	BS	T	3	1	0	4	4
4	26PYB05	Applied Physics for Civil Engineering	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, Statistics and Numerical Techniques	BS	T	3	1	0	4	4
8	XXXX	Introduction to AI and ML FOR Civil Engineering	BS	T	2	0	0	2	2

Engineering Science General Courses - ES (G)

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26ADC02	Problem Solving and Python Programming	ES (G)	LIT	3	0	2	4	5
2	26MEC01	Engineering Drawing and Graphics	ES (G)	LIT	3	0	2	4	5
3	26EEC03	Basic of Electrical and Electronics Engineering	ES (G)	T	3	0	0	3	3
4	26CEC02	Engineering Mechanics: (Statics and Dynamics)	ES (G)	T	3	1	0	4	4
5	26GEA01	Analytical Skills - I	ES (G)	T	2	0	0	1	2
6	XXXX	Design Thinking	ES (G)	T	2	0	0	2	2
7	XXXX	Analytical Skills - II	ES (G)	T	2	0	0	1	2
8	XXXX	Analytical Skills - III	ES (G)	T	2	0	0	1	2

Engineering Science Programme Core – ES (PC)

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26CEC01	Introduction to Civil Engineering	ES (PC)	T	3	0	0	3	3
2	26CEC02	Engineering Mechanics: (Statics and Dynamics)	ES (G)	T	3	1	0	4	4
3	26CEC03	Construction Materials and Practices	ES (PC)	T	3	0	0	3	3
4	XXXX	Mechanics of Solids	ES (PC)	T	3	0	0	3	3
5	XXXX	Fluid Mechanics and Hydraulics Engineering	ES (PC)	LIT	3	0	2	4	5
6	XXXX	Surveying	ES (PC)	T	3	0	0	3	3
7	XXXX	Concrete Technology	ES (PC)	LIT	3	0	2	4	5
8	XXXX	Material Testing Laboratory	ES (PC)	L	0	0	2	1	2

9	XXXX	Surveying Practices	ES (PC)	L	0	0	4	2	4
10	XXXX	Structural Analysis	ES (PC)	T	3	0	0	3	3
11	XXXX	Soil Mechanics	ES (PC)	LIT	3	0	2	4	5
12	XXXX	Highway Engineering	ES (PC)	LIT	3	0	2	4	5
13	XXXX	Environmental Engineering	ES (PC)	LIT	3	0	2	4	5
14	XXXX	Design of Reinforced Concrete Elements	ES (PC)	T	3	0	0	3	3
15	XXXX	Introduction to Standards in Civil Engineering	ES (PC)	T	1	0	0	1	1
16	XXXX	Computer Aided Building Drawing Laboratory	ES (PC)	L	0	0	4	2	4
17	XXXX	Foundation Engineering	ES (PC)	T	3	0	0	3	3
18	XXXX	Design of Reinforced Concrete Structures	ES (PC)	T	3	0	0	3	3
19	XXXX	Water Resources and Irrigation Engineering	ES (PC)	T	3	0	0	3	3
20	XXXX	Computer Aided Structural Analysis and Design Laboratory	ES (PC)	L	0	0	4	2	4
21	XXXX	Design of Steel Structures	ES (PC)	T	3	0	0	3	3
22	XXXX	Estimation, Costing and Valuation	ES (PC)	T	3	0	0	3	3
23	XXXX	Industry Readiness Laboratory	ES (PC)	L	0	0	2	1	2
24	XXXX	Remote Sensing and GIS Applications	ES (PC)	T	3	0	0	3	3
25	XXXX	Sustainable and Green Construction	ES (PC)	T	3	0	0	3	3

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	26GEP03	Life Skills for Engineers	SD	-	1	0	2	1	3

4	XXXX	Personality and Character Development	SD	L	0	0	1	0	1
5	XXXX	Microproject	SD	PW	0	0	4	2	4
7	XXXX	Mini Project / Design Project	SD	PW	0	0	4	2	4
8	XXXX	Internship/ Industrial Training	SD	L	0	0	4	2	4
10	XXXX	Project Work / Internship cum Project Work	SD	PW	0	0	16	8	16

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	-	2

Semester wise Credit Distribution

	HUM	BS	ES (G)	ES(PC)	ES(PE)	ES(PE/OE)	ES(OE)	SD	Total
Sem I	4	7	8	3				2	24
Sem II	2	10	10	3				2	27
Sem III	1	4	3	17					25
Sem IV	1		1	21				2	25
Sem V		2		11	6	3			22
Sem VI	3			7	6	3		2	21
Sem VII				6	6		3	2	17
Sem VIII								8	8
Total	11	23	22	68	18	6	3	18	169

INDUCTION PROGRAMME (Common to All Branches)							
Course Code:	26MAN01				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					Cognitive Level	Weightage of COs in ESE	
The students will be able to							
CO1	Explain the objectives of the Induction Programme and the role of engineering in addressing societal and national needs.				U	-	
CO2	Demonstrate self-discipline, healthy lifestyle practices, and awareness of universal human values in day-to-day activities.				Ap		
CO3	Participate effectively in creative, literary, physical, and department-specific activities to enhance personal and professional skills.				Ap		
CO4	Analyze the significance of teamwork, communication, and ethical behavior in building positive relationships within the institution and society.				An		
CO5	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
CO1						3	2				3		
CO2						2	3	2	3	2	3		
CO3							2	3	3	2	3		
CO4						2	3	3	3	2	3		
CO5						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
The students will be able to							
CO1	Apply the concepts of eigen values, eigen vectors, and the Cayley - Hamilton theorem to solve matrix-related problems.					Ap	20%
CO2	Analyze single and multivariable functions using limits, continuity, derivatives, and optimization techniques.					An	20%
CO3	Evaluate double and triple integrals to determine area and volume.					Ap	20%
CO4	Compute higher order linear differential equations using analytical methods.					Ap	20%
CO5	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
CO1	3				2						2		
CO2		3			2						2		
CO3	3				2						2		
CO4	3				2						2		
CO5	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.

APPLIED CHEMISTRY (Common to ECE, EEE, CIVIL, CHEMICAL and MECH)							
Course Code:	26CYB01				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 core concepts in water treatment, electrochemistry, energy storage devices, and corrosion science to solve real-world engineering problems. 2. To equip students with knowledge of analytical techniques, nanomaterials, and polymer processing to develop and evaluate solutions in materials science, chemical analysis, and energy systems.							
Course Outcomes					Cognitive Level	Weightage of COs in ESE	
The students will be able to							
CO 1	Apply water treatment methods for domestic and industrial applications.				Ap	20%	
CO 2	Assess electrochemical systems and polymer processing techniques for industrial applications.				E	20%	
CO 3	Evaluate energy storage systems and fuel technologies for energy applications.				E	20%	
CO 4	Analyze corrosion mechanisms and protective coating methods for material protection.				An	20%	
CO 5	Examine analytical methods and nanomaterials for advanced material applications.				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										3		
CO 2			2			2							
CO 3		2				2							
CO 4	2										3		
CO 5	2					2							
CO (W.A)	2	2	2			2					3		

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 POLYMER SCIENCE	6
Electrode potential - Nernst equation - derivation and problems - reference electrodes - calomel electrode - glass electrode. Polymers - classification - addition - condensation - copolymerization - engineering plastics - preparation - properties - uses of PVC and nylon - polymer processing - compression - injection moulding techniques.	
UNIT- III : ENERGY STORAGE SYSTEMS AND FUEL SCIENCE	6
Batteries - types of batteries - secondary batteries - lead acid storage battery - lithium ion battery - flow battery - hydrogen - oxygen fuel cell- electric vehicles - working principles. Fuels - metallurgical coke - manufacture by Otto-Hoffmann method - manufacture of synthetic petrol - Bergius process.	
UNIT- IV : PROTECTIVE COATINGS IN CORROSION SCIENCE	6
Corrosion - types - chemical corrosion - mechanism - electrochemical corrosion - mechanism - factors influencing corrosion - corrosion control - sacrificial anodic protection method - protective coatings - paints - constituents and functions - metallic coatings - electroplating.	
UNIT- V :ANALYTICAL METHODS AND NANO CHEMISTRY	6
Colorimetry – principles- estimation of Iron by colorimetry - UV-Visible spectroscopy- principles - instrumentation (block diagram only) - IR spectroscopy - principles - instrumentation (block diagram only) - Atomic absorption spectroscopy - principles - instrumentation (block diagram only). Nanomaterials - carbon nanotubes - synthesis - laser ablation - chemical vapour deposition method - applications of CNTs.	
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. S.S. Dara," A text book of Engineering Chemistry", S.Chand& Co. Ltd. New Delhi, 2024.

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. Jaya Shree Anireddy, "Text book of Engineering Chemistry", John Wiley & Sons (India) Private Limited, New Delhi, 2023.
3. B. Sivasankar, Engineering Chemistry,3rd Edition, McGraw Hill Education (India) Pvt. Ltd., New Delhi, 2023.
4. William D. Callister Jr. and David G. Rethwisch, Callister's Materials Science and Engineering, 11th Edition, John Wiley & Sons, Hoboken, NJ, 2024.
5. M. N. Boraste, Nanomaterials: Principles and Applications, CRC Press, Taylor & Francis Group, Boca Raton, Florida, 2022.



தமிழ்மரபு - 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 – சங்கஇலக்கியத்தில்பகிர்தல்அறம்–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 – ஓயிலாட்டம்–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. பொருநை-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. Thirunavukarasu - Historical Heritage of Tamils - Published by : International Institute of Tamil Studies



PROBLEM SOLVING AND PYTHON PROGRAMMING							
(Common to Agri, Civil, Chem, Mech Branches)							
Course Code:		26ADC02				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 Hours
Pre-requisites		Nil					
Course Objectives							
To provide students with fundamental Python programming skills for developing computational thinking and problem-solving abilities, and to apply Python libraries for engineering applications.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
The students will be able to							
CO 1	Develop algorithmic solutions for basic computational problems using Python fundamentals.					AP	20%
CO 2	Apply Python syntax, data types, and control flow constructs to develop programs for solving basic computational tasks.					AP	20%
CO 3	Apply compound data structures such as strings, lists, tuples, sets, and dictionaries to organize and process sequential data efficiently.					AP	20%
CO 4	Implement file handling operations to manage data input and output in programs.					AP	20%
CO 5	Design and analyze data-driven solutions using NumPy, Pandas, and Matplotlib to clean, filter, and visually explore datasets.					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	3	3	2							3		
CO 2	3	3	3	2							3		
CO 3	3	3	3	2							3		
CO 4	3	3	3	2							3		
CO 5	3	3	3	2	3						3		
CO (W.A)	3	3	3	2	3						3		

Unit- I : ALGORITHMIC PROBLEM SOLVING AND PYTHON FUNDAMENTALS	9
Problem Solving, Problem Analysis Chart, Developing an Algorithm, Flowchart and Pseudocode, Interactive and Script Mode, Indentation, Comments, Error messages, Variables, Reserved Words, Data Types, Arithmetic operators and expressions, Built-in Functions, Importing from Packages.	
Unit- II : Control Structures and functions	9
if, if-else, nested if, multi-way if-elif statements, while loop, for loop, break, continue, nested loops, pass statements. Functions-Introduction to Functions-Defining and Calling Functions-Function Arguments and Return Values-Scope of Variables-Recursive Functions	
Unit- III :Strings & Collections	9
String Comparison, Formatting, Slicing, Splitting, Stripping, Lists, tuples, and dictionaries, basic list operators, searching and sorting lists; dictionary literals, adding and removing keys, accessing and replacing values.	
Unit- IV : File Operations	9
Create, Open, Read, Write, Append and Close files. Manipulating directories, OS and Sys modules, reading/writing text and numbers, from/to a file; creating and reading a formatted file (csv, tab-separated, etc.) - File Pointer Methods (seek() and tell())	
Unit- V : MODULES, PACKAGES	9
Introduction to Modules-Importing Modules using import and from...import-Standard Library Modules-math-random-date time-Creating and Using User-Defined Modules-Introduction to Packages-Accessing Modules from Packages-NumPy: Creating Arrays and Basic Array Operations-Matplotlib: Data Visualization-Line Plots-Bar Charts-Scatter Plots	
List of Experiments:	30 Hours
1. Programs using operators and input/output statements. 2. Programs using conditional and looping constructs (if, for, while) 3. Programs using user-defined and recursive functions 4. Programs using string operations and formatting 5. Programs using lists, tuples, and dictionaries 6. Programs involving file handling operations (reading, writing, appending, seek(), tell()) 7. Programs using standard library modules, user-defined modules, and packages 8. Program to create and perform basic operations on NumPy arrays 9. Programs to visualize data using Matplotlib (Line, Bar, and Scatter plots)	
Total (L : 45 + P : 30)	

Suggested Learning Resources

Text Books:

1. Reema Thareja Python Programming: Using Problem Solving Approach, 3rd Edition, Oxford University Press (2025)
2. R. Nageswara Rao, Core Python Programming, 3rd Edition, Dream tech Press, New Delhi, 2021

Reference Books:

1. Y. Daniel Liang, Introduction to Programming Using Python, 1st Edition, Pearson Education, 2012.
2. Charles Dierbach, Introduction to Computer Science Using Python: A Computational Problem-Solving Focus, 1st Edition, Wiley India, 2013.
3. John V. Guttag, Introduction to Computation and Programming Using Python: With Application to Computational Modeling, 3rd Edition, MIT Press, 2021.
4. Robert Sedgewick, Kevin Wayne, Robert Dondero, "Introduction to Programming in Python: An Inter-disciplinary Approach, Pearson India Education Services Pvt. Ltd., 2016.
5. Eric Matthes, Python Crash Course: A Hands-On, Project-Based Introduction to Programming, 3rd Edition, No Starch Press, 2023.



ENGINEERING DRAWING AND GRAPHICS (Common to Agri, Chemical, Civil, EEE and Mechanical Engineering)							
Course Code:	26MEC01				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 Hrs	
Pre-requisites	Nil						
Course Objectives							
To impart knowledge of BIS standards and develop skills in engineering drawing, projections, sectioning of solids, and CAD-based orthographic and isometric drawings.							
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.				Ap	20 %	
CO 2	Apply the principles of first angle projection to solve and draw projection problems involving lines and planes.				Ap	20 %	
CO 3	Construct projections of simple solids inclined to principal planes using the rotating object method.				Ap	20 %	
CO 4	Develop sectional views and lateral surfaces of solids for manufacturing applications.				Ap	20 %	
CO 5	Generate orthographic/isometric drawings and dimensioning as per BIS/ISO standards.				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		3					2					2
CO 4	3	3	2					2					2
CO 5	3	2	3		3			2			3		2
CO (W.A)	3	2.5	2.67		3			2			3		2

CONCEPTS AND CONVENTIONS (Not for Examination)	
Importance of graphics in engineering applications - use of drafting instruments - BIS conventions and specifications - size, layout and folding of drawing sheets – types of lines, lettering and dimensioning – scales – title block.	
Unit- I : PLANE CURVES	9
Basic geometrical constructions of conics - Ellipse, parabola and hyperbola by eccentricity method - construction of cycloid - drawing of tangents and normal to the above curves.	
UNIT-II : PROJECTION OF POINTS, LINES AND PLANES	9
Introduction to theory of projection – first angle and third angle projection. Principal planes - first angle projection - projection of points - projection of straight lines inclined to both the principal planes - determination of true lengths and true inclinations by rotating line method - projection of planes (polygonal and circular surfaces).	
UNIT-III : PROJECTION OF SOLIDS	9
Projection of simple solids - prism, pyramid, cylinder and cone when the axis is inclined to anyone of the principal plane and parallel to the other plane by rotating object method.	
Unit - IV : SECTION OF SOLIDS AND DEVELOPMENT OF SURFACE	9
Sectioning of solids (prism, pyramid, cylinder and cone) in simple vertical position when the cutting plane is inclined to the one of the principal plane and perpendicular to the other plane - development of lateral surfaces of sectioned solids - prism, pyramid, cylinder and cone.	
UNIT V : ISOMETRIC AND ORTHOGRAPHIC PROJECTIONS	9
Principles of isometric projection - isometric scale - isometric projections of lines, plane figures, simple solids and truncated solids - prism, pyramid, cylinder, and cone – free hand sketching of orthographic views from isometric views of objects.	

List of Experiments:	30 Hours
1. Construction of cycloid. 2. Projection of Lines inclined to both the reference planes. 3. Projection of Planes inclined to both the reference planes. 4. Projection of solids with axis inclined to one reference plane and parallel to the other plane. 5. Development of lateral surface of the sectioned solids. 6. Projection of orthographic views of the given isometric view of the objects.	
Total : L : 45 + P : 30 = 75	

Suggested Learning Resources

Text Books:

1. K.Venugopal and V.Prabhu Raja, "Engineering Graphics", New Age International (P) Limited, 2022.
2. K. V.Natarajan, "A text book of Engineering Graphics", Dhanalakshmi Publishers, Chennai, 2018.

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. 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.
4. M.B.Shah and B.C.Rana, "Engineering Drawing", Pearson, 2nd Edition, 2009.



INTRODUCTION TO CIVIL ENGINEERING							
Course Code:		26CEC01			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
Pre-requisites		Nil					
Course Objectives							
To impart the significance of the Civil Engineering and provide insight to the essentials of components of infrastructure.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
The student will be able to							
CO1	Apply the principles of professional ethics and analyze project types, project stages, specifications, scope, and emerging trends in civil engineering practice.					Ap	20%
CO2	Employ the principles of different fields within civil engineering in real-world engineering applications.					An	20%
CO3	Select appropriate building materials for construction applications based on their properties and performance requirements.					An	20%
CO4	Examine the suitability of masonry, finishing works, and National Building Code (NBC) provisions for safe and sustainable building construction.					An	20%
CO5	Apply appropriate infrastructure construction practices in civil engineering projects.					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												
CO 2	2												
CO 3	3											3	3
CO 4	2	3											3
CO 5		2											3
CO (W.A)	2.5	2.5										3	3

Unit- I : OVERVIEW OF CIVIL ENGINEERING	9
Role of civil engineers in society, Ethics in Civil Engineering Practice, outstanding accomplishments of the profession, future trends - Types of projects, stages of projects, Specifications and Scope.	
Unit- II : FIELDS OF CIVIL ENGINEERING	9
Scope of work involved in various branches of Civil Engineering - Overview of Structural, Construction, Architecture and Town planning, Geotechnical, Environmental, Transportation, Water Resources and Environmental Engineering, Surveying, GIS / GPS / RS - Introduction to Engineering Geology and seismology.	
Unit- III :CIVIL ENGINEERING MATERIALS	9
Civil Engineering Materials: Manufacturing Process and Types - Bricks - Stones - Sand - Cement - Lime – Concrete - Steel - Flyash - GGBS - Steel Slag.	
Unit- IV : BUILDING COMPONENTS	9
Building plans - Setting out of a Building - Foundations: Types of foundations - Bearing capacity and settlement - Brick masonry - Stone Masonry - Beams - Columns - Lintels - Roofing - Flooring - Plastering- NBC.	
Unit- V : INFRASTRUCTURE	9
Types of Bridges and Dams - Water Supply Network - Rain Water Harvesting - Solid Waste Management system - Introduction to Highways and Railways - Introduction to Green Buildings.	
Total (L : 45)	

Suggested Learning Resources
Text Books :
1. Rangwala, S. C. "Building materials", 27th ed. Charotar Publishing House Pvt. Ltd, 2009. 2. Bhavikatti. S. S., "Basic Civil Engineering", New Age International Publishers, 2010. 3. Ramamrutham, S. "Basic Civil Engineering", DhanpatRai Publishing Co. (P) Ltd, 2013.
Reference Books:
1. M. S. Palanichamy, "Basic Civil Engineering", Tata McGraw Hill, New Delhi, 2000 2. Kumar S. "Building construction", Standard Publishers, Delhi, 2001. 3. Seetharaman S. "Basic Civil Engineering", Anuradha Agencies, 2005. 4. S. T. Mau and Sami Maalouf, "Introduction to Civil Engineering: A Student's Guide to Academic and Professional Success", CognellaAcademic Publishing, 2014. 5. Valdengrave Okumu, "An Introduction to Civil Engineering", Create Space Independent Publishers, 2014

Signature

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.

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					Cognitive Level	Weightage of COs in ESE	
The students will be able to							
CO 1	Apply yoga and physical exercises for a healthy life.				Ap	Internal Assessment	
CO 2	Explainthe 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 – Sermlinal Fluid – Life Force – Biomagnetism – Mind, Maintaining Youthfulness – Postponing Aging – Transformation of food into Seven Body Constitutes Greatness of Sermlinal 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

FOURIER ANALYSIS AND PARTIAL DIFFERENTIAL EQUATIONS (Common to AGRI, CHEMICAL, CIVIL & MECHANICAL Branches)							
Course Code:		26MYB02				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 introduce Fourier Series, Fourier Transforms and their applications in harmonic analysis, and engineering problem solving. 2. To develop the ability to solve ordinary and partial differential equations using Laplace Transform techniques and apply them to vibrations, and heat transfer.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply Fourier Series techniques to represent periodic functions and perform harmonic analysis.					Ap	20%
CO 2	Use Fourier Transform techniques to solve engineering problems involving signal analysis, transport processes, and dynamic system behavior.					Ap	20%
CO 3	Solve ordinary differential equations using Laplace Transform methods and interpret engineering system responses.					Ap	20%
CO 4	Apply Partial Differential Equation techniques to solve problems involving vibrations of strings and membranes.					Ap	20%
CO 5	Analyze wave propagation and heat transfer problems using partial differential equations in engineering systems.					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		2			2						2		
CO (W.A)	3	2			2						2		

Unit- I : FOURIER SERIES	(9+3)
Dirichlet's condition – Fourier series: Half range sine series – Half range cosine series – Parseval's identity for half range series – Root mean square value of a function – Harmonic analysis.	
Unit- II : FOURIER TRANSFORMS	(9+3)
Fourier integral theorem(Statement only) – Fourier transform pair - Sine and Cosine transforms – Properties -Transforms of simple functions – Convolution theorem – Parseval's identity(Excluding proof).	
Unit- III :LAPLACE TRANSFORM	(9+3)
Condition for existence - Transforms of Elementary functions –Basic Properties- First & Second Shifting Theorems (Statement only) - Initial and Final value Theorems. Inverse Laplace transforms -Convolution theorem (Excluding proof) - Solution of linear second order ordinary differential equations with constant coefficients using Laplace transform.	
Unit- IV : PARTIAL DIFFERENTIAL EQUATIONS	(9+3)
Formulation of partial differential equations by eliminating arbitrary constants and functions – Solution of standard types first order partial differential equations of the type $f(p,q)=0$, Clairaut's form – Lagrange's linear equations – Linear partial differential equation of second and higher order with constant coefficient of homogeneous types.	
Unit- V : APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS	(9+3)
Classification of second order quasi linear partial differential equations – Solution of one dimensional wave equation (Zero and non-zero velocity) – One dimensional heat equation (Temperature reduced to zero and non zero boundary conditions) – Steady state solution of two dimensional heat equation(Finite and infinite plate).	
Total (L:45+T:15)	

Suggested Learning Resources
Text Books : 1. B. S. Grewal, Higher Engineering Mathematics , 45th Edition, Khanna Publishers, 2023. 2. Erwin Kreyszig, Advanced Engineering Mathematics, 11 th Edition, Wiley India, 2025.
Reference Books: 1. R. K. Jain and S. R. K. Iyengar, Advanced Engineering Mathematics –5th Edition, Narosa Publishing House, 2016. 2. Alan Jeffrey, Advanced Engineering Mathematics, 2nd Edition, Academic Press,2002. 3. Louis A. Pipes and Lawrence R. Harvill , Applied Mathematics for Engineers and Physicists , 3rd Edition, McGraw Hill Education,2014. 4. Stanley J. Farlow, Partial Differential Equations for Scientists and Engineers, Revised Edition, Dover Publications, 1993. 5. James Ward Brown and Ruel V. Churchill ,Fourier Series and Boundary Value Problems, 7th Edition, McGraw Hill Education,2006.



APPLIED PHYSICS FOR CIVIL ENGINEERING							
Course Code:		26PYB05				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 provide fundamental knowledge of the physical principles underlying engineering materials, acoustics, fiber optics, energy systems, and their applications in Civil Engineering. 2. To develop the ability to apply modern physics concepts and advanced materials for sustainable construction, structural health monitoring, and smart infrastructure development.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply the principles of crystal structures, material defects, elasticity, and advanced construction materials to solve civil engineering problems.					Ap	20%
CO 2	Analyze the acoustical properties of buildings and ultrasonic testing results for structural evaluation.					An	20%
CO 3	Employ optical fiber and fiber optic sensor technologies in structural health monitoring applications.					Ap	20%
CO 4	Analyze solar energy systems, thermal insulation, and sustainable energy conservation techniques in smart buildings.					An	20%
CO 5	Analyze the relationship between the properties of advanced engineering materials and their applications in modern engineering technologies.					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											
CO 2	3	3				1							
CO 3	3	2											
CO 4	3	3											
CO 5	3	2				1	1						
CO (W.A)	3	2				1	1						

Unit- I : Properties of Matter	9
Elasticity - Hooke's law Stress-strain diagram and its uses - factors affecting elastic modulus and tensile strength - Torsional stress and deformations - twisting couple - torsion pendulum: theory and experiment - bending of beams - bending moment - cantilever: theory and experiment - uniform and non-uniform bending: theory and experiment - I-shaped girders - stress due to bending in beams.	
Unit- II : Acoustics and Lighting Systems	9
Acoustics: Reverberation – Loudness – Focusing – Echelon – Noise – Echo - Resonance – Interference – Sabine's formula (Derivation) – Absorption coefficient – Sonometer - Sound insulation. Activities: Virtual Demonstration of sound insulation and resonance. Lighting: Visual field glare, colour – day light calculations – day light design of windows, measurement of day light and use of models and artificial skies - artificial lighting – LED characteristics.	
Unit- III : Fiber Optics and Sensors	9
Principles of optical fibers - Structure and propagation of light in optical fibers - Numerical aperture and acceptance angle - Types of optical fibers and losses - Fiber optic communication basics - Advantages of fiber optics over conventional systems - Fiber optic sensors for structural health monitoring - Fiber optic sensors and strain gauges - Applications in bridges, tunnels and dams.	
Unit- IV : Energy and Environmental Physics	9
Solar energy systems for buildings - Solar radiation and solar thermal systems - Photovoltaic cells and solar panels - Energy-efficient building concepts - Heat transfer mechanisms - Thermal conductivity of building materials - Insulation techniques for buildings - Energy conservation in smart buildings - Sustainable construction materials - Rainwater harvesting and environmental monitoring - green energy technologies in civil engineering - Net-zero energy buildings	
Unit- V : Engineering Materials	9
Engineering Materials: Composites – Fibre Reinforced Plastics (FRP) – Fiber Reinforced Metals (FRM) – Fiber Reinforced Bricks (FRB) – Metallic Glasses- Shape memory alloys – Ceramics – Thermal, Mechanical, Electrical and Chemical properties –3D printed construction materials - Nano materials.	
Total (L : 45)	
Suggested Learning Resources	
Text Books :	
1. Arthur Beiser, (2017), Concepts of Modern Physics, 7th Edition, McGraw Hill Education. 2. D. K. Bhattacharya and Poonam Tandon, (2015), Engineering Physics, Oxford University Press.	
Reference Books:	
1. Halliday, Resnick and Walker, (2015), Fundamentals of Physics, 10th Edition, Wiley India. 2. Charles Kittel, (2012), Introduction to Solid State Physics, 8th Edition, Wiley India. 3. R. C. Hibbeler, (2023), Structural Analysis, Pearson. 4. Medved, (2021), Building Physics, Springer. 5. Stephen Peake, (2018), Renewable Energy: Power for a Sustainable Future, Oxford University Press.	

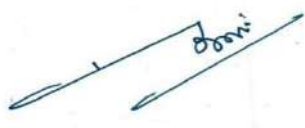
CLIMATE CHANGE AND SUSTAINABILITY (Common to All Branches)							
Course Code:		26CYB04			CIA		40
Course Type: (Theory/Practical/Integrated)		Theory			ESE		60
L:T:P:C		2	0	0	2	Total Marks	100
Total Hours of Pedagogy		30			Exam Hours		3
Prerequisite		NIL					
Course Objectives							
1. To develop students 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, Envriomental Science and Engineering, Sri Krishna Hitech Publishing Co. Pvt.Ltd., Chennai,15 th Edition, 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, கடல்வளம்உணர்தல்.					R	20%
CO 5	தமிழ்மொழியைகணினிவழிபயன்படுத்தும்உத்திகளைதெரிந்துகொள்ளுதல்.					U	20%

அலகு 1 நெசவுமற்றும்பாளைத்தொழில்நுட்பம்	3
நெசவுத்தொழில்-பாளைத்தொழில்நுட்பம்-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-தமிழ்மின்நூலகம்- 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.

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING							
Course Code:		26EEC03				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
Pre-requisites		NIL					
Course Objectives							
- To develop fundamental knowledge of electrical and electronic engineering concepts through DC circuits, AC circuits, electrical machines, wiring systems, semiconductor devices and digital electronics. - To apply electrical and electronic engineering principles for analyzing domestic and industrial applications.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Apply the fundamental principles and laws to solve basic DC and AC circuits.					Ap	20%
CO 2	Analyze the characteristics of DC machines, transformers and AC machines.					An	20%
CO 3	Apply basic electrical wiring techniques and safety practices for residential electrical installations.					Ap	20%
CO 4	Analyze and Recommend a suitable semiconductor device for a basic electronic circuit design.					An	20%
CO 5	Design a digital logic circuit using logic gates for real world electronics 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	3	3										
CO 2	3	2	2										
CO 3	3	2				1					1		
CO 4	3	2											
CO 5	3	2											
CO (W.A)	3	2	2.5			1							

Unit- I : BASIC ELECTRICAL CIRCUITS	9
Electrical quantities and circuit elements (R, L and C) – Ohm’s Law – Kirchhoff’s Laws – Series and parallel circuits – Electrical power and energy – Introduction to DC and AC supply systems.	
Unit- II : ELECTRICAL MACHINES	9
DC Machines: Construction, principle of operation, types and applications – Single phase transformer: Construction, principle of operation and applications – AC Machines: Construction, principle of operation and applications of single phase induction motor, three phase induction motor, and synchronous motor.	
Unit- III :HOUSE WIRING AND ELECTRICAL SAFETY	9
Single phase and three phase systems – Phase, Neutral and Earth – Basic house wiring – Wiring tools and accessories – Staircase wiring – Ceiling fan and lamp connections – MCB and RCCB – Basic load calculation - Electrical safety practices in homes and industries.	
Unit- IV : ELECTRONIC DEVICES AND APPLICATIONS	9
Introduction to semiconductor devices – PN junction diode – Zener diode – BJT transistor – LED – Operational amplifier – Applications in rectifier, switching and simple control circuits – Introduction to sensors and smart devices.	
Unit- V :DIGITAL ELECTRONICS AND EMERGING TECHNOLOGIES	9
Number systems – Binary arithmetic – Logic gates – Boolean algebra – Adder and subtractor circuits – Introduction to Arduino, IoT and renewable energy systems.	
Total (L : 45)	
Suggested Learning Resources	
Text Books :	
1. D. P. Kothari and I. J. Nagrath, Basic Electrical and Electronics Engineering, 2nd Edition, McGraw Hill, 2020.	
2. Ritu Sahdev “Basic Electrical Engineering” 1st Revised Edition, Khanna Book Publishing Co, 2020.	
Reference Books:	
1. Jr., William H. Hayt, Kemmerly, Jack E. Phillips, Jamie D. Durbin, Steven M. “Engineering Circuits Analysis”, 10th edition., Tata McGraw Hill publishers, New Delhi, 2024.	
2. Charles Alexander and Mathew Sadiku, ‘Fundamentals of Electric Circuits’. Tata McGraw Hill, New Delhi, 2021	
3. R Muthusubramanian and S Salivahanan, “Basic Electrical and Electronics Engineering, education” 2nd Edition, McGraw Hill, 2024.	
4. Dr. Aruna Bansal, Dr. L. Radhika Rani, Dr. N. Chandrakant Joshi, and Dr. C. Bala Subramanian, Basic Electronics Engineering, Academic Guru Publishing House, 2023.	
5. D. C. Kulshreshtha, Basic Electrical Engineering, Tata McGraw Hill, 2019.	

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ENGINEERING MECHANICS: (STATICS AND DYNAMICS)							
Course Code:	26CEC02				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	
Pre-requisites	Nil						
Course Objectives							
- To apply principles of equilibrium to analyze rigid body systems in 2D space. - To evaluate the first and second moment of area of composite plane figures. - To comprehend the effects of friction in mechanical systems. - To understand the different methods to analyze the forces acting on trusses.							
Course Outcomes					Cognitive Level	Weightage of COs in ESE	
The student will be able to							
CO1	Compute the resultant and analyze equilibrium of the system of forces acting on particles and rigid bodies in plane and space.				Ap	20%	
CO2	Calculate the geometry-dependent properties like center of gravity and moment of inertia.				An	20%	
CO3	Examine the laws of friction to distinguish between different types of friction in practical scenarios.				Ap	20%	
CO4	Solve problems related to the dynamics of rigid bodies in plane motion.				An	20%	
CO5	Predict the internal forces of the members of trusses and frames.				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					2
CO 4	3	2								2		2	2
CO 5	3	2						2		2			2
CO (W.A)	3	2						2		2		2	2

Unit- I : STATICS AND EQUILIBRIUM OF RIGID BODIES	(9+3)
Fundamental concepts and principles - Resolution of a force - Resolution of forces in a plane - Free body diagram - System of forces - Principle of transmissibility - Moment of force about a point and axis - Varignon's theorem - Equilibrium of rigid bodies in two and three dimensions - Types of beams and Frames - Reactions and supports.	
Unit- II : PROPERTIES OF SURFACES	(9+3)
Centre of gravity, Centre of mass and Centroid - Parallel axis and Perpendicular axis theorem - Moment of Inertia of simple and complex areas.	
Unit- III : FRICTION	(9+3)
Laws of friction, Coefficients of Friction, Angles of Friction, Types of Friction - Surface and Ladder friction.	
Unit- IV : DYNAMICS OF PARTICLES AND RIGID BODIES	(9+3)
Kinematics - Displacement, Velocity and Acceleration - Rectilinear motion - Projectile Motion - Kinetics - Equations of motion of a rigid body - Newton's second Law.	
Unit- V : ANALYSIS OF TRUSSES	(9+3)
Introduction to trusses - Classification - Methods of truss analysis - Analysis of plane trusses - Method of joints - Method of sections (simple problems).	
Total (L : 45 + T : 15)	

Suggested Learning Resources
Text Books :
1. R.S. Khurmi and N. Khurmi, "A Text Book of Engineering Mechanics", S.Chand & co. 22nd Edition, 2018. 2. Rajasekaran and Sankara Subramanian, "Fundamentals of Engineering Mechanics", 3rd Edition, 2017. 3. Hibbeler, R.C., "Engineering Mechanics: Statics, and Engineering Mechanics: Dynamics", 15th edition, Prentice Hall, 2022.
Reference Books:
1. Shames I.H, and Rao G.K.M, "Engineering Mechanics - Static and Dynamics", Pearson Education, 2009. 2. S. Timoshenko and Young, "Engineering Mechanics", McGraw Hill, 4th Edition, 2017

for Review

CONSTRUCTION MATERIALS AND PRACTICES							
Course Code:		26CEC03				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
Pre-requisites		Nil					
Course Objectives							
- To acquire knowledge of traditional and modern and sustainable building materials to promote eco-friendly infrastructure development. - To develop skills to analyse the properties and performance of cementitious materials and construction techniques in various environmental conditions.							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
The student will be able to							
CO1	Evaluate the quality and suitability of construction materials using standard tests.					An	20%
CO2	Select appropriate timber, metal products, finishes, insulation, and protective materials for building construction based on functional requirements.					An	20%
CO3	Assess the Suitability of Advanced Materials for Different Construction applications based on performance requirements.					An	20%
CO4	Apply Appropriate Construction Techniques during Construction.					Ap	20%
CO5	Examine the Applications of Sustainable Building Materials and Technologies in Sustainable Construction.					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		3			3	3
CO 2	3	3					2		3			3	3
CO 3	2	3							2			2	3
CO 4	3								3				3
CO 5	3	3					2		3			2	3
CO (W.A)	2.8	2.8					2		2.8			2.5	3

Unit- I : Construction Materials	11
Stones: Stone as building material, Criteria for selection, Tests on stones. Bricks: Tests on bricks - Compressive strength, Water absorption, Efflorescence. Concrete blocks, Types, Hollow and solid blocks, Lightweight Concrete Blocks, Applications. Cement -Properties: Hydration, Compressive and Tensile strength, Soundness, Consistency, Setting Time. Fine aggregates, River sand, Crushed Stone sand (M and P-Sand) - Properties. Coarse Aggregates, Crushing Strength, Impact Strength, Flakiness and Elongation index, Abrasion Resistance.	
Unit- II : Other Materials	9
Timber, Market Forms, Industrial Timber, Plywood, Laminated Panels. Metals, Steel, Aluminum, Composition, Properties, Market Forms, Mechanical Treatment, Aluminum Composite Panels. Surface Finishes, Paints, Varnishes, Distempers, Bituminous Products. Sealants for Joints, Insulating Materials, Acoustic and Thermal Insulation, Fire Protection, Damp Proofing, Ventilation, Air Conditioning.	
Unit- III : Advanced Materials	9
Advanced materials, Glass, Solar Panels - Ceramics, Clay products, Refractories, Fibre reinforced plastics, Fibre textiles, Geomembranes, Geotextiles. Composite materials, Types, Laminar composites, Applications in construction.	
Unit- IV : Construction Practices	8
Masonry construction, Brick and stone masonry. Formwork, Centering, shuttering, Scaffolding, Shoring, Underpinning. Construction joints, Contraction, construction and expansion joints. Plastering, Pointing, Cavity and diaphragm walls.	
Unit- V : Sustainable Technologies and Emerging Trends	8
Sustainable Building Materials: Natural fibers in construction (Sisal, jute, and coir) - Green cement alternatives (Calcium sulfoaluminate cement, Alkali-activated materials)-Smart Coatings: Self-healing coatings (Mechanisms and materials) - Stimuli-responsive coatings (thermochromic, electrochromic) - Self-cleaning coatings: (Hydrophobic and photocatalytic coatings) - 3D-Printing Building Materials, Introduction to 3D Printing in Construction - Advantages and limitations.	
Total (L : 45)	

Suggested Learning Resources
Text Books :
1. Arora, S. P., and Bindra, S. P. "Building Construction". Dhanpat Rai Publications, 2013. 2. Rangwala, S. C, "Engineering Materials", Charotar Publishing House, Anand India, 2014.
Reference Books:
1. Edward Allen and Joseph Iano, "Fundamentals of Building Construction: Materials and Methods", John Wiley & Sons, 7th edition, 2019.

2. Rao, S. S. "Engineering Materials: Properties and Applications of Metals and Alloys", Narosa Publishing House, 2010.
3. Peurifoy, Schexnayder, Shapira, "Construction Planning, Equipment and Methods", Tata McGraw Hill Education Private Ltd, New Delhi, 9th edition, 2018.
4. Vyas, N., and Chauhan, M. S. "Sustainable Construction: Green Building Design and Delivery", Narosa Publishing House, 2020.
5. National Building Code of India, Part V, "Building Materials", 2016.

Dr. Anil Kumar

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 :
- Sanjay Kumar and PushpLata, "Communication Skills", Oxford University Press, Third Edition, 2023. - Meenakshi Raman and Sangeeta Sharma, "Professional Communication", Oxford University Press, Third Edition, 2022.
Reference Books:
- Barun K. Mitra, "Personality Development and Soft Skills", Oxford University Press, Second Edition, 2023. - Flatley, Marie E. and Rentz, Kathryn. "Business Communication: Connecting in a Digital World", McGraw Hill Education, 2022. - Murphy, Herta A., Hildebrandt, Herbert W. and Thomas, Jane P. "Effective Business Communication", McGraw Hill Education, 2022. - Raman, Meenakshi and Sharma, Sangeeta. "Technical Communication: Principles and Practice", Oxford University Press, 2021. 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.

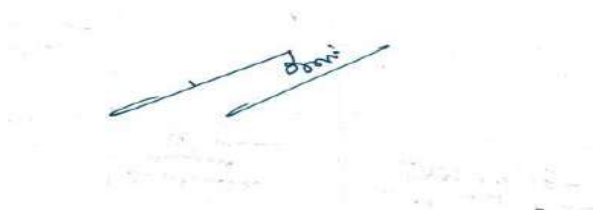
TOTAL (P:30)

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/



LIFE SKILLS FOR ENGINEERS							
Course Code:		26MAN03				CIE	100
Course Type: (Theory/Practical/Integrated)		Integrated				ESE	-
L:T:P:C		1	0	2	1	Total Marks	100
Total Hours of Pedagogy		45				Exam Hours	1 hour
Pre-requisites		Nil					
Course Objectives							
1. To enhance self-awareness, interpersonal skills, and resilience to prepare students for the professional and personal challenges of engineering careers and life beyond academics. 2. To equip engineering students with essential life skills encompassing personal and emotional development, effective management of time and stress, financial literacy, digital safety, and personal wellness. 3. To impart and cultivate analytical reasoning, innovative thinking, effective collaboration, and ethical leadership to prepare students for complex challenges in professional and personal environments							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Display self-awareness, emotional intelligence, and resilience through reflection and personal development activities.					A	-
CO 2	Demonstrate effective communication, empathy, collaboration, and interpersonal skills during team-based activities.					P	-
CO 3	Apply creative, critical-thinking, and problem-solving strategies to address real-life and professional challenges.					C	-
CO 4	Exhibit leadership, accountability, adaptability, and ethical conduct while participating in individual and group tasks.					A	-
CO 5	Practice responsible behaviors related to wellness, financial management, digital citizenship, and lifelong learning.					B	-

COs	POs										
	1	2	3	4	5	6	7	8	9	10	11
CO 1						2					2
CO 2							2	3	3		
CO 3		3	2								
CO 4			2			2	2	2	2		
CO 5						2	2			3	3
CO (W.A)		3	2			2	2	2.5	2.5	3	3

Unit- I : SELF-MANAGEMENT	9
Self-Awareness, Emotional Intelligence, Personal Effectiveness, Positive Attitude, Stress Management, Resilience, Goal Setting, Time Management, Adaptability. Activities: Personality Assessment and Reflection, Vision Board Creation, Weekly Time Audit, Cone grab, Blind Polygon, Baba-Baby-Ball, Pushing Boundaries.	
Unit- II : INTERPERSONAL SKILLS & COLLABORATION	9
Communication, Active Listening, Empathy, Interpersonal Relationships, Trust Building, Team Roles, Team Collaboration, Conflict Management. Activities: Baton pass, Blindfold Walk, Human Knot, Minefield, Helium Stick, Pipe & ball.	
Unit- III :INNOVATIVE THINKING & PROBLEM SOLVING	9
Critical Thinking, Creativity, Problem Solving, Decision Making, Analytical Reasoning, Lateral Thinking, Scientific Temperament. Activities: 30 Circles Challenge, Key Punch, Tarp Hole Game, Toxic Waste, River Crossing Challenge, T-Puzzle & Square Puzzle	
Unit- IV :LEADERSHIP & PROFESSIONAL RESPONSIBILITY	9
Leadership Styles, Leadership Initiative, Motivation, Delegation, Accountability, Adaptive Leadership, Professional Responsibility, Decision Making. Activities: Human Crane, Number Roll, Snake Walk, Super Airways, Leaky Pipe Game, Leadership Style Assessment & Reflection.	
Unit- V : LIFE & CAREER MANAGEMENT	9
Financial Literacy, Budgeting and Saving, Digital Citizenship and Online Safety, Health and Wellness, Professional Ethics, Lifelong Learning. Activities: Bank It! – Choice vs Chance Simulation, Budget Planning Challenge, Digital Safety Scenarios, Wellness Challenge, Community Service Project, Learning Sprint Challenge.	
Total (15 + 30 : 45)	

Suggested Learning Resources

Text Books :

1. ICT Academy of Kerala, Life Skills for Engineers, McGraw Hill Education (India) Private Limited, 2016.
2. Kolb, D.A., Experiential Learning: Experience as the Source of Learning and Development, 2nd Edition, Pearson Education, 2015.

Reference Books:

1. Goleman, D., Emotional Intelligence: Why It Can Matter More Than IQ, 25th Anniversary Edition, Bloomsbury Publishing, 2021
2. Johnson, D.W. and Johnson, F.P., Joining Together: Group Theory and Group Skills, 12th Edition, Pearson Education, 2021
3. Northouse, P.G., Leadership: Theory and Practice, 10th Edition, SAGE Publications, 2025.
4. Chambers, H., Skills for New Managers, 2nd Edition, McGraw-Hill Education, 2017.
5. Heifetz, R., Grashow, A. and Linsky, M., The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World, Harvard Business Press, 2009.

A handwritten signature in blue ink, appearing to be 'Paw' or similar, with a stylized loop and a horizontal line extending to the right.