

NANDHA ENGINEERING COLLEGE

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



Curriculum and Syllabi

for

B.Tech. - AGRICULTURAL ENGINEERING [R26]

[CHOICE BASED CREDIT SYSTEM]

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

JULY 2026

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

B.Tech. - AGRICULTURAL ENGINEERING	
VISION	• To foster academic excellence by imparting knowledge in Agricultural Engineering to meet the ever-growing needs of the society.
MISSION	• To provide quality education to produce agricultural engineers with social responsibility. • To excel in the thrust areas of agricultural engineering to identify and solve the real-world problems. • To create a learner-centric environment by upgrading knowledge and skills to cater the needs and challenges of the society.
PROGRAMME EDUCATIONAL OBJECTIVES (PEO)	• The graduates of Agricultural Engineering will be • PEO1: Core Competency: Successful professional with core competency and interdisciplinary skills to satisfy the Industrial needs. • PEO2: Research, Innovation and Life-long Learning: Capable of identifying technological requirements for the society and providing innovative solutions to 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 Agricultural Engineering will be able to • PSO1: Design, analyze and apply the knowledge gained on agricultural machinery, tools, implements and production technologies to increase crop production, improve land use, soil nutrient and conserve resources like water, fertilizer and energy. • PSO2: Apply the comprehensive knowledge of engineering properties of agricultural products for upgrading the unit operation and developing innovative process, value-added products, and advanced engineering technologies to meet the challenges in agriculture.

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

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

NANDHA ENGINEERING COLLEGE (AUTONOMOUS), ERODE - 638 052

REGULATIONS - 2026 (R26)

CHOICE BASED CREDIT SYSTEM (CBCS)

B.TECH. – AGRICULTURAL 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									
2	26MYB01	Linear Algebra and Applied Calculus	BS	T	3	1	0	4	4
3	26CYB02	Applied Agricultural Chemistry	BS	LIT	2	0	2	3	4
4	26GYA01	தமிழர்மரபு / Heritage of Tamils	HUM	T	1	0	0	1	1
5	26ADC02	Problem Solving and Python Programming	ES (G)	LIT	3	0	2	4	5
6	26MEC01	Engineering Drawing and Graphics	ES(G)	LIT	3	0	2	4	5
7	26AGC01	Introduction to Agricultural Engineering	ES (PC)	T	3	0	0	3	3
8	26EYP01	English Communication Lab	HUM	L	0	0	4	2	4
9	26GEP02	Makers Space	SD	L	0	0	4	2	4
10	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	26PYB03	Applied Physics for Industrial systems	BS	T	3	0	0	3	3
3	26CYB04	Climate Change and Sustainability	BS	T	2	0	0	2	2
4	26GYA02	தமிழரும் தொழில்நுட்பம் / Tamils and Technology	HUM	T	1	0	0	1	1

5	26EEC02	Electrical systems for Agricultural Engineering	ES (G)	T	3	0	0	3	3
6	26AGC02	Engineering Mechanics for Agricultural Engineers	ES(PC)	T	2	1	0	3	3
7	26AGC03	Soil Science and Soil Mechanics	ES (PC)	LIT	3	0	2	4	5
8	26EYP02	English Proficiency Lab	HUM	L	0	0	2	1	2
9	26PYP01	Physics Laboratory	HUM	L	0	0	2	1	2
10	26GEP01	Foundation Lab	SD	L	0	0	4	2	4
11	26GEP03	Life Skills for Engineers	ES (G)	-	1	0	2	1	3
12	26GEA01	Analytical Skills- I	ES (G)	T	2	0	0	1	2
TOTAL					20	2	12	26	34

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	Principles and Practices of Crop Production	ES(PC)	T	3	0	0	3	3
3	XXXX	Surveying and Levelling for Agricultural Engineers	ES (PC)	LIT	3	0	2	4	5
4	XXXX	Thermodynamics for Agricultural Engineers	ES (PC)	T	3	0	0	3	3
5	XXXX	Hydrology and Water Resources Engineering	ES (PC)	T	2	1	0	3	3
6	XXXX	Strength of Materials	ES (PC)	T	2	1	0	3	3
7	XXXX	Crop Production Laboratory	ES (PC)	L	0	0	4	2	4
8	XXXX	English Competency Laboratory	HUM	L	0	0	2	1	2
9	XXXX	Disaster Management and Preparedness	M	T	2	0	0	0	2
10	XXXX	Design Thinking	ES (G)	T	2	0	0	2	2
11	XXXX	Analytical Skills - II	ES (G)	T	2	0	0	1	2
TOTAL					22	3	8	26	33

SEMESTER: IV							
S. No.	COURSE	COURSE TITLE	CATEGORY	COURSE	TEACHING AND LEARNING SCHEME	CREDITS	TCP

	CODE			TYPE	L	T	P		
1	XXXX	Introduction to AI and ML for Agricultural Engineers	BS	T	2	0	0	2	2
2	XXXX	Fluid Mechanics and Hydraulics	ES (PC)	LIT	2	1	2	4	5
3	XXXX	Farm Tractor Systems	ES (PC)	LIT	3	0	2	4	5
4	XXXX	Heat and Mass Transfer for Agricultural Engineers	ES (PC)	T	2	1	0	3	3
5	XXXX	Renewable energy Resources	ES (PC)	T	3	0	0	3	3
6	XXXX	CAD for Agricultural Engineers	ES (PC)	L	0	0	4	2	4
7	XXXX	Workplace English Laboratory	HUM	L	0	0	2	1	2
8	XXXX	Analytical Skills - III	ES (G)	T	2	0	0	1	2
9	XXXX	Micro Project	SD		0	0	4	2	4
10	XXXX	Personality and Character Development	SD		0	0	1	0	1
TOTAL					14	2	15	22	31

SEMESTER: V									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Crop Process Engineering	ES (PC)	T	3	0	0	3	3
2	XXXX	Irrigation and Drainage Engineering	ES (PC)	LIT	3	0	2	4	5
3	XXXX	Farm Implements and Equipments	ES (PC)	T	3	0	0	3	3
4	E1	Elective I	ES (PE)	T	3	0	0	3	3
5	E2	Elective II	ES (PE)	T	3	0	0	3	3
6	E3	Elective III	ES (PE/OE)	T	3	0	0	3	3
7	XXXX	Crop Process Engineering Laboratory	ES (PC)	L	0	0	4	2	4
8	XXXX	Farm Implements and Equipments Laboratory	ES (PC)	L	0	0	4	2	4
9	XXXX	Indian Knowledge System	M	T	2	0	0	0	2
TOTAL					20	0	10	23	30

FOR HONOURS

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

SEMESTER: VI									
S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	XXXX	Innovation, Start-up and Entrepreneurship	HUM	LIT	2	0	2	3	4
2	XXXX	Unit Operations in Agricultural Processing	ES (PC)	LIT	3	0	0	3	3
3	XXXX	Bio and Thermo-chemical conversion of biomass	ES (PC)	LIT	3	0	2	4	5
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	Comprehension	SD	T	2	0	0	2	2
8	XXXX	Unit Operations in Agricultural Processing Laboratory	ES (PC)	L	0	0	4	2	4
9	XXXX	Mini Project	SD		0	0	4	2	2
TOTAL					19	0	12	25	29

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	Food and Dairy Engineering	ES (PC)	LIT	3	0	2	4	5
2	E7	Elective 7	ES (PE)	T	3	0	0	3	3
3	E8	Elective 8	ES (PE)	T	3	0	0	3	3
4	E9	Elective 9	ES (OE)	T	3	0	0	3	3
5	XXXX	Rural Agro Industry Work Experiment	ES (PC)	L	0	0	2	1	2
6	XXXX	Internship/ Industrial Training	SD					2	
7	XXXX	Research Paper Writing	M						2
TOTAL					12	0	4	16	18

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

Humanities and Social Sciences including Management courses (HUM)

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26GYA01	தமிழர்மரபு / Heritage of Tamils	HUM	T	1	0	0	1	1
2	26EYP01	English Communication Lab	HUM	L	0	0	4	2	4
3	26GYP01	Yoga for Youth Empowerment	HUM	L	0	0	2	1	2
4	26GYA02	தமிழரும் தொழில் நுட்பமும்/Tamils and Technology	HUM	T	1	0	0	1	1
5	26EYP02	English Proficiency Lab	HUM	L	0	0	2	1	2
6	26PYP01	Physics Laboratory	HUM	L	0	0	2	1	2
7	XXXX	English Competency Laboratory	HUM	L	0	0	2	1	2
8	XXXX	Workplace English Laboratory	HUM	L	0	0	2	1	2
9	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	26CYB02	Applied Agricultural	BS	LIT	2	0	2	3	4

		Chemistry							
3	26MYB02	Fourier Analysis and Partial Differential Equations	BS	T	3	1	0	4	4
4	26PYB03	Applied Physics for Industrial systems	BS	T	3	0	0	3	3
5	26CYB04	Climate Change and Sustainability	BS	T	2	0	0	2	2
6	XXXX	Probability, Statistics and Numerical Techniques	BS	T	3	1	0	4	4
7	XXXX	Introduction to AI and ML for Agricultural Engineers	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	26EEC02	Electrical systems for Agricultural Engineering	ES (G)	T	3	0	0	3	3
4	26GEP03	Life Skills for Engineers	ES (G)	-	1	0	2	1	3
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	26AGC01	Introduction to Agricultural Engineering	ES (PC)	T	3	0	0	3	3
2	26AGC02	Engineering Mechanics for Agricultural Engineers	ES(PC)	T	2	1	0	3	3
3	26AGC03	Soil Science and Soil Mechanics	ES (PC)	LIT	3	0	2	4	5
4	XXXX	Principles and Practices of Crop Production	ES(PC)	T	3	0	0	3	3
5	XXXX	Surveying and Levelling for Agricultural Engineers	ES (PC)	LIT	3	0	2	4	5

6	XXXX	Thermodynamics for Agricultural Engineers	ES (PC)	T	3	0	0	3	3
7	XXXX	Hydrology and Water Resources Engineering	ES (PC)	T	2	1	0	3	3
8	XXXX	Strength of Materials	ES (PC)	T	2	1	0	3	3
9	XXXX	Crop Production Laboratory	ES (PC)	L	0	0	4	2	4
10	XXXX	Fluid Mechanics and Hydraulics	ES (PC)	LIT	2	1	2	4	5
11	XXXX	Farm Tractor Systems	ES (PC)	LIT	3	0	2	4	5
12	XXXX	Heat and Mass Transfer for Agricultural Engineers	ES (PC)	T	2	1	0	3	3
13	XXXX	Renewable energy Resources	ES (PC)	T	3	0	0	3	3
14	XXXX	CAD for Agricultural Engineers	ES (PC)	L	0	0	4	2	4
15	XXXX	Crop Process Engineering	ES (PC)	T	3	0	0	3	3
16	XXXX	Irrigation and Drainage Engineering	ES (PC)	LIT	3	0	2	4	5
17	XXXX	Farm Implements and Equipments	ES (PC)	T	3	0	0	3	3
18	XXXX	Crop Process Engineering Laboratory	ES (PC)	L	0	0	4	2	4
19	XXXX	Farm Implements and Equipments Laboratory	ES (PC)	L	0	0	4	2	4
20	XXXX	Unit Operations in Agricultural Processing	ES (PC)	LIT	3	0	0	3	3
21	XXXX	Bio and Thermo-chemical conversion of biomass	ES (PC)	LIT	3	0	2	4	5
22	XXXX	Unit Operations in Agricultural Processing Laboratory	ES (PC)	L	0	0	4	2	4
23	XXXX	Food and Dairy Engineering	ES (PC)	LIT	3	0	2	4	5
24	XXXX	Rural Agro Industry Work Experiment	ES (PC)	L	0	0	2	1	2

Skill Development Courses - SD

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	COURSE TYPE	TEACHING AND LEARNING SCHEME			CREDITS	TCP
					L	T	P		
1	26GEP02	Makers Space	SD	L	0	0	4	2	4
2	26GEP01	Foundation Lab	SD	L	0	0	4	2	4
3	XXXX	Micro Project	SD		0	0	4	2	4
4	XXXX	Personality and Character Development	SD		0	0	1	0	1

5	XXXX	Comprehension	SD	T	2	0	0	2	2
6	XXXX	Mini Project	SD		0	0	4	2	2
7	XXXX	Internship/ Industrial Training	SD					2	
8	XXXX	Project Work / Internship cum Project Work	SD	PW	0	0	16	8	8

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

SEMESTER WISE CREDIT DISTRIBUTION								
SEMESTER	HUM	BS	ES (G)	ES(PC)	ES(PE)	ES(PE/OE)	ES(OE)	SD
I	4	7	8	3				2
II	3	9	5	7				2
III	1	4	3	18				
IV	1	2	1	16				2
V				14	6	3		
VI	3			9	6	3		4
VII				5	6		3	2
VIII								8
Total	12	22	17	72	18	6	3	20
% Credit Distribution	7.06	12.94	10.00	42.35	10.59	3.53	1.76	11.76

Credits Total: 170

INDUCTION PROGRAMME (Common to All Branches)

Course Code:	IP3151				CIA	-
Course Type: (Theory/Practical/Integrated)					ESE	-
L:T:P:C	0	0	0	0	Total Marks	Nil
Total Hours of Pedagogy	2 Weeks				Exam Hours	-
Prerequisite	Nil					

Course Objectives

1. To recognize the importance of holistic development, professional ethics, human values, and social responsibility in engineering education.
2. To develop positive interpersonal relationships, adapt effectively to the academic environment and participate responsibly in institutional and societal activities.

Course Outcomes The students will be able to		Cognitive Level	Weightage of COs in ESE
CO 1	Explain the objectives of the Induction Programme and the role of engineering in addressing societal and national needs.	U	-
CO 2	Demonstrate self-discipline, healthy lifestyle practices, and awareness of universal human values in day-to-day activities.	Ap	
CO 3	Participate effectively in creative, literary, physical, and department-specific activities to enhance personal and professional skills.	Ap	
CO 4	Analyze the significance of teamwork, communication, and ethical behavior in building positive relationships within the institution and society.	An	
CO 5	Develop innovative ideas and create simple solutions or models through department-specific activities, fostering creativity and a maker mindset.	C	

Mapping of COs with POs / PSOs

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

(i) Physical Activity

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

(ii) Creative Arts

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

(iii) Universal Human Values

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

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

(iv) Literary Activity

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

(v) Proficiency Modules

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

(vi) Lectures by Eminent People

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

(vii) Visits to Local Area

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

(viii) Familiarization to Dept./Branch & Innovations

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

(ix) Department Specific Activities

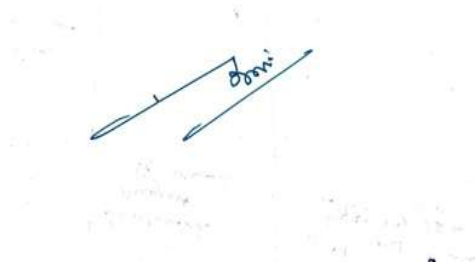
About a week can be spent in introducing activities (games, quizzes, social interactions, small experiments, design thinking, etc.) that are relevant to the particular branch of Engineering/Technology/Architecture that can serve as a motivation and kindle interest in building things (become a maker)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

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

Total (2 weeks)

References

Guide to Induction program from AICTE



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

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	3				2						2		
CO 2		3			2						2		
CO 3	3				2						2		
CO 4	3				2						2		
CO 5	3				2						2		
CO (W.A)	3	3			2						2		
Unit- I : Linear Algebra												(9+3)	
Eigen values and Eigen vectors of a real matrix- Properties of Eigen values and Eigen vectors (without proof)- Cayley Hamilton Theorem (excluding proof) and its applications.													

Unit- II : Calculus of Single and Several Variables	(9+3)
Limit of a function, Continuity, Limits at infinity, Maxima and Minima of functions of single variable, Mean value theorem - Partial derivatives-Total Derivative-Euler's theorem on homogeneous function- Maxima and Minima of functions of two variables.	
Unit- III : Multiple Integration in Cartesian Coordinates	(9+3)
Double integration in Cartesian Co-ordinates-Change of order of integration-Area as double integral- Triple Integration in Cartesian Co-ordinates-Volume as triple integrals.	
Unit- IV : Linear Differential Equations of Second Order	(9+3)
Higher order linear differential equations with constant coefficients - Method of variation of parameters - Cauchy's and Legendre's linear equations.	
Unit- V : Vector Differentiation and Integration	(9+3)
Divergence and Curl – Irrotational and solenoidal vector fields – Line integral over a plane curve – Surface integral and volume integral - Green's, Gauss divergence Theorem (Excluding Proofs) and Stokes Theorem(Excluding Proofs).	
Total (L:45+T:15)	

Suggested Learning Resources

Text Books :

1. Erwin Kreyszig, Advanced Engineering Mathematics, 11th Edition, Wiley India, 2025.
2. B.S. Grewal, Higher Engineering Mathematics, 45th Edition, Khanna Publishers, 2023.

Reference Books:

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



APPLIED AGRICULTURAL CHEMISTRY (For AGRI Branch Only)							
Course Code:		26CYB02				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 provide students with fundamental knowledge of water treatment, electrochemistry, corrosion, plant biochemistry, fertilizers, pesticides, and soil science for understanding agricultural and environmental processes. 2. To enable students to apply scientific principles related to water quality management, electrochemical systems, biochemical reactions, agrochemicals, and soil formation in solving agricultural and environmental problems.							
Course Outcomes The students will be able to						Cognitive Level	Weightage of COs in ESE
CO 1	Apply water treatment methods for domestic and industrial applications.					Ap	20%
CO 2	Analyze electrochemical processes and corrosion mechanisms for material protection.					An	20%
CO 3	Examine the structural and functional roles of carbohydrates, lipids, fatty acids, and enzymes in biological systems.					An	20%
CO 4	Implement sustainable approaches for fertilizer and pesticide use to improve crop productivity and soil fertility.					Ap	20%
CO 5	Evaluate soil formation, degradation, and conservation processes for sustainable soil management.					E	20%

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1	2										3		
CO 2			2			2							
CO 3	2					2							
CO 4			2			2					3		
CO 5			2			2							
CO (W.A)	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 CORROSION SCIENCE	6
Electrode potential - Nernst equation - derivation and problems - reference electrodes - calomel electrode - glass electrode - corrosion - chemical corrosion - mechanism - electrochemical corrosion - mechanism.	
UNIT- III : BIOMOLECULAR CHEMISTRY	6
Carbohydrates - monosaccharides - nomenclature of monosaccharides - polysaccharides - starch - lipids - classification of lipids - simple - triglycerides - complex - phospholipids - derived lipids - fatty acids - nomenclature of fatty acids - enzymes - kinetics of enzymes - Michaelis Menten equation - factors affecting enzyme activity.	
UNIT- IV : FERTILIZERS AND PESTICIDES	6
Fertilizers - nitrogen - phosphorus - sources - effects - uses - pesticides - insecticides - herbicides - sources - effects - uses - effect of excess fertilizers and pesticides used in modern agriculture - role of biofertilizers in sustainable agriculture - importance and applications of AI in agrochemicals.	
UNIT- V : SOIL SCIENCE	6
Soil - pedological and edaphological concepts - causes of soil degradation - soil erosion - causes - preventive measures - earth - earth interior components - rock weathering - types - physical - chemical - biological - fundamental soil forming process - additions - losses - transformation - translocation - importance and applications of AI in soil science.	

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)	

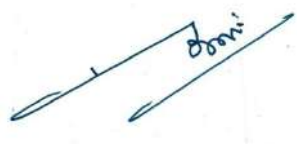
Suggested Learning Resources

Text Books :

1. Dr.Ravikrishnan A., "Applied Chemistry - II", First Edition, Sri Krishna Hitech Publishing Company Pvt. Ltd., Chennai, 2025.
2. Dilip Kumar Das, Introductory Soil Science, 4th Revised Edition, Kalyani Publishers, 2021.

Reference Books:

1. Jain P C. and Monica Jain, "Engineering Chemistry", Volume I and II, 17th Edition, Dhanpat Rai Publishing Company, New Delhi 2025.
2. Shivanand Tolanur, Fundamentals of Soil Science, 2nd Edition, CBS Publishers & Distributors, 2024.
3. Jaya Shree Anireddy, Text Book of Engineering Chemistry, John Wiley & Sons (India) Pvt. Ltd., New Delhi, 2023.
4. David L. Nelson and Michael M. Cox, Lehninger Principles of Biochemistry, 9th Edition, W. H. Freeman and Company, New York, 2025.
5. John L. Havlin, Samuel L. Tisdale, Werner L. Nelson and James D. Beaton, Soil Fertility and Fertilizers: An Introduction to Nutrient Management, 9th Edition, Pearson, 2022.



தமிழர்மரபு - HERITAGE OF TAMILS
(Common to all branches)

Course Code:	26GYA01				CIA	40
Course Type: (Theory/Practical/Integrated)	Theory				ESE	60
L:T:P:C	1	0	0	1	Total Marks	100
Total Hours of Pedagogy	15				Exam Hours	3
Prerequisite	Nil					

பாடத்திட்டத்தின்நோக்கம் :

பழந்தமிழரிடமிருந்தஅறம், இசை, கலைநுட்பம், வாணிபம், கட்டுமானம், மருத்துவம், வீரம், வாழ்வுமுறைஇவற்றைமாணவர்களுக்குஉணர்த்துவது.

Course Outcomes The students will be able to	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. Thirunavvukarasu - Historical Heritage of Tamils - Published by : International Institute of Tamil Studies

சுரை

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: The students will be able to						Cognitive Level	Weightage of COs in ESE
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 The students will be able to					Cognitive Level	Weightage of COs in ESE	
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 AGRICULTURAL ENGINEERING							
Course Code:		26AGC02			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 introduce the scope and significance of Agricultural Engineering. • To familiarize students with engineering applications in agriculture. • To provide basic knowledge on farm mechanization, irrigation, post-harvest technology, and renewable energy. • To create awareness of emerging technologies used in modern agriculture.							
Course Outcomes The students will be able to					Cognitive Level	Weightage of COs in ESE	
CO 1	Apply fundamental concepts of Agricultural Engineering to explain engineering interventions in agricultural systems				An	40%	
CO 2	Select suitable farm power sources and agricultural machinery for agricultural operations.				An	20%	
CO 3	Apply basic water management principles to recommend appropriate irrigation practices.				An	20%	
CO 4	Utilize post-harvest technologies to reduce losses and improve product quality.				An	20%	
CO 5	Apply modern agricultural technologies and renewable energy solutions for sustainable farming.				Ap	Internal Assessment	

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

Unit- I : AGRICULTURE AND AGRICULTURAL ENGINEERING	9
Agriculture: Past, Present and Future – Importance of Agriculture in India – Introduction to Agricultural Engineering – Scope and Branches of Agricultural Engineering – Role of Agricultural Engineers in Agricultural Production and Rural Development - Entrepreneurship in Agricultural Engineering.	
Unit- II : FARM MECHANIZATION	9
Need for Farm Mechanization – Sources of Farm Power – Introduction to Tractors and Power Tillers – Tillage Implements – Sowing and Planting Equipments – Plant Protection Equipments – Harvesting Machinery – Farm Safety Practices.	
Unit- III : WATER MANAGEMENT IN AGRICULTURE	9
Importance of Water in Agriculture – Agricultural Water Resources – Need and Benefits of Irrigation – Surface Irrigation Methods – Sprinkler Irrigation – Drip Irrigation – Rainwater Harvesting – Introduction to Watershed Management.	
Unit- IV : POST-HARVEST TECHNOLOGY	9
Importance of Post-Harvest Management – Crop Process Engineering and its Unit Operation Technologies – Storage of Agricultural Commodities – Value Addition of Agricultural Products.	
Unit- V : MODERN AGRICULTURAL TECHNOLOGIES	9
Renewable Energy in Agriculture – Solar Energy Applications – Biomass Utilization – Greenhouse and Protected Cultivation – Introduction to Precision Agriculture – Applications of Drones and Sensors in Agriculture – Smart Farming Concepts.	
Total (L : 45)	

Suggested Learning Resources
Text Books :
1. Ojha, T.P. and Michael, A.M., <i>Principles of Agricultural Engineering, Volume I</i>, 16th Edition, Jain Brothers, New Delhi, 2025. 2. Hunt, D. and Wilson, D., <i>Farm Power and Machinery Management</i>, 11th Edition, Waveland Press, Illinois, USA, 2016. 3. Sahay, K.M. and Singh, K.K., <i>Unit Operations of Agricultural Processing</i>, 3rd Edition, Vikas Publishing House Pvt. Ltd., New Delhi, 2004.
Reference Books:
1. Field, H.L. and Solie, J.B., <i>Introduction to Agricultural Engineering Technology</i>, 2nd Edition, Springer, New York, 2007. 2. Bainer, R., Kepner, R.A. and Barger, E.L., <i>Principles of Farm Machinery</i>, CBS Publishers & Distributors, New Delhi, Reprint Edition, 2018.

3. Dilip Kumar Majumdar, "Irrigation water Management – Principles and Practice", Prentice – Hall of India Pvt. Ltd., New Delhi, 2006.
4. Twidell, J.W. & Weir A., Renewable Energy Resources, EFN Spon Ltd., UK, 2015.
5. Hermann, J.H. Precision in Crop Farming, Site Specific Concepts and Sensing Methods: Applications and Results. Springer, Netherlands.2013.

M.K. Mh

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 The students will be able to		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.

Don't

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

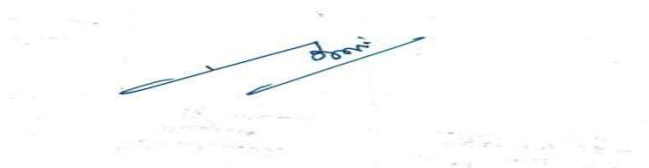
Suggested Learning Resources
Text Books: 1) Wang, W. (2010). Reverse engineering: Mechanisms, structures, systems & materials. CRC Press. 2) Stephen Christena, Learn to Weld: Beginning MIG Welding and Metal Fabrication Basics, Crestline Books, 2014. 3) H. Lipson, Fabricated - The New World of 3D Printing, 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							
1. To develop students' character and ethical values through value-based education. 2. To apply yogic principles and healthy lifestyle practices to enhance physical well-being and maintain youthfulness.							
Course Outcomes The students will be able to					Cognitive Level	Weightage of COs in ESE	
CO 1	Apply yoga and physical exercises for a healthy life.				Ap	Internal Assessment	
CO 2	Explain the principles of Kayakalpa for maintaining health and youthfulness.				U		
CO 3	Practice meditation techniques for mental well-being.				Ap		
CO 4	Demonstrate individual and social values in daily life.				Ap		
CO 5	Analyze the importance of introspection and moral values for personal development				An		

Mapping of COs with POs / PSOs													
COs	POs											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1						2	1				2		
CO 2										2	3		
CO 3						2	1	2			3		
CO 4						2	2	3	2	2	3		
CO 5										2	3		
CO (W.A)						2	1	2	1	2	3		
Unit- I : Physical Health												6	
Sky – Introduction – Education as a means for Youth Empowerment – Greatness of Education – Yoga for Youth Empowerment. Simplified Physical Exercise Explanation – Hand, Leg, Breathing and Eye exercises – Kapalabathi, Makarasanam, Massaging, Acupressure and Relaxation practices – Benefits, Pranayamam: Nadi Saddhi – Clearance – Explanation Benefits.													

Unit- II : Strengthening Life Force	6
Reasons for Diseases: Natural Reasons – Artificial Reasons, Philosophy of Kayakalpa – Physical Body – 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 The students will be able to		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.	



PHYSICS FOR INDUSTRIAL SYSTEM (Common to AGRI & CHEMICAL Branches)							
Course Code:		26PYB03				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 understand the properties and applications of engineering materials and apply thermal physics, fluid mechanics, and instrumentation principles in industrial processes. 2. To analyze modern energy technologies and advanced physics concepts for sustainable industrial applications.							
Course Outcomes The students will be able to						Cognitive Level	Weightage of COs in ESE
CO 1	Apply the knowledge of structure and properties of engineering materials to select suitable materials for industrial applications.					Ap	20%
CO 2	Apply thermodynamic principles and heat transfer concepts in process industries.					Ap	20%
CO 3	Analyze fluid behavior and instrumentation techniques for industrial systems.					An	20%
CO 4	Apply renewable energy and environmental monitoring technologies to address industrial and sustainability challenges.					Ap	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	2											
CO 5	3	2				1	1						
CO(W.A)	3	3				1	1						

Unit- I : Properties of Engineering Materials	9
Crystal structure and bonding – Crystal systems and unit cells – Atomic bonding in solids – Mechanical properties of materials – Elasticity, plasticity and toughness – Thermal expansion and thermal stress – Corrosion and prevention techniques – Polymers, composites and ceramic materials – Smart materials and industrial applications.	
Unit- II : Thermal Physics	9
Laws of thermodynamics – Zeroth, First and Second laws – Heat transfer: conduction, convection and radiation – Heat conduction analyze for compound materials- Thermal conductivity of materials – Heat exchangers and insulation materials – Thermal conductivity of bad conductor- Applications in food processing and chemical industries.	
Unit- III : Fluid Physics and Instrumentation	9
Properties of fluids and fluid dynamics – Bernoulli's principle and flow measurement – Sensors and transducers – Pressure, temperature and humidity sensors-Viscosity – Poiseuille's flow – Optical and electronic instrumentation – Applications in irrigation systems and process industries.	
Unit- IV : Energy Physics and Environmental Applications	9
Renewable energy sources – Solar thermal and photovoltaic systems – Bioenergy and biomass conversion – Environmental pollution monitoring techniques – Energy management in agriculture and chemical plants.	
Unit- V : Engineering Materials	9
Composites – Fibre Reinforced Plastics (FRP) – Fiber Reinforced Metals (FRM) – Fiber Reinforced Bricks (FRB) - 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. M. N. Avadhanulu and P. G. Kshirsagar, (2024), Engineering Physics, S. Chand Publishing. 2. Yunus A. Çengel and Afshin J. Ghajar, (2020), Heat and Mass Transfer: Fundamentals and Applications, 6th Edition, McGraw-Hill Education.
Reference Books: 1. S. O. Pillai, (2019), Applied Physics for Engineers, New Age International Publishers. 2. John Twidell and Tony Weir, (2021), Renewable Energy Resources, 4th Edition, Routledge. 3. A. K. Sawhney, (2015), A Course in Electrical and Electronic Measurements and Instrumentation, Dhanpat Rai Publications. 4. P. K. Nag, (2021), Engineering Thermodynamics, McGraw Hill Education. 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 The students will be able to		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%

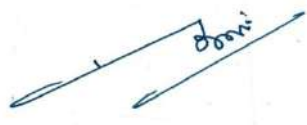
Mapping of COs with POs / PSOs

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 The students will be able to		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 நெசவுமற்றும்பாணத்தொழில்நுட்பம்	3
நெசவுத்தொழில்-பாணத்தொழில்நுட்பம்-கருப்புசிவப்புபண்டங்கள் - பாண்டங்களில்கீறல்குறியீடுகள்	
அலகு 2 வடிவமைப்புமற்றும்கட்டிடத்தொழில்நுட்பம்	3
சங்ககாலத்தில்வடிவமைப்புமற்றும்கட்டுமானங்கள் - சிலப்பதிகாரத்தில்மேடைஅமைப்பு- மாமல்லபுரம்சிற்பங்களும்கோவில்களும்-தஞ்சைபெரியகோயில்-மதுரைமீனாட்சிஅம்மன்ஆலயம் - செட்டிநாட்டுவீடுகள்-சென்னையில்இந்தோசாரோசெனிக்கட்டிடக்கலை	
அலகு 3 உற்பத்தித்தொழில்நுட்பம்	3
கப்பல்கட்டும்கலை-இரும்புஉருக்குதல்-நாணயங்கள்அச்சடித்தல் - கல்மணிகள், கண்ணாடிமணிகள், சுடுமண்மணிகள், சங்குமணிகள்-தொல்லியல்	
அலகு 4 வேளாண்மைமற்றும்நீர்பாசனத்தொழில்நுட்பம்	3
கல்லணை - சோழர்காலகுமிழித்தூம்பு - வேளாண்மைமற்றும்வேளாண்மைசார்ந்தசெயல்பாடுகள்- கடல்சார்அறிவு - முத்துக்குளித்தல்	
அலகு 5 அறிவியல்தமிழ்மற்றும்கணினித்தமிழ்	3

அறிவியல்தமிழின்வளர்ச்சி-தமிழ்மென்பொருட்கள்உருவாக்கம்-தமிழ்மின்னூலகம்-
இணையத்தில்தமிழ்அகராதிகள்-சொற்குவைத்திட்டம் - தமிழும்செயற்கைநுண்ணறிவும்

TOTAL(L:15)

Suggested Learning Resources

Text Books – CUM- Reference Books

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

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ELECTRICAL FOR AGRI ENGINEERING							
Course Code:	26EEC02				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 Hours	
Pre-requisites	Nil						
Course Objectives :							
- To apply electrical wiring techniques and electric fencing systems in designing safe and practical electrical installations. - To apply the working principles of single-phase and three-phase induction motors in selecting suitable machines for engineering applications. - To apply the concepts of measuring instruments, protection systems, sensors, and transducers for solving real-time electrical engineering problems.							
Course Outcomes : The students will be able to					Cognitive Level	Weightage of COs in ESE	
CO 1	Apply suitable electrical wiring methods and electric fencing systems for domestic and agricultural applications.				Ap	20%	
CO 2	Analyze the characteristics of single-phase and three-phase induction motors and recommend the selection of electric motors in agricultural applications.				An	20%	
CO 3	Apply Various measuring techniques to measure electrical parameters in agricultural electrical systems.				Ap	20%	
CO 4	Apply suitable protection scheme and earthing methods for safe operation of agricultural electrical systems				Ap	20%	
CO 5	Analyze and recommend a suitable sensors and transducers for the measurement and control of agricultural automation 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	2		1	1		1					1		
CO 2	2	1	1	1		1					1		
CO 3	2		1	1		1					1		
CO 4	2		1	1		1					1		
CO 5	2		1	1		1					1		
CO (W.A)	2	1	1	1		1					1		

UNIT I - ELECTRICAL WIRING AND FENCING	(9)
Introduction- Wiring materials – Types: Casing and Capping, Cleat wiring, Batten Wiring and Conduit Wiring - Electric Fencing: Working principle of Earth Return System, Fence Return System and Bi-Polar Fencing System – Energiser- Solar fencing.	
UNIT II - ELECTRICAL MACHINES	(9)
Single Phase Induction Motor: Constructional details- Starting methods – Applications. Three phase induction motor: Types – Construction and working principle – Torque-Slip Characteristics-Starters: Construction & Operation	
UNIT III - MEASURING INSTRUMENTS	(9)
Instruments: Classification – Indicating Instruments: Operating Principles of Moving Iron and Moving Coil meters – Digital energy meter - Measurement of Earth resistance using Earth tester-Multimeter.	
UNIT IV – PROTECTING EQUIPMENTS	(9)
Fuses - Circuit Breakers: Types - Operation of MCB, MCCB and ELCB - Earthing: Pipe, Plate Earthing, System and Equipment Earthing.	
UNIT V - SENSORS AND TRANSDUCERS	(9)
Sensors: Position sensor - Velocity sensor - Proximity sensor - Hall effect sensor - Thermistor and Thermocouple. Transducers: Principle of operation – LVDT – Piezo electric - optical and digital transducers.	
Total (L : 45)	

Suggested Learning Resources
Text Books :
1. Ritu Sahdev “Basic Electrical Engineering” 1st Revised Edition, Khanna Book Publishing Co, 2024
2. Sawhney, A. K., “A Course in Electrical and Electronic Measurement and Instrumentation”, Dhanpat Rai & Sons, 29th Edition, New Delhi, 2021.
Reference Books:
1. R. Muthusubramanian and S. Salivahanan, “Basic Electrical and Electronics Engineering”, Education, 2nd Edition, McGraw Hill, 2024
2. D. P. Kothari and I. J. Nagarath, “Basic Electrical and Electronics Engineering”, McGraw Hill Education (India) Private Limited, 2 nd Edition, 2020
3. S. K. Bhattacharya, Basic Electrical Engineering, Pearson Education, 1 st Edition, 2019
4. H. S. Kalsi, ‘Electronic Instrumentation’, Tata McGraw-Hill, New Delhi, 3 rd Edition, 2017
5. Arun Ingole, ‘Switch Gear and Protection’ Pearson Education, 1 st Edition, 2018.

G. 8.2

ENGINEERING MECHANICS FOR AGRICULTURAL ENGINEERS							
Course Code:	26AGC02				CIA	40	
Course Type: (Theory/Practical/Integrated)	Theory				ESE	60	
L:T:P:C	2	1	0	3	Total Marks	100	
Total Hours of Pedagogy	45				Exam Hours	3	
Pre-requisites	Nil						
Course Objectives							
- To analyze the behaviour of the particle and rigid body under the action of forces - To gain knowledge related to friction and its applications - To study the geometric properties of the different plane areas - To acquire knowledge on the behavior of the body in motion under the action of forces							
Course Outcomes The students will be able to					Cognitive Level	Weightage of COs in ESE	
CO 1	Evaluate the forces and support reactions of particles and rigid bodies in equilibrium.				An	40%	
CO 2	Solve the problems involving dry friction under equilibrium conditions				Ap	20%	
CO 3	Determine the centroid, centre of gravity and moment of inertia of various plane and composite areas				An	20%	
CO 4	Analyze the problems involving dynamics of particle				An	20%	
CO 5	Demonstrate the concept of forces and their effects in practical applications				Ap	Internal Assessment	

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		3										3	
CO 3		2	2									2	
CO 4	2	2										2	
CO 5			2								3		2
CO (W.A)	2.5	2	2								3	2	2

Unit- I : STATICS OF PARTICLE	9
Units and dimensions - fundamental principles - laws of mechanics, lami's theorem, parallelogram and triangular law of forces, principle of transmissibility – System of forces- coplanar and concurrent forces - resultant force - statics of particles in two dimension - free body diagram - equilibrium of particles in two dimensions –problems	
Unit- II : STATICS OF RIGID BODY	9
Rigid body-Statics of rigid body in two dimensions- moment of a force about a point and about an axis- Varignon's theorem-Resultant of parallel and non-concurrent forces-moments and couple- equilibrium of rigid bodies in two dimensions- types of supports and their reactions.	
Unit- III : FRICTION	9
Frictional force - Laws of Coulomb friction -Limiting friction- co-efficient of friction and angle of friction - Impending motion-angle of repose- cone of friction - simple contact friction - ladder friction, Belt friction - problems involving the equilibrium of a rigid bodies with frictional forces	
Unit- IV : PROPERTIES OF SECTIONS	9
Centroid and Centre of Gravity- first and second moment of area -centroid of plan and composite plane Areas-parallel axis theorem -perpendicular axis theorem - moment of Inertia of plane and composite plane areas - radius of gyration-polar moment of inertia – problems.	
Unit- V : DYNAMICS OF PARTICLES	9
Kinematics-Displacements, velocity and acceleration, their relationship - linear motion with uniform and variable acceleration - curvilinear motion - Kinetics of particles- Newton's law, D'Alembert's Principle - problems.	
Total (L : 45)	

Suggested Learning Resources
Text Books :
4. Vela Murali, "Engineering Mechanics", Oxford University Press, 2019.
5. Ferdinand, P., Beer and Russell Johnson, E., "Vector Mechanics for Engineers: Statics and Dynamics" Tata McGraw Hill International Edition, 13 th Edition, 2025.
Reference Books:
6. Irving H. Shames, "Engineering Mechanics: Statics and Dynamics", Prentice Hall of India Private limited, 2006.
7. Russell C. Hibbeler, "Engineering Mechanics: Statics and Dynamics", 15 th Edition Prentice Hall,

2025

8. Anthony M. Bedford and Wallace Fowler, "Engineering Mechanics: Statics and Dynamics", 6th Edition, Prentice Hall, 2024.
9. Palanichamy, M. S and Nagan, S., "Engineering Mechanics - Statics and Dynamics", Tata McGraw-Hill, 3rd Edition, New Delhi, 2011.
10. Meriam, J. L. and Kraige, L. G., "Engineering Mechanics: Statics and Dynamics", Wiley Publishers, 9th Edition, 2021.
11. Rajasekaran, S. and Sankarasubramanian, G., "Fundamentals of Engineering Mechanics", Vikas Publishing House Pvt. Ltd., 3rd Edition, New Delhi, 2005.

M.K.Mb

SOIL SCIENCE AND SOIL MECHANICS							
Course Code:		26AGC03				CIE	60
Course Type: (Theory/Practical/Integrated)		Integrated				ESE	40
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 equip students with the knowledge and skills of soil science and engineering to evaluate soil physical, chemical, classification, mechanics and organic matter characteristics for sustainable agricultural and engineering applications.							
Course Outcomes The students will be able to						Cognitive Level	Weightage of COs in ESE
CO 1	Apply the principles of soil physical and chemical properties to assess soil behavior, water movement and ion exchange processes for agricultural and engineering applications.					Ap	40
CO 2	Analyze soil reaction, classifications, land capability and reclamation methods to recommend suitable management practices for different soil conditions.					An	20
CO 3	Apply the principles of soil survey, mapping and soil mechanics to evaluate soils for agricultural engineering purposes.					Ap	20
CO 4	Analyze the influence of soil organic matter, including composting technologies, on improving soil quality and sustainable land use.					An	20
CO 5	Prepare and deliver a presentation as a team on a contemporary topic by integrating knowledge related to soil science and engineering.					Ap	Internal Assessment

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	
CO 2		3											
CO 3	3												
CO 4				3			2					3	
CO 5									3	3			
CO (W.A)	3	3		3			2		3	3		2.5	

Unit- I : Physical Properties	9
Soil physical properties and their significance – Soil texture and textural classes – soil structure and classification. Bulk density, particle density and porosity – soil color- significance – causes and measurement. Soil temperature – Soil air – soil water – Measurements – Soil water potentials – Soil moisture constants – Movements of soil water – saturated and unsaturated flow – infiltration, hydraulic conductivity, percolation, permeability and drainage.	
Unit- II : Chemical Properties	9
Soil colloids – properties, types and significance – layer silicate clays – their genesis and sources of charges – Ion exchange: CEC, AEC and Base saturation – Factors influencing Ion exchange – significance. Soil reaction - Buffering capacity - pH and EC.	
Unit- III : Soil Classification and Survey	9
Soil taxonomy – Soils of Tamil Nadu and India – Land Capability Classification - sub classes – Reclamation of problematic soils – Principles of soil survey and mapping – field & base mapping – units.	
Unit- IV : Soil Mechanics	9
Engineering properties of soils, fundamentals and definitions – Soil compaction – factors affecting compaction - index properties – permeability and seepage analysis – shear strength – Mohr’s circle of stress – Earth pressure – Stability of slopes – Terzaghi’s theory.	
Unit- V : Organic Matter and Composting Technology	9
Soil organic matter – Composition – decomposition and mineralization, C: N ratio, carbon cycle – Composting techniques: Aerobic and anaerobic – Enriched FYM and Vermi-compost - Composting of organic waste: Sugarcane trash and coir waste.	

List of Experiments:	30 Hours
10. Soil Sample Collection. 11. Soil textural analysis – feel method, International pipette method. 12. Determination of soil color and temperature. 13. Determination of Infiltration rate. 14. Determination of soil pH and EC. 15. Estimation of Soil organic carbon.	
Total (L : 45 + P : 30) = 75 Hours	

Suggested Learning Resources
Text Books : 1. Brady, N. C. and Raymond, C. Weil, “The Nature and properties of Soils”, Pearson Education, Inc. publishing as prentice Hall, 15 th Edition, 2022. 2. Murthy V. N. S., Soil Mechanics and Foundations, UBS Publishers, New Delhi, 2020.

Reference Books:

1. Das, D. K. "Introductory Soil Science", Kalyani Publishers, New Delhi, 4th Edition, 2025.
2. Venkatarama Reddy, G. and Hema Gopala Reddy, "Principles of Soil Science", Kalyani Publishers, New Delhi, 2024.
3. Fanning, D. S. and Fanning, C. B., "Soil: Morphology, Genesis and Classification", John Wiley and sons, Newyork, 6th Edition, 2016.
4. Sehgal, J. L. "Textbook of Pedology: Concepts and Applications", Kalyani Publishers, New Delhi, 2018.
5. Gupta, M. P., Soil Engineering Theory and Practice, Khanna Publishers, New Delhi, 2019.

M.K. mb

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						
1. To improve real-time communication and interaction skills						
2. To enhance digital, collaborative, and workplace communication						
Course Outcomes The students will be able to					Cognitive Level	Weightage of COs in ESE
CO 1	Communicate effectively in collaborative and workplace situations.				Ap	20%
CO 2	Demonstrate fluency in professional and interpersonal interactions.				Ap	20%
CO 3	Respond effectively to real-world communication contexts.				Ap	20%
CO 4	Apply creative and analytical thinking in communication tasks.				Ap	20%
CO 5	Create clear oral and written communications for academic, social, and professional purposes.				C	20%

Mapping of Cos with POs / PSOs													
Cos	Pos											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1								2	3	-	2		
CO 2								2	3	-	2		
CO 3								2	3	-	2		
CO 4								2	3	-	2		
CO 5								2	3	-	2		
CO (W.A)								2	3	-	2		
Module - I :Interactive Communication Skills												6	
Grammar –If Conditional Clauses - Listening - Listening to Engineering Project Briefings and Response Analysis- Speaking - Expressing Opinions through Agree–Disagree Circles													
Module - II :Workplace Communication												6	
Grammar –Active and Passive Voice - Reading - Reading Corporate Communication Samples – Writing - Drafting LinkedIn Profile Summaries													

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

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

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							
1. To improve real-time communication and interaction skills 2. To enhance digital, collaborative, and workplace communication							
Course Outcomes						Cognitive Level	Weightage of COs in ESE
CO 1	Communicate effectively in collaborative and workplace situations.					Ap	20%
CO 2	Demonstrate fluency in professional and interpersonal interactions.					Ap	20%
CO 3	Respond effectively to real-world communication contexts.					Ap	20%
CO 4	Apply creative and analytical thinking in communication tasks.					Ap	20%
CO 5	Create clear oral and written communications for academic, social, and professional purposes.					C	20%

Mapping of Cos with POs / PSOs													
Cos	Pos											PSOs	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO 1								2	3	-	2		
CO 2								2	3	-	2		
CO 3								2	3	-	2		
CO 4								2	3	-	2		
CO 5								2	3	-	2		
CO (W.A)								2	3	-	2		
Module - I :Interactive Communication Skills												6	
Grammar –If Conditional Clauses - Listening - Listening to Engineering Project Briefings and Response Analysis- Speaking - Expressing Opinions through Agree–Disagree Circles													
Module - II :Workplace Communication												6	
Grammar –Active and Passive Voice - Reading - Reading Corporate Communication Samples – Writing - Drafting LinkedIn Profile Summaries													

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

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



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/

