Kongunadu College of Engineering and Technology

(Autonomous)

Affiliated to Anna University, Chennai

B.Tech - Agricultural Engineering

Regulations: R2024 Choice Based Credit System

I to VIII Semesters Curricula & Syllabi

Semester I							
S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24MC001	Induction Programme	MC	-	-	-	0
Theory							
2	24EN101	Communicative English	HSMC	3	0	0	3
3	24MA101	Matrices and Calculus	BSC	3	1	0	4
4	24PH101	Engineering Physics	BSC	3	0	2	4
5	24CY101	Engineering Chemistry	BSC	3	0	2	4
6	24GE102	Engineering Graphics	ESC	3	0	2	4
7	24TA101	தமிழர் மரபு / Heritage of Tamils	HSMC	1	0	0	1
Practicals							
8	24GE104L	Engineering Practices Laboratory	ESC	0	0	4	2
9	24EEC101L	Interpersonal Communication Laboratory	EEC	0	0	2	1
			Total	**16**	**1**	**12**	**23**

Semester II							
S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
Theory							
1	24EN201	Technical English	HSMC	3	0	0	3
2	24MA203	Vector Calculus and Statistics	BSC	3	1	0	4
3	24MC002	Universal Human Values 2: Understanding Harmony	MC	2	1	0	3
4	24CY201	Environmental Science	BSC	3	0	0	3
5	24GE101	Computer Fundamentals and C Programming	ESC	3	0	0	3
6	24AG201	Principles and Practices of Crop Production	PCC	3	0	0	3
7	24TA201	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	HSMC	1	0	0	1
Practicals							
8	24GE103L	C Programming Laboratory	ESC	0	0	3	1.5
9	24AG202L	Crop Husbandry Field Laboratory	PCC	0	0	3	1.5
10	24EEC201L	Professional Communication Laboratory	EEC	0	0	2	1
			Total	**18**	**2**	**8**	**24**

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Semester III							
S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
Theory							
1	24MA302	Probability and Mathematical Techniques	BSC	3	1	0	4
2	24AG301	Thermodynamics and Heat Transfer	PCC	3	0	0	3
3	24AG302	Hydraulics and Hydraulic Pumps	PCC	3	0	2	4
4	24AG303	Unit Operations in Agricultural Processing	PCC	3	0	0	3
5	24CE303	Surveying	PCC	3	0	0	3
6	24EC307	Electronic Devices and Microprocessor	ESC	3	0	2	4
Practicals							
7	24CE306L	Surveying Laboratory	PCC	0	0	2	1
8	24EEC301L	Soft Skills Development	EEC	0	0	2	1
			Total	**18**	**1**	**8**	**23**

Semester IV							
S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
Theory							
1	24AG401	Strength of Materials for Agricultural Engineering	PCC	3	0	0	3
2	24AG402	Tractors and Farm Engines	PCC	2	0	2	3
3	24AG403	Design of Basic Machine Elements	PCC	3	0	0	3
4	24AG404	Soil Science and Engineering	PCC	3	0	0	3
5	24EC408	Sensors and Transducers	ESC	3	0	2	4
6	24MC003	Constitution of India	MC	2	0	0	0
Practicals							
7	24AG405L	Strength of Materials Laboratory	PCC	0	0	2	1
8	24AG406L	Soil Science and Engineering Laboratory	PCC	0	0	2	1
9	24EEC401L	Life Skills and Personality Development	EEC	0	0	2	1
			Total	**16**	**0**	**10**	**19**

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Semester V							
S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
Theory							
1	24AG501	Irrigation and Drainage Engineering	PCC	3	0	0	3
2	24AG502	Farm Machinery and Equipments	PCC	3	0	2	4
3	24AG503	Soil and Water Conservation Engineering	PCC	3	0	0	3
4	24EC508	Embedded Systems	ESC	3	0	0	3
5		Professional Elective I	PEC	3	0	0	3
6		Open Elective I	OEC	3	0	0	3
Practicals							
7	24AG504L	Irrigation Field Laboratory	PCC	0	0	2	1
8	24EC509L	Embedded Systems Laboratory	ESC	0	0	2	1
9	24EEC501L	Professional Skills Development	EEC	0	0	2	1
			Total	**18**	**0**	**8**	**22**

Semester VI							
S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
Theory							
1	24AG601	Post Harvest Technology	PCC	3	0	0	3
2	24AG602	Food and Dairy Engineering	PCC	3	0	0	3
3	24EC704	IoT in Agriculture Systems	ESC	3	0	0	3
4		Professional Elective II	PEC	3	0	0	3
5		Professional Elective III	PEC	3	0	0	3
Practicals							
6	24AG603L	Post Harvest Technology Laboratory	PCC	0	0	2	1
7	24EC705L	IoT in Agriculture Systems Laboratory	ESC	0	0	2	1
8	24AG604L	Mini Project-I	EEC	0	0	2	1
9	24EEC601L	Employability Skills	EEC	0	0	2	1
			Total	**15**	**0**	**8**	**19**

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Semester VII							
S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
Theory							
1	24AG701	Remote Sensing and Geographical Information System	PCC	3	0	0	3
2	24AG702	Renewable Energy in Agricultural Engineering	PCC	3	0	0	3
3		Professional Elective IV	PEC	3	0	0	3
4		Professional Elective V	PEC	3	0	0	3
5		Open Elective II	OEC	3	0	0	3
Practicals							
6	24AG703L	Remote Sensing and GIS Laboratory	PCC	0	0	2	1
7	24AG704L	Renewable Energy Laboratory	PCC	0	0	2	1
8	24AG705L	Mini Project-II	EEC	0	0	2	1
			Total	**15**	**0**	**6**	**18**

Semester VIII							
S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
Theory							
1		Professional Elective VI	PEC	3	0	0	3
2		Professional Elective VII	PEC	3	0	0	3
Practicals							
3	24AG801L	Project Work	EEC	0	0	20	10
		Total		**6**	**0**	**20**	**16**

TOTAL NO. OF CREDITS: 164

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PROFESSIONAL ELECTIVE COURSES: VERTICALS

S. No	Vertical I	Vertical II	Vertical III	Vertical IV	Vertical V	Vertical VI	Vertical VII
	Food Processing and Management	**Farm Machinery and Power Engineering**	**Water Conservation Engineering**	**Renewable Energy Engineering**	**Smart Agriculture Systems**	**Agricultural Business Management**	**Crop Production**
1	Fundamentals of Food Process Engineering	Applied Ergonomics	Hydrology and Water Resources Engineering	Biochemical and Thermochemical Conversion of Biomass	IT in Agriculture Systems	Agricultural Business Management	Soil Fertility and Fertilizers
2	Storage and Packaging Technology	Farm Power and Machinery Management	Watershed Hydrology	Solar Energy Engineering and Technology	Automation in Agriculture	Sustainable Agriculture and Food Security	Basics of Crop Breeding and Plant Biotechnology
3	Process Engineering of Fruits and Vegetables	Mechanics of Tillage and Traction	Groundwater and Well Engineering	Wind Energy Technology	Instrumentation and Control Engineering in Agriculture	Organic Farming for Sustainable Agricultural Production	Modern Concepts in Crop Production
4	Thermal Operations in Food Process Engineering: Theory and Applications	Special Farm Equipment	Water Quality Management Practices	Waste and By-product Utilization	Mechatronics in Agricultural Engineering	Agricultural Economics and Farm Management	Seed Processing Technology
5	Refrigeration and Cold Storage	Advanced IC Engines	Natural Resources Management	Green Buildings	Drone Technology for Agriculture	Total Quality Management	Integrated Farming System
6	Food Process Equipment and Design	Advances in Farm Machinery and Power Engineering	On Farm Water Management	Energy Conservation in Agro-Based Industry	System Analysis in Agricultural Engineering	Professional Ethics in Engineering	Protected Cultivation
7	Novel Technologies for Food Processing and Shelf Life Extension	Design of Farm Machinery	Advanced Irrigation Systems	Farm Level Energy Auditing	Machine Learning for Soil and Crop Management	Project Management for Managers	Climate Change and Adaptation for Agriculture
8	Quality and Safety Monitoring in Dairy Industry	Testing and Evaluation of Farm Machinery and Equipment	Reservoir and Farm Pond Design	Energy Management and Environment Utilities	Artificial Intelligence for Agriculture	Principles of Management	Extension Methodology and Transfer of Technology

Registration of Professional Elective Courses from Verticals:

- Professional Elective Courses will be registered in Semesters V to VIII. These courses are listed in groups called verticals that represent a particular area of specialization / diversified group. Students are permitted to choose all the Professional Electives from a particular vertical or from different verticals. Further, only one Professional Elective course shall be chosen in a semester horizontally (row-wise). However, two courses are permitted from the same row, provided one course is enrolled in Semester V and another in semester VI, VII and VIII.
- The registration of courses for B.E./B.Tech (Honours) or Minor degree shall be done from Semester V to VIII. The procedure for registration of courses explained above shall be followed for the courses of B.E/B.Tech (Honours) or Minor degree also.

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PROFESSIONAL ELECTIVE COURSES: VERTICALS

VERTICAL I: FOOD PROCESSING AND MANAGEMENT

S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24AG101PE	Fundamentals of Food Process Engineering	PEC	3	0	0	3
2	24AG102PE	Storage and Packaging Technology	PEC	3	0	0	3
3	24AG103PE	Process Engineering of Fruits and Vegetables	PEC	3	0	0	3
4	24AG104PE	Thermal Operations in Food Process Engineering: Theory and Applications	PEC	3	0	0	3
5	24AG105PE	Refrigeration and Cold Storage	PEC	3	0	0	3
6	24AG106PE	Food Process Equipment and Design	PEC	3	0	0	3
7	24AG107PE	Novel Technologies for Food Processing and Shelf Life Extension	PEC	3	0	0	3
8	24AG108PE	Quality and Safety Monitoring in Dairy Industry	PEC	3	0	0	3

VERTICAL II: FARM MACHINERY AND POWER ENGINEERING

S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24AG201PE	Applied Ergonomics	PEC	3	0	0	3
2	24AG202PE	Farm Power and Machinery Management	PEC	3	0	0	3
3	24AG203PE	Mechanics of Tillage and Traction	PEC	3	0	0	3
4	24AG204PE	Special Farm Equipment	PEC	3	0	0	3
5	24ME104PE	Advanced IC Engines	PEC	3	0	0	3
6	24AG205PE	Advances in Farm Machinery and Power Engineering	PEC	3	0	0	3
7	24AG206PE	Design of Farm Machinery	PEC	3	0	0	3
8	24AG207PE	Testing and Evaluation of Farm Machinery and Equipment	PEC	3	0	0	3

VERTICAL III: WATER CONSERVATION ENGINEERING

S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24CE105PE	Hydrology and Water Resources Engineering	PEC	3	0	0	3
2	24AG301PE	Watershed Hydrology	PEC	3	0	0	3
3	24AG302PE	Groundwater and Well Engineering	PEC	3	0	0	3
4	24AG303PE	Water Quality Management Practices	PEC	3	0	0	3
5	24AG304PE	Natural Resources Management	PEC	3	0	0	3
6	24AG305PE	On Farm Water Management	PEC	3	0	0	3
7	24AG306PE	Advanced Irrigation Systems	PEC	3	0	0	3
8	24AG307PE	Reservoir and Farm Pond Design	PEC	3	0	0	3

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VERTICAL IV: RENEWABLE ENERGY ENGINEERING

S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24AG401PE	Biochemical and Thermochemical Conversion of Biomass	PEC	3	0	0	3
2	24EE606PE	Solar Energy Engineering and Technology	PEC	3	0	0	3
3	24AG402PE	Wind Energy Technology	PEC	3	0	0	3
4	24AG403PE	Waste and By-Product Utilization	PEC	3	0	0	3
5	24AG404PE	Green Buildings	PEC	3	0	0	3
6	24AG405PE	Energy Conservation in Agro-Based Industry	PEC	3	0	0	3
7	24AG406PE	Farm Level Energy Auditing	PEC	3	0	0	3
8	24AG407PE	Energy Management and Environment Utilities	PEC	3	0	0	3

VERTICAL V: SMART AGRICULTURE SYSTEMS

S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24AG501PE	IT in Agriculture Systems	PEC	3	0	0	3
2	24AG502PE	Automation in Agriculture	PEC	3	0	0	3
3	24AG503PE	Instrumentation and Control Engineering in Agriculture	PEC	3	0	0	3
4	24AG504PE	Mechatronics in Agricultural Engineering	PEC	3	0	0	3
5	24AG505PE	Drone Technology for Agriculture	PEC	3	0	0	3
6	24AG506PE	System Analysis in Agricultural Engineering	PEC	3	0	0	3
7	24AG507PE	Machine Learning for Soil and Crop Management	PEC	3	0	0	3
8	24AG508PE	Artificial Intelligence for Agriculture	PEC	3	0	0	3

VERTICAL VI: AGRICULTURAL BUSINESS MANAGEMENT

S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24AG601PE	Agricultural Business Management	PEC	3	0	0	3
2	24AG602PE	Sustainable Agriculture and Food Security	PEC	3	0	0	3
3	24AG603PE	Organic Farming for Sustainable Agricultural Production	PEC	3	0	0	3
4	24AG604PE	Agricultural Economics and Farm Management	PEC	3	0	0	3
5	24ME705PE	Total Quality Management	PEC	3	0	0	3
6	24ME706PE	Professional Ethics in Engineering	PEC	3	0	0	3
7	24ME707PE	Project Management for Managers	PEC	3	0	0	3
8	24ME708PE	Principles of Management	PEC	3	0	0	3

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VERTICAL VII: CROP PRODUCTION

S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24AG701PE	Soil Fertility and Fertilizers	PEC	3	0	0	3
2	24AG702PE	Basics of Crop Breeding and Plant Biotechnology	PEC	3	0	0	3
3	24AG703PE	Modern Concepts in Crop Production	PEC	3	0	0	3
4	24AG704PE	Seed Processing Technology	PEC	3	0	0	3
5	24AG705PE	Integrated Farming System	PEC	3	0	0	3
6	24AG706PE	Protected Cultivation	PEC	3	0	0	3
7	24AG707PE	Climate Change and Adaptation for Agriculture	PEC	3	0	0	3
8	24AG708PE	Extension Methodology and Transfer of Technology	PEC	3	0	0	3

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Open Elective Course (OEC)

(Students shall choose the open elective courses, such that the course contents are not similar to any other course contents/title under other course categories)

Open Elective I (Semester-V)

S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24BM101OE	Medical Instruments	OEC	3	0	0	3
2	24BM102OE	Food, Nutrition and Health	OEC	3	0	0	3
3	24CE101OE	Industrial Waste Management	OEC	3	0	0	3
4	24CE102OE	Ecological Engineering	OEC	3	0	0	3
5	24CS101OE	Python Programming for Data Science	OEC	3	0	0	3
6	24CS102OE	Programming and Data Structures	OEC	3	0	0	3
7	24EC101OE	Principles of Signal Processing	OEC	3	0	0	3
8	24EC102OE	Consumer Electronics	OEC	3	0	0	3
9	24EE101OE	Power Generation Systems	OEC	3	0	0	3
10	24EE102OE	Electrical Wiring and Lighting	OEC	3	0	0	3
11	24ME101OE	Production Technology	OEC	3	0	0	3
12	24ME102OE	Alternative Energy Fuels	OEC	3	0	0	3
13	24AD101OE	Introduction to Artificial Intelligence	OEC	3	0	0	3
14	24AD102OE	Introduction to Data Science	OEC	3	0	0	3
15	24IT101OE	Fundamentals of Software Engineering	OEC	3	0	0	3
16	24IT102OE	Wireless Sensor Networks	OEC	3	0	0	3

Open Elective II (Semester-VII)

S. No	Course Code	Course Title	Course Category	No of Hours / Week			Credit
				L	T	P	
1	24BM201OE	Traditional Indian Foods	OEC	3	0	0	3
2	24BM202OE	Fundamentals of Cell and Molecular Biology	OEC	3	0	0	3
3	24CE201OE	Global Warming and Climate Change	OEC	3	0	0	3
4	24CE202OE	Building Services	OEC	3	0	0	3
5	24CS201OE	Fundamentals of Operating Systems	OEC	3	0	0	3
6	24CS202OE	Introduction to Database	OEC	3	0	0	3
7	24EC201OE	Basics of Virtual Instrumentation	OEC	3	0	0	3
8	24EC202OE	Telecommunications for Society	OEC	3	0	0	3
9	24EE201OE	Energy Audit and Management	OEC	3	0	0	3
10	24EE202OE	Electric Vehicles	OEC	3	0	0	3
11	24ME201OE	Basics of Automotive Components	OEC	3	0	0	3
12	24ME202OE	Unconventional Machining Processes	OEC	3	0	0	3
13	24AD201OE	Basics of Visualization Tools	OEC	3	0	0	3
14	24AD202OE	Fundamentals of Machine Learning	OEC	3	0	0	3
15	24IT201OE	Introduction to Web Development	OEC	3	0	0	3
16	24IT202OE	Principles of Multimedia	OEC	3	0	0	3

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SUMMARY

S.NO	SUBJECT AREA	CREDITS AS PER SEMESTER								CREDITS TOTAL
		I	II	III	IV	V	VI	VII	VIII	
1	HSMC	4	7	0	0	0	0	0	0	11
2	BSC	12	7	4	0	0	0	0	0	23
3	ESC	6	4.5	4	4	4	4	0	0	26.5
4	PCC	0	4.5	14	14	11	7	8	0	58.5
5	PEC	0	0	0	0	3	6	6	6	21
6	OEC	0	0	0	0	3	0	3	0	6
7	EEC	1	1	1	1	1	2	1	10	18
8	Non Credit / Mandatory				#					0
	TOTAL	23	24	23	19	22	19	18	16	164

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ENROLLMENT FOR B.E. / B. TECH. (HONOURS) / MINOR DEGREE (OPTIONAL)

- A student can also optionally register for additional courses (18 credits) and become eligible for the award of B.E. / B. Tech. (Honours) or Minor Degree.
- For B.E. / B. Tech. (Honours). a student shall register for the additional courses (18 credits) from semester V onwards. These courses shall be from the same vertical or a combination of different verticals of the same programme of study only.
- For minor degree, a student shall register for the additional courses (18 credits) from semester V onwards. All these courses have to be in a particular vertical from any one of the other programmes. Moreover. for minor degree the student can register for courses from any one of the following verticals also.

VERTICAL FOR MINOR DEGREE
(In addition to all the verticals of other programmes)

Vertical 1	Vertical 2	Vertical 3	Vertical 4	Vertical 5
Fintech and Block Chain	**Entrepreneurship**	**Public Administration**	**Business Data Analytics**	**Environment and Sustainability**
Financial Management	Foundations of Entrepreneurship	Principles of Public Administration	Statistics for Management	Sustainable Infrastructure Development
Fundamentals of Investment	Team Building and Leadership Management for Business	Elements of Public Administration	Data Mining for Business Intelligence	Sustainable Agriculture and Environmental Management
Banking. Financial Services and Insurance	Creativity and Innovation in Entrepreneurship	Public Personnel Administration	Human Resource Analytics	Sustainable Bio Materials
Introduction to Blockchain and its Applications	Principles of Marketing Management for Business	Administrative Theories	Marketing and Social Media Web Analytics	Materials for Energy Sustainability
Fintech Personal Finance and Payments	Human Resource Management for Entrepreneurs	Indian Administrative System	Operation and Supply Chain Analytics	Green Technology
Introduction to Fintech	Financing New Business Ventures	Public Policy Administration	Financial Analytics	Environmental Quality Monitoring and Analysis
-	-	-	-	Integrated Energy Planning for Sustainable Development
-	-	-	-	Energy Efficiency for Sustainable Development

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(Choice of courses for Minor degree is to be made from any one vertical of other programmes or from anyone of the following verticals)

VERTICAL 1: FINTECH AND BLOCK CHAIN

S. No	Course Code	Course Title	Course Category	No. of Hours/Week			Credit
				L	T	P	
1	24M101	Financial Management	PEC	3	0	0	3
2	24M102	Fundamentals of Investment	PEC	3	0	0	3
3	24M103	Banking, Financial Services and Insurance	PEC	3	0	0	3
4	24M104	Introduction to Blockchain and its Applications	PEC	3	0	0	3
5	24M105	Fintech Personal Finance and Payments	PEC	3	0	0	3
6	24M106	Introduction to Fintech	PEC	3	0	0	3

VERTICAL 2: ENTREPRENEURSHIP

S. No	Course Code	Course Title	Course Category	No. of Hours/Week			Credit
				L	T	P	
1	24M201	Foundations of Entrepreneurship	PEC	3	0	0	3
2	24M202	Team Building and Leadership Management for Business	PEC	3	0	0	3
3	24M203	Creativity and Innovation in Entrepreneurship	PEC	3	0	0	3
4	24M204	Principles of Marketing Management for Business	PEC	3	0	0	3
5	24M205	Human Resource Management for Entrepreneurs	PEC	3	0	0	3
6	24M206	Financing New Business Ventures	PEC	3	0	0	3

VERTICAL 3: PUBLIC ADMINISTRATION

S. No	Course Code	Course Title	Course Category	No. of Hours/Week			Credit
				L	T	P	
1	24M301	Principles of Public Administration	PEC	3	0	0	3
2	24M302	Elements of Public Administration	PEC	3	0	0	3
3	24M303	Public Personnel Administration	PEC	3	0	0	3
4	24M304	Administrative Theories	PEC	3	0	0	3
5	24M305	Indian Administrative System	PEC	3	0	0	3
6	24M306	Public Policy Administration	PEC	3	0	0	3

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VERTICAL 4: BUSINESS DATA ANALYTICS

S. No	Course Code	Course Title	Course Category	No. of Hours/Week			Credit
				L	T	P	
1	24M401	Statistics for Management	PEC	3	0	0	3
2	24M402	Data Mining for Business Intelligence	PEC	3	0	0	3
3	24M403	Human Resource Analytics	PEC	3	0	0	3
4	24M404	Marketing and Social Media Web Analytics	PEC	3	0	0	3
5	24M405	Operation and Supply Chain Analytics	PEC	3	0	0	3
6	24M406	Financial Analytics	PEC	3	0	0	3

VERTICAL 5: ENVIRONMENT AND SUSTAINABILITY

S. No	Course Code	Course Title	Course Category	No. of Hours/Week			Credit
				L	T	P	
1	24M501	Sustainable Infrastructure Development	PEC	3	0	0	3
2	24M502	Sustainable Agriculture and Environmental Management	PEC	3	0	0	3
3	24M503	Sustainable Bio Materials	PEC	3	0	0	3
4	24M504	Materials for Energy Sustainability	PEC	3	0	0	3
5	24M505	Green Technology	PEC	3	0	0	3
6	24M506	Environmental Quality Monitoring and Analysis	PEC	3	0	0	3
7	24M507	Integrated Energy Planning for Sustainable Development	PEC	3	0	0	3
8	24M508	Energy Efficiency for Sustainable Development	PEC	3	0	0	3

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24MC001	INDUCTION PROGRAMME	L T P C - - - 0

This is a mandatory 2 week programme to be conducted as soon as the students enter the institution. Normal classes start only after the induction program is over.

The induction programme has been introduced by AICTE with the following objective:

"Engineering colleges were established to train graduates well in the branch/department of admission, have a holistic outlook, and have a desire to work for national needs and beyond. The graduating student must have knowledge and skills in the area of his/her study. However, he/she must also have broad understanding of society and relationships. Character needs to be nurtured as an essential quality by which he/she would understand and fulfill his/her responsibility as an engineer, a citizen and a human being. Besides the above, several meta-skills and underlying values are needed."

"One will have to work closely with the newly joined students in making them feel comfortable, allow them to explore their academic interests and activities, reduce competition and make them work for excellence, promote bonding within them, build relations between teachers and students, give a broader view of life, and build character. " Hence, the purpose of this programme is to make the students feel comfortable in their new environment, open them up, set a healthy daily routine, create bonding in the batch as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature. The following are the activities under the induction program in which the student would be fully engaged throughout the day for the entire duration of the program.

(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 program. 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 dont's, 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.

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(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.

References: Guide to Induction program from AICTE

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24EN101	COMMUNICATIVE ENGLISH (Common to All Branches)	L T P C 3 0 0 3

OBJECTIVES:

The students should be made to:

- Develop basic communication skills in English.
- Enhance the speaking skills for academic, professional and social purposes.
- Use of the electronic media such as internet and other online resources for their language development.
- Inculcate the habit of reading and writing for the purpose of effective communication
- Develop confidence in learners to communicate in English for all purposes

UNIT I BASICS OF COMMUNICATION 9

Listening: Basics of listening-Intensive and Extensive Listening, Barriers to Effective Listening; Speaking: Speaking about Future plans- Giving instruction to use the product, Reading: Skimming and Scanning, Writing: Writing about one's leisure time activities, hometown, everyday activities etc., Grammar: Parts of speech, Prepositions, Vocabulary: Word formation.

UNIT II CREATIVE COMMUNICATION 9

Listening: Listening to short lectures /talks, Speaking: Telephonic interview, Reading: Reading Editorial and Opinion Blogs, Writing: Biographical writing - Writing a paragraph (Cause and Effect/Compare and Contrast/Narrative/Analytical) - Grammar: Gerund and Infinitive - Present Tense, Vocabulary: Abbreviations & Acronyms.

UNIT III FUNCTIONAL COMMUNICATION 9

Listening: Listening to radio and TV and taking notes - Focused audio tracks, Speaking: Role Play - Group Interaction, Reading: Reading magazines, Writing: Letter (Informal /Formal – Industrial Visit, Internship, etc),Writing a set of instructions, Grammar: Past Tense -Subject - Verb Agreement, Vocabulary: Question Tags.

UNIT IV ANALYTICAL SKILLS 9

Listening: Listening to select talks by eminent personalities, speaking: Speaking in mock Interviews, Reading: Reading advertisements, Writing: Writing a set of recommendations, Interpreting Visual Materials (Line Graphs, Pie Charts etc.), Grammar: Sentence Pattern, Future Tense, Articles, Vocabulary: Single word substitutes.

UNIT V PROFESSIONAL COMMUNICATION 9

Listening: Understanding different Accents,Listening to TED talks, Speaking: Giving impromptu talks- Making presentations, Reading: Reading and comprehending a passage, Writing: Letter to the editor- Check list, Grammar: Direct and Indirect Speech, Vocabulary: Phrasal Verbs.

TOTAL: 45 PERIODS

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OUTCOMES:

On successful completion of the course, the students will be able to,

- Use suitable vocabulary with confidence and express their ideas both in speech and writing.
- Write intelligibly avoiding grammatical errors, using a range of vocabulary, organizing their ideas logically on a topic.
- Speak confidently, with one or many listeners using appropriate communicative strategies.
- Read different genres of texts adopting various reading strategies.
- Understand different spoken discourses/excerpts in different accents.

TEXT BOOKS:

1. Kumar, Sanjay and Lata, Pushp, "Communication Skills", Oxford University Press. 2018.

REFERENCES:

1. DuttP. Kiranmai and Rajeevan Geeta, "Basic Communication Skills", Foundation Books, 2007.
2. Mohan, Krishna and Banerji Meera, "Developing Communication Skills", Macmillan Publishers India Ltd., Delhi: 2009.
3. Martin Hewings "Advanced English Grammar: A self study reference and Practice book for advanced South Asian students" Cambridge University Press, Delhi: 2016.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	2	-	-	2	-	1	2	3	-	2
CO2	-	-	2	-	2	-	-	2	3	1	-
CO3	-	-	2	-	2	1	2	3	3	2	2
CO4	-	-	-	2	2	1	2	3	3	2	2
CO5	2	3	-	2	3	-	2	-	3	1	2

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24MA101	MATRICES AND CALCULUS (Common to All Branches)	L T P C 3 1 0 4

OBJECTIVES:

The students should be made to:

- Introduce the matrix techniques and to illustrate the nature of the matrix.
- Remember the basic concepts of solving algebraic and transcendental equations.
- Apply the formula for the curvature of a curve defined in Cartesian coordinates.
- Analyze the Partial differentiation, concept of total derivative, finding maxima and minima of function of two variables.
- Evaluate the techniques of integration in finding area and volume.

UNIT I MATRICES **9+3**

Eigenvalues and eigenvectors of a real matrix - Properties of eigenvalues and eigenvectors - Cayley-Hamilton theorem (Without proof) - Application of Cayley - Hamilton theorem (A^{-1},A^n)- Nature of quadratic forms - Reduction of a quadratic form to canonical form by orthogonal transformation.

UNIT II SYSTEM OF LINEAR EQUATIONS **9+3**

Newton Raphson method- Bisection Method -Solution of linear system of equations by matrix method, Gauss-Jordan, Gauss- Jacobi and Gauss-Seidel methods- Eigen values of a matrix by Power method.

UNIT III DIFFERENTIAL CALCULUS **9+3**

Curvature in Cartesian co-ordinates – Centre and radius of curvature – Circle of curvature – Evolutes – Envelopes - Evolute as envelope of normal.

UNIT IV FUNCTIONS OF SEVERAL VARIABLES **9+3**

Partial derivatives - Total derivative - Differentiation of implicit functions - Jacobians - Taylor's series for functions of two variables - Maxima and minima of functions of two variables.

UNIT-V MULTIPLE INTEGRALS IN CARTESIAN COORDINATES **9+3**

Double integration- Change of order of integration- Area between two curves- Triple integration- Volume as triple integrals.

TOTAL: (45+15) PERIODS

OUTCOMES:

On successful completion of the course, the students will be able to,

- Develop problem-solving skills using systems of equations and matrix transformations.
- Evaluate the efficiency of numerical methods based on the number of iterations required to achieve a desired level of accuracy.
- Compute the radius of curvature and interpret its significance for different types of curves.
- Expand a given function into a series and determine the maximum and minimum of multivariate functions.
- Apply the concepts of double and triple integrals in mathematical and real-world contexts.

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TEXT BOOKS:

1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 44th Edition, 2017.
2. Burden, R.L and Faires, J.D, "Numerical Analysis", 9th Edition, Cengage Learning, 2018.

REFERENCES:

1. Kreyszig Erwin, "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2018.
2. Sankara Rao. K., "Numerical Methods for Scientists and Engineers", Prentice Hall of India Pvt. Ltd, 4th Edition, New Delhi, 2021.
3. Ramana B V "Higher Engineering Mathematics", New Delhi Tata McGraw- Hill Education India Private Limited., 2021
4. Gerald. C.F., and Wheatley. P.O. "Applied Numerical Analysis" 7th Edition, Pearson Education India, 2017.

Mapping of COs with Pos

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	2	2	2	-	-	-	-	-	2
CO2	3	3	2	3	2	-	-	-	-	-	2
CO3	3	3	2	2	2	1	-	-	-	-	2
CO4	3	3	2	3	3	1	-	-	-	-	2
CO5	3	2	3	3	3	2	-	-	-	-	3

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24PH101	ENGINEERING PHYSICS (Common to All Branches)	L T P C 3 0 2 4

OBJECTIVES:

The students should be made to:

- Recall the mechanical properties of materials.
- Gain knowledge on electrical properties of materials.
- Understand the properties of magnetic and superconducting materials.
- Examine basic quantum mechanical concepts and their applications.
- Acquire the basic knowledge about nano phase materials and their properties.

UNIT I MECHANICAL PROPERTIES OF SOLIDS 9

Elasticity and Plasticity - stress-strain diagram and its uses - Hooke's law - factors affecting elastic modulus - bending of beams - bending moment - cantilever: theory and experiment - uniform and non-uniform bending: theory and experiment – I shaped girders and its applications.

UNIT II ELECTRICAL PROPERTIES OF MATERIALS 9

Classical free electron theory of metals - Electrical conductivity and thermal conductivity of metals - Wiedemann - Franz law - Failures of classical free electron theory - Success of Quantum free electron theory - Fermi distribution function and its variation with temperature - Density of energy states-carrier concentration of metals.

UNIT III MAGNETIC AND SUPERCONDUCTING MATERIALS 9

Classification of magnetic materials - Domain theory of ferromagnetism - Hysteresis - Soft and Hard magnetic materials - Superconducting materials – Meissner effect - Isotopic effect - BCS theory of superconductors - Type I & Type II superconductors - Applications of superconductors.

UNIT IV QUANTUM PHYSICS 9

Black body radiation - Planck's theory (derivation) - Deduction of Wien's displacement law and Rayleigh Jeans' Law from Planck's theory-de-Broglie wavelength - Properties of matter waves - Schrodinger's wave equations - Time independent and time dependent wave equations - Physical significance of wave function - Particle in a one dimensional potential box.

UNIT V NEW ENGINEERING MATERIALS 9

Metallic glasses - Types - Preparation - Properties and applications - Shape Memory Alloys (SMA) - Characteristics and applications - Advantages and disadvantages of shape memory alloys - Synthesis of nanomaterials - Top down approaches (Ball Milling) and Bottom up approaches (CVD and PVD).

TOTAL: 45 PERIODS

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LIST OF THE EXPERIMENTS – PHYSICS LABORATORY

1. Determination of Young's modulus of the material by Non-uniform bending method.
2. Determination of Rigidity modulus of the wire using Torsion Pendulum.
3. Determination of band gap energy of a semiconductor.
4. Determination of thickness of the thin film/wire by forming the fringe using Air wedge method.
5. Determination of velocity of ultrasonic waves in a liquid and compressibility of liquid using ultrasonic Interferometer.

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of the course, the students will be able to,

- Identify the mechanical properties of materials and their significance in engineering applications.
- Interpret the electrical properties of materials and their role in various technological applications.
- Illustrate the magnetic and superconducting properties of materials and their practical implications.
- Apply fundamental quantum mechanical concepts to understand material behavior at the atomic level.
- Explore the properties and applications of smart materials in modern engineering solutions.

TEXT BOOKS:

1. M.N. Avadhanulu, P.G. Kshirsagar, TVS Arun Murthy "A Text book of Engineering Physics", S.Chand and Company Ltd, New Delhi, 11th Edition.2022.
2. Rajendran. V. "Materials Science", McGraw Hill Education (India) Private Limited, New Delhi, 2017.
3. S.O Pillai, "Solid State Physics" New Age International Publishers, New Delhi, 10th Edition, 2022.

REFERENCES:

1. R. K. Gaur and S.L. Gupta, "Engineering Physics", Dhanpat Rai Publications, New Delhi, Reprint 2022.
2. Wahab. M.A, "Solid State Physics' Narosa Publishing House, New Delhi, 4th Edition. 2023.
3. D. Halliday, R. Resnick and J. Walker, Principles of Physics, Wiley (11th Edition), 2020.
4. Malik.K and Singh. A.K, "Engineering Physics" TMH, New Delhi 2nd Edition - 2020.

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LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS

PHYSICS LABORATORY

S.No.	Name of Equipment	Quantity Required
1	Torsional pendulum with accessories	6 Nos.
2	Non - Uniform bending with accessories	6 Nos.
3	Ultrasonic interferometer.	6 Nos.
4	Air wedge with accessories	6 Nos.
5	Band gap kit	6 Nos.

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Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	3	1	1	-	-	-	-	-	1
CO2	3	2	2	3	2	-	-	-	-	-	2
CO3	3	3	2	3	2	1	-	-	-	-	-
CO4	3	2	2	3	3	-	-	-	-	-	2
CO5	2	2	2	2	2	2	-	-	-	-	3

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24CY101	ENGINEERING CHEMISTRY (Common to All Branches)	L T P C 3 0 2 4

OBJECTIVES:

The student should be made to:

- Gain knowledge on various sources of water and its industrial applications.
- Explore the essentials of electrochemistry, types of corrosion and its prevention.
- Examine the fundamentals of polymer, various engineering plastics and composites.
- Study the concept of Phase diagrams, different types of energy storage devices and emerging batteries.
- Assess the types of fuels and its quality estimation.

UNIT I WATER TECHNOLOGY **9**

Sources of water - Hard and soft water - Boiler feed water-requirements - disadvantages of using hard water in boilers (Scale, Sludge, Caustic Embrittlement, Priming and Foaming) - Municipal water treatment (screening, sedimentation, coagulation, filtration and disinfection - ozonolysis, UV treatment, chlorination). Internal conditioning (Phosphate, Calgon, Colloidal and Carbonate conditioning methods) - External conditioning - Zeolite and demineralization process - desalination by reverse osmosis.

UNIT II ELECTROCHEMISTRY AND CORROSION SCIENCE **9**

Electrochemistry - Nernst equation & its Applications - Electrochemical (EMF) series - Corrosion - Types - Chemical and Electrochemical corrosions - Galvanic corrosion - Differential aeration corrosion - Pitting corrosion - Corrosion control - material selection and design - sacrificial anodic method and impressed current cathodic protection method - Organic coatings - Paint and its constituents.

UNIT III POLYMERS AND COMPOSITES **9**

Introduction: Functionality - degree of polymerization. Classification of polymers (Source, Structure, Synthesis and Intermolecular forces) - Mechanism of free radical polymerization - Engineering Plastics: Polyamides, Polycarbonates and Polyurethanes.

Composites: Need, Composition of composites - Definition, examples and applications of Metal matrix composites (MMC), Ceramic matrix composites (CMC) and Polymer matrix composites (PMC)

UNIT IV PHASE RULE AND ENERGY STORAGE DEVICES **9**

Phase Rule - Terms involved - One Component system (water system) - Two component system (Lead-Silver system) - Storage devices - types - primary battery (dry cell), secondary battery (lead acid, lithium-ion battery) - Emerging batteries - Aluminum air battery, batteries for automobiles and satellites - Fuel cells - Hydrogen - Oxygen fuel cell.

UNIT V FUELS AND COMBUSTION **9**

Fuels – Introduction - Classification of fuels - coal - Analysis of coal (proximate and ultimate) - Carbonization - Manufacture of metallurgical coke (Otto Hoffmann method) - Petroleum - Manufacture of synthetic petrol (Bergius process) - Knocking - Anti knocking - Octane number - Cetane number - Gaseous fuels - LPG, CNG - Combustion: Calorific value - higher and lower calorific values - Theoretical calculation of calorific value - Flue gas analysis (ORSAT Method).

TOTAL: 45 PERIODS

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LIST OF THE EXPERIMENTS - CHEMISTRY LABORATORY

1. Estimation of HCl using Na_2CO_3 as primary standard and determination of alkalinity in water sample.
2. Determination of total, temporary & permanent hardness of water by EDTA method.
3. Determination of Chloride content of water sample by Argentometric method.
4. Determination of strength of given hydrochloric acid using pH meter.
5. Estimation of Copper content by spectrophotometer.
6. Estimation of iron content of the given solution using potentiometer.
7. Conductometric titration of strong acid Vs strong base.

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of the course, the students will be able to,

- Understand the various water treatment methodologies and its applications.
- Recognize corrosion protection techniques and appropriate mitigation strategies.
- Assess different types of polymers, composites and their industrial applications.
- Illustrate the concept of phase diagram, working principles of batteries, emerging energy storage technologies and their applications.
- Analyze the various fuels and their properties.

TEXT BOOKS:

1. P. C. Jain and Monica Jain, "Engineering Chemistry", Dhanpat Rai Publishing, Company, New Delhi, 2015.
2. S. S. Dara, "A Text Book of Engineering Chemistry", S Chand & Co. Ltd., New Delhi, 2013.

REFERENCES:

1. Shika Agarwal, "Engineering Chemistry", Cambridge University Press, Delhi, 2016.
2. B. Sivashankar, "Engineering Chemistry", Tata Mc. Graw–Hill Publishing Company, Ltd., Delhi, 2012.
3. G Palanna, "Engineering Chemistry", Tata Mc. Graw Hill Education Private Limited, Delhi, 2017.
4. Prasanta Rath,"Engineering Chemistry", Cengage Learning India Pvt. Ltd., Delhi, 2018.

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LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS

CHEMISTRY LABORATORY

S.No.	Name of Equipment	Quantity Required
1	pH Meter	10 Nos.
2	Digital Conductivity Meter	10 Nos.
3	Digital Potentiometer	10 Nos.
4	Electronic Balance	5 Nos.
5	Deionizer unit	1 No.
6	Spectrophotometer	5 Nos.

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Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	2	-	2	3	2	-	-	-	-
CO2	3	2	-	-	2	3	2	-	-	-	-
CO3	3	-	2	2	3	2	-	-	-	-	-
CO4	3	2	1	-	3	2	-	-	-	-	2
CO5	3	3	1	-	2	3	2	-	-	-	2

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24GE102	ENGINEERING GRAPHICS (Common to All Branches)	L T P C 3 0 2 4

OBJECTIVES:

The student should be made to:

- Understand the various basic concepts like dimensioning, standards, curves and free hand sketching
- Develop the skills on projection of points, lines and plane surfaces
- Impart knowledge on projection of solids like prisms and pyramids
- Illustrate the section of solids and development of surfaces for various objects
- Acquire skills on viewing of solid objects in Isometric and Perspective projections

CONCEPTS AND CONVENTIONS (NOT FOR EXAMINATION) **2**

Importance of graphics in engineering applications - Use of drafting instruments - BIS conventions and specifications - Size, layout and folding of drawing sheets - Lettering and geometric dimensioning

UNIT I PLANE CURVES AND FREE HAND SKETCHING **9+6**

Curves used in engineering practices: Conics - Construction of ellipse, Parabola and hyperbola by eccentricity method - Construction of cycloid and involutes of square and circle- Drawing of tangents and normal to the above curves.

Visualization concepts and Free Hand sketching: Visualization principles - Representation of Three Dimensional objects - Layout of views – Free hand sketching of multiple views from pictorial views of objects.

UNIT II PROJECTION OF POINTS, LINES AND PLANE SURFACES **9+6**

Projection of points - Projection of straight lines (only First angle projections) inclined to both the principal planes - Determination of true length and true inclination by rotating line method - Projection of planes inclined to both the principal planes by rotating object method.

UNIT III PROJECTION OF SOLIDS **7+6**

Projection of simple solids like prisms, pyramids, cylinder, cone when the axis is inclined to one of the principal planes by rotating object method.

UNIT IV PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES **9+6**

Sectioning of solids: prisms, pyramids, cylinder, cone in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other - obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids: prisms, pyramids, cylinder and cone.

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UNIT V ISOMETRIC AND PERSPECTIVE PROJECTIONS **9+6**

Principles of isometric projection - isometric scale - isometric projections of simple solids, truncated and frustum of solids: Prisms, pyramids, cylinder, cone - Perspective projection of simple solids: Prisms, pyramids and cylinder by visual ray method.

TOTAL: 75 (45+30) PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Relate the engineering knowledge on dimensioning, standards, curves and free hand sketching objects
- Identify the various views on the projection of points, straight lines and plane surfaces
- Apply the knowledge on projection of solids like prisms and pyramids
- Analyze the section of solids and development of surfaces
- Develop the isometric views and perspective projection of simple solids

TEXT BOOKS:

1. Natarajan K V., "A text book of Engineering Graphics", Dhanalakshmi Publishers, Chennai, 2023.
2. Venugopal K and Prabhu Raja V., "Engineering Graphics", New Age International (P) Limited, 2024.

REFERENCES:

1. Bhatt N D and Panchal V M., "Engineering Drawing", Charotar Publishing House, 50th Edition, 2023.
2. Basant Agarwal and Agarwal C M., "Engineering Drawing", Tata McGraw Hill Publishing Company Limited, New Delhi, 2019.
3. Gopalakrishna K R., "Engineering Drawing" (Vol. I & II combined), Subhas Stores, Bangalore, 2017.

Special points applicable to End Semester Examinations on Engineering Graphics:

1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use an appropriate scale to fit solution within A3 size.
4. The examination will be conducted in appropriate sessions on the same day.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	2	-	-	-	-	-	3	-	2
CO2	3	2	2	-	-	-	-	-	3	-	2
CO3	3	2	2	-	-	-	-	-	3	-	2
CO4	3	2	2	-	-	-	-	-	3	-	2
CO5	3	2	2	-	-	-	-	-	3	-	2

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24TA101	HERITAGE OF TAMILS (Common to All Branches)	L T P C 1 0 0 1

OBJECTIVES:

The students should be made to:

- Learn the extensive literature of classical Tamil.
- Analyze rock art paintings to modern art.
- Understand folk and martial arts.
- Apply the concepts of Thinai in Tamils.
- Realize the contribution of Tamils in Indian freedom struggle.

UNIT I LANGUAGE AND LITERATURE 3

Language Families in India - Dravidian Languages –Tamil as a Classical Language - Classical Literature in Tamil – Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature - Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land - Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil - Contribution of Bharathiyar and Bharathidhasan.

UNIT II HERITAGE-ROCK ART PAINTINGS TO MODERN ART–SCULPTURE 3

Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils.

UNIT III FOLK AND MARTIAL ARTS 3

Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.

UNIT IV THINAI CONCEPT OF TAMILS 3

Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.

UNIT V CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE 3

Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India– Self-Respect Movement- Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.

TOTAL: 15 PERIODS

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OUTCOMES:

On successful completion of the course, the students will be able to,

- Recognize the extensive literature Tamil and classical nature.
- Understand the heritage of sculpture, painting and musical instruments.
- Classify the folk and martial arts of Tamil people.
- Realization of Thinai concepts, trade and victory of Chozha dynasty.
- Interpret the contribution of Tamils in Indian freedom struggle, Self- esteem movement and siddha medicine.

TEXT-CUM-REFERENCE BOOKS

1. தமிழக வரலாறு - மக்களும் பண்பாடும் – கே. கே. பிள்ளை (வெளியீடு:தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை -ஆற்றங்கரை நாகரீகம். (தொல்லியல் துறை வெளியீடு).
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by:International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatanianian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by : International Institute of Tamil Studies.)
9. Keeladi – 'Sangam City Civilization on the banks of the river Vaigai' (Jointly Published by: Department of Archaeology & Tamilnadu Textbook and Educational Services Corporation, Tamilnadu.)
10. Studies in the History of India with Special Reference to Tamilnadu (Dr.K.K.Pillay) (Published by: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamilnadu Textbook and Educational Services Corporation, Tamilnadu.)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	2	1	2	-	1
CO2	-	-	-	-	-	-	2	1	2	-	1
CO3	-	-	-	-	-	-	2	1	2	-	1
CO4	-	-	-	-	-	-	2	1	2	-	1
CO5	-	-	-	-	-	-	2	1	2	-	1

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24TA101	தமிழர் மரபு (அனைத்து துறைகளுக்கும் பொதுவானது)	L T P C 1 0 0 1

நோக்கங்கள்:

மாணவர்கள் கண்டிப்பாக அறிய வேண்டுவன:

- செம்மொழியான தமிழ் மொழியின் விரிவான இலக்கியத்தைப் பற்றி அறிதல்.
- பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை உள்ள கலைகளை பகுப்பாய்வு செய்தல்.
- நாட்டுப்புறக் கலைகள் மற்றும் வீர விளையாட்டுகளைப் புரிந்துகொள்ளுதல்.
- தமிழர்களின் திணைக் கோட்பாடுகளைச் செயல்படுத்துதல்.
- இந்திய விடுதலைப் போராட்டத்திற்கும் பண்பாட்டிற்கும் தமிழர்களின் பங்களிப்பை உணருதல்

அலகு 1 மொழி மற்றும் இலக்கியம் 3

இந்திய மொழிக் குடும்பங்கள் - திராவிட மொழிகள் - தமிழ் ஒரு செம்மொழி - தமிழ் செவ்விலக்கியங்கள் –சங்க இலக்கியத்தின் சமயச் சார்பற்ற தன்மை - சங்க இலக்கியத்தில் பகிர்தல் அறம்-திருக்குறளில் மேலாண்மைக் கருத்துக்கள்- தமிழ்க் காப்பியங்கள், தமிழகத்தில் சமண பௌத்த சமயங்களின் தாக்கம்- பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள் - சிற்றிலக்கியங்கள் -தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி - தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.

அலகு II மரபு - பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை – சிற்பக் கலை 3

நடுகல் முதல் நவீன சிற்பங்கள் வரை - ஐம்பொன் சிலைகள் - பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள், பொம்மைகள் - தேர் செய்யும் கலை - சுடுமண் சிற்பங்கள் - நாட்டுப்புறத் தெய்வங்கள் -குமரிமுனையில் திருவள்ளுவர் சிலை - இசைக்கருவிகள் - மிருதங்கம், பறை , வீணை , யாழ், நாதஸ்வரம் – தமிழர்களின் சமூக பொருளாதார வாழ்வில் கோவில்களின் பங்கு.

அலகு III நாட்டுப்புறக் கலைகள் மற்றும் வீர விளையாட்டுகள் 3

தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஒயிலாட்டம், தோல்பாவைக் கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுகள்.

அலகு IV தமிழர்களின் திணைக் கோட்பாடுகள் 3

தமிழகத்தின் தாவரங்களும், விலங்குகளும் - தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள் - தமிழர்கள்

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போற்றிய அறக்கோட்பபாடு - சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும், கல்வியும் –சங்ககால நகரங்களும் துறை முகங்களும் -சங்ககாலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி - கடல்கடந்த நாடுகளில் சோழர்களின் வெற்றி.

அலகு V இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு 3

இந்திய விடுதலைப்போரில் தமிழர்களின் பங்கு - இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் - சுயமரியாதை இயக்கம் - இந்திய மருத்துவத்தில் சித்த மருத்துவத்தின் பங்கு - கல்வெட்டுகள், கையெழுத்துப்படிகள் - தமிழ்ப் புத்தகங்களின் அச்சு வரலாறு.

TOTAL: 15 PERIODS

முடிவுகள்:

பாடத்தின் முடிவில், மாணவர்கள் அறிந்து கொள்வன:

- தமிழ் மொழியின் செம்மொழி தன்மையையும் சங்க இலக்கியத்தின் முக்கியத்துவத்தையும் உணர்வார்கள்.
- தமிழர்களின் சிற்ப, ஓவிய, இசை மரபுகளை புரிந்துகொள்வார்கள்.
- நாட்டுப்புறக் கலைகளையும் வீர விளையாட்டுகளையும் வகைப்படுத்துவார்கள்.
- தமிழர்களின் திணைக் கோட்பாடுகளும் சங்ககால வர்த்தகமும் புரிந்துகொள்வார்கள்.
- இந்திய விடுதலைப் போராட்டம், சுயமரியாதை இயக்கம், சித்த மருத்துவம் ஆகியவற்றில் தமிழர்களின் பங்களிப்பை விளக்குவார்கள்.

உரை மற்றும் குறிப்பு புத்தகங்கள்:

1. தமிழக வரலாறு - மக்களும் பண்பாடும் – கே. கே. பிள்ளை (வெளியீடு:தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை -ஆற்றங்கரை நாகரீகம். (தொல்லியல் துறை வெளியீடு).
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by:International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by : International Institute of Tamil Studies.)

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9. Keeladi – 'Sangam City Civilization on the banks of the river Vaigai' (Jointly Published by: Department of Archaeology & Tamilnadu Textbook and Educational Services Corporation, Tamilnadu.)
10. Studies in the History of India with Special Reference to Tamilnadu (Dr.K.K.Pillay) (Published by: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamilnadu Textbook and Educational Services Corporation, Tamilnadu.)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	2	1	2	-	1
CO2	-	-	-	-	-	-	2	1	2	-	1
CO3	-	-	-	-	-	-	2	1	2	-	1
CO4	-	-	-	-	-	-	2	1	2	-	1
CO5	-	-	-	-	-	-	2	1	2	-	1

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24GE104L	ENGINEERING PRACTICES LABORATORY (Common to All Branches)	L T P C 0 0 4 2

OBJECTIVES:

The student should be made to:

- Acquire knowledge in calculation of area and volume of various 2D and 3D shapes and gain practical exposure in pipeline connections and carpentry
- Develop the fundamental skills in welding, machining, sheet metal and foundry works
- Illustrate the basic working principles of air conditioner, industrial robot and washing machine
- Learn the domestic, industrial wiring circuits and measure the electrical parameters
- Demonstrate the basic electronic components in PCB, assemble of smart phone, computer and LED TV

GROUP A (CIVIL & MECHANICAL)

I. CIVIL ENGINEERING PRACTICES 15

Basic Measurements

1. Calculation of area and volume for various solid and hollow shapes, including cubical, spherical, cylindrical and conical models with different scale conversions.

Carpentry

2. Study of industrial trusses and joints in doors and windows using models.
3. Sawing and planing- Making joints: T-joint, Mortise joint, and Tenon joint.

Plumbing

4. Laying pipe connections for suction and delivery sides of the pumps and preparation of plumbing line sketches for water supply and sewage works.
5. Connecting various pipe fittings using different materials (metal, plastic, and flexible pipes) and other components which are commonly used in household appliances.

II. MECHANICAL ENGINEERING PRACTICES 15

Welding:

a) Arc Welding
   i) Butt joint
   ii) Lap joint
b) Gas welding practice

Basic Machining:

a) Turning and Facing
b) Drilling and tapping

Sheet Metal work:

a) Making of a funnel
b) Making of a tray

Foundry work:

a) Making a mould using solid pattern
b) Making a mould using split pattern

Study Experiments

a) Study of components in Air conditioner
b) Study of components in Industrial robot
c) Study of components in Washing machine

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(BoS / MECH)

GROUP B (ELECTRICAL AND ELECTRONICS)

III. ELECTRICAL ENGINEERING 15

1. Residential house wiring using switches, fuse, indicator, circuit breaker, lamp and Energy meter
2. Stair case wiring
3. Industrial wiring using switches, fuse, indicator and Energy meter
4. Measurement of electrical quantities - voltage, current, power, power factor and energy in RLC circuit
5. Calculation of energy consumption for different lamps
6. Study of fan with regulator, Iron Box and Emergency Lamp

IV. ELECTRONICS ENGINEERING 15

1. Study and identification of electronic components -Resistors, Capacitors and Inductors
2. Assembling and testing electronic components in small PCB
3. Assembling and dismantling of Computer/Laptop
4. Assembling and dismantling of LED TV
5. Study of elements in smart phone

TOTAL: 60 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Interpret engineering knowledge on calculation of area and volume of different geometric shapes, connecting various household fittings and making carpentry joints
- Apply engineering skills to do welding, machining, sheet metal and foundry works
- Gain knowledge on Air conditioner, Industrial robot and washing machine
- Understand the domestic, industrial wiring circuits and measure the various electrical parameters
- Analyze the basic components of electronic circuits, computer, laptop, smart phone and LED TV

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	2	-	2	2	-	2	-	-	2
CO2	3	2	2	-	2	2	-	2	-	-	2
CO3	3	2	1	-	2	2	-	2	-	-	2
CO4	3	2	1	-	2	2	-	2	-	-	2
CO5	3	2	2	-	2	2	-	2	-	-	2

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24GE104L ENGINEERING PRACTICES LABORATORY

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS

GROUP A (CIVIL & MECHANICAL)

S. No	Name of Equipment	Quantity Required
	CIVIL ENGINEERING PRACTICES	
Basic Measurements		
1.	Sphere	03 Nos.
2.	Cylinder	03 Nos.
3.	Cone	03 Nos.
4.	Cube	03 Nos.
5.	Cuboid	03 Nos.
Carpentry		
6.	Industrial truss	03 Nos.
7.	Door Joint	03 Nos.
8.	Window Joint	03 Nos.
9.	Try Square	15 Nos.
10.	Hand Saw	15 Nos.
11.	Carpentry bench vice	15 Nos.
12.	Firmer Chisel	15 Nos.
13.	Motrin Chisel	15 Nos.
14.	Iron Jack	15 Nos.
15.	Mallet	15 Nos.
16.	Bench hold fastens (C Clamp)	15 Nos.
17.	Wood Cutting Machine	2 Nos.
18.	Planer machine	2 Nos.
19.	Hand drilling Machine	2 Nos.
20.	Jig Saw	2 Nos.
Plumbing		
21.	Pipe Vice	15 Nos.
22.	Die Holder with Die set	10 Nos.

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S. No	Name of Equipment	Quantity Required
	MECHANICAL ENGINEERING PRACTICES	
Welding		
1.	Arc welding unit	5 Nos.
2.	Gas welding unit	2 Nos.
Basic Machining		
3.	Lathe Machines	3 Nos.
4.	Drilling Machines	2 Nos.
Sheet Metal work		
5.	Steel rule	5Nos.
6.	Bend snips	5 Nos.
7.	Straight snips	5 Nos.
8.	Scriber	5 Nos.
9.	Divider	5 Nos.
10.	Trammel	5 Nos.
11.	Prick Punches	5 Nos.
12.	Centre punches	5 Nos.
13.	Pliers	5 Nos.
14.	Ball peen hammer	5 Nos.
15.	Cross peen hammer	5 Nos.
16.	Bull wart hammer	5 Nos.
17.	Mallet	5 Nos.
18.	Anvil	3 Nos.
19.	Swage block	3 Nos.
20.	Wire gauges	2 Nos.
Foundry work		
21.	Cope and Drag Box	5 Nos.
22.	Solid pattern	5 Nos.
23.	Split pattern	5 Nos.
24.	Runner	5 Nos.
25.	Riser	5 Nos.
26.	Sprue pin	5 Nos.
27.	Sand rammer	5 Nos.
28.	Trowel	5 Nos.
Study Experiments		
29.	Air-conditioner unit	1 No.
30.	Industrial Robot	1 No.
31.	Washing Machine	1 No.

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24GE104L **ENGINEERING PRACTICES LABORATORY (GROUP – B)**

LIST OF EQUIPMENTS FOR A BATCH OF 30 STUDENTS

S. No.	Description of Equipment	Quantity Required (Nos)
Part III: Electrical Engineering		
1.	Single phase house wiring setup	5
2.	Three phase house wiring setup	3
3.	Staircase wiring setup	3
4.	Fluorescent lamp and LED with wiring setup	Each 3
5.	Emergency lamp wiring setup	2
6.	Iron box wiring setup	2
7.	Fan with Regulator	2
8.	AC Voltmeter, Ammeter, Wattmeter and Energy Meter	Each 4
9.	R-Load	4
10.	Inductive and Capacitive Load	Each 1
Part IV: Electronics Engineering		
1.	Soldering Iron, Lead	10 Set
2.	Multi meter	10
3.	Continuity tester	10
4.	Used Laptop	3
5.	Used desktop computer	3
6.	Used LED TV	3
7.	Used Smart Phone	3
8.	DC Regulated power supply (0-30V)	2
9.	Resistors	200
10.	Capacitors	200
11.	Diodes	100
12.	Transistors	50

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24EEC101L INTERPERSONAL COMMUNICATION LABORATORY L T P C
(Common to All Branches) 0 0 2 1

OBJECTIVES:
The students should be made to:

- Improve the communicative competence of learners
- Help learners use language effectively in academic/work contexts
- Develop various listening strategies to comprehend various types of audio materials like lectures, discussions, videos etc.
- Build on students' English language skills by engaging them in listening, speaking and grammar learning activities that are relevant to authentic contexts.
- Use language efficiently in expressing their opinions via various media.

UNIT I INTRODUCTION TO FUNDAMENTALS OF COMMUNICATION 6

Listening for general information-specific details - conversation: Introduction to classmates (formal & informal); Telephone conversation; Speaking - Self Introduction-Introducing a friend; - politeness strategies - making polite requests, making polite offers, replying to polite requests and offers - understanding basic instructions (filling out a bank application for example).

UNIT II NARRATION AND SUMMATION 6

Listening - Listening to podcasts, anecdotes / stories / event narration; documentaries and interviews with celebrities. Speaking - Narrating personal experiences / events- Talking about current and temporary situations & permanent and regular situations - describing experiences and feelings engaging in small talk- describing requirements and abilities.

UNIT III DESCRIPTION OF A PROCESS / PRODUCT 6

Listening - Listen to product and process descriptions, a classroom lecture; and advertisements about products. Speaking – Picture description- describing locations in workplaces- Giving instruction to use the product- explaining uses and purposes- Presenting a product- describing shapes and sizes and weights- talking about quantities(large & small)- talking about precautions.

UNIT IV FUNCTIONAL COMMUNICATION 6

Listening – Listening to TED Talks; Listening to lectures - and educational videos. Speaking – Small Talk; discussing and making plans-talking about tasks-talking about progress- talking about positions and directions of movement-talking about travel preparations- talking about transportation.

UNIT V PROFESSIONAL SKILLS 6

Listening – Listening to debates/ discussions; different viewpoints on an issue; and panel discussions. Speaking –making predictions- talking about a given topic.

TOTAL: 30 PERIODS

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OUTCOMES:

On successful completion of the course, the students will be able to,

- Listen to and comprehend general as well as complex academic information.
- Listen to and understand different points of view in a discussion.
- Speak fluently and accurately in formal and informal communicative contexts.
- Describe products and processes and explain their uses and purposes clearly and accurately.
- Express their opinions effectively in both formal and informal discussions.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	-	2	3	-	2
CO2	-	-	-	-	-	-	2	2	3	-	2
CO3	-	-	2	-	3	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	2	3	-	2
CO5	-	-	-	-	-	3	2	2	3	-	-

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LIST OF EQUIPMENTS
Requirements for a batch of 30 students

Sl. No.	Description of Equipment/Software	Quantity required (Nos)
1	Computer	30
2	Headphones	30
3	**Software:** Globarena	30

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24EN201	TECHNICAL ENGLISH (Common to All Branches)	L T P C 3 0 0 3

OBJECTIVES:

The students should be made to:

- Improve understanding of commonly used English usage by cultivating listening skills through informal interactions.
- Enrich their speaking abilities through scenario-based conversations to understand how language functions in context.
- Develop their ability to read critically by analyzing newspaper articles.
- Use group discussion techniques to improve cooperative communication.
- Enhance your ability to write professionally by creating organized reports.

UNIT I CONVERSATION **9**

Listening: Listening to informal conversations, Speaking: Short conversations in varied situations in student life, Reading: Reading Short text and longer passages for comprehension at deeper levels, Writing: Writing reviews (book / film), Grammar: Compound Nouns - Numerical Expression, Vocabulary: Cause and Effect Expressions.

UNIT II LANGUAGE IN USE **9**

Listening: Listening to Situation based Dialogues, Speaking: Asking about Routine actions and giving directions, Reading: Reading a short story for appreciation and understanding, Writing: Writing Emails - Dialogue writing, Grammar: Purpose expressions - Adverbs, Vocabulary: Imperative sentences.

UNIT III ENGLISH FOR SPECIFIC PURPOSE **9**

Listening: Listening strategies for deeper understanding, Speaking: Using dictionary for learning pronunciation, stress and syllable divisions, Reading: an article from Newspaper - Critical reading, Writing: Note-Making / Note-Taking - Essay writing, Grammar: Definition, Degrees of Comparison, Vocabulary: Model verbs.

UNIT IV ENGLISH FOR CAREER **9**

Listening: Listening to the interviews of CEOs / entrepreneur, Speaking: Group Discussion skills, Reading: pre reading and post reading tasks, Writing - Job application - Cover letter & Resume, Grammar: Active and Passive voice, Relative Pronouns, Vocabulary: Synonyms and Antonyms.

UNIT V REPORT WRITING **9**

Listening: Listening and making notes, Speaking: Discussion on problems and solutions (case studies), Reading: Reading abstracts / Journal Articles, Writing: Minutes of meeting, Reports (Feasibility / Accident / Survey Report), Grammar: If Clause, Vocabulary: Idioms and their Meanings.

TOTAL: 45 PERIODS

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OUTCOMES:

On successful completion of the course, the students will be able to,

- Respond to informal conversations with effectiveness, exhibiting understanding.
- Appreciate and critically engage with short stories, articulating insights.
- Utilize dictionaries to comprehend syllable structures and pronounce words correctly.
- Engage in healthy group discussions by answering peers' questions and sharing ideas.
- Acquire constructive criticism in case study by describing issues.

TEXT BOOKS:

1. Bhatnagar, Nitin and Bhatnagar, Mamta, "Communicative English for Engineering and Professionals", Pearson Education India, 2010.

REFERENCES:

1. Raman, Meenakshi and Sharma, Sangeetha, "Technical Communication Principles and Practice", Oxford University Press, Delhi, 2019.
2. Andrea J, Rutherford. "Basic Communication Skills for Technology", Pearson Education, Inc., 2013.
3. Rizvi M, Ashraf. "Effective Technical Communication", Tata McGraw Hill Education Pvt.Ltd., Delhi,2017.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	1	-	-	2	3	-	2
CO2	-	-	1	-	-	2	2	-	3	-	2
CO3	-	-	-	-	2	-	2	-	3	-	-
CO4	-	-	-	2	-	-	2	3	3	-	-
CO5	-	2	-	2	-	2	2	2	3	-	-

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24MA203	VECTOR CALCULUS AND STATISTICS (Common to Civil, Mech and AGE)	L T P C 3 1 0 4

OBJECTIVES:

The Student should be made to:

- Grasp the fundamental ideas of vectors, vector fields, and scalar fields.
- Identify the field of engineering in ODE as an effective tool for resolving practical issues.
- Interpret the geometric implications of analytic functions in terms of conformal mapping.
- Differentiate knowledge of hypothesis testing to small and large samples that play an important role in real-life problems.
- Analyze differences among group means, while controlling the Type I error rate.

UNIT I VECTOR CALCULUS **9+3**

Gradient of a Scalar point function - Divergence, Curl, Solenoidal and irrotational of a vector point function - Directional Derivative - Green's, Gauss divergence and Stoke's theorems (without proof)

UNIT II ORDINARY DIFFERENTIAL EQUATIONS **9+3**

Higher order linear differential equations with constant coefficients $(e^{ax}V, x^nV)$ - Method of variation of parameters - Cauchy's linear differential equations - Legendre's linear differential equations

UNIT III ANALYTIC FUNCTIONS **9+3**

Functions of a complex variable - Analytic functions: Necessary condition - Cauchy-Riemann equations and sufficient condition (statement only) Harmonic and orthogonal properties of analytic function - Construction of analytic functions by Milne's method - Conformal mapping $(w = z + k, 1/z, kz)$ - Bilinear transformation.

UNIT IV TESTING OF HYPOTHESIS **9+3**

Statistical hypothesis - Large sample tests based on Normal distribution for single mean and difference of means - Small sample tests based on t distributions for testing of means and F distributions for testing of variances - Chi-square - Contingency table (test for Independency) - Goodness of fit.

UNIT V ANALYSIS OF VARIANCE **9+3**

One way classifications - two way classifications - Completely randomized design -Randomized block design - Latin square design

TOTAL: (45+15) PERIODS

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OUTCOMES:

On successful completion of the course, the students will be able to,

- Understand the concepts of gradient, divergence, and curl in vector calculus.
- Apply suitable techniques for solving second and higher-order differential equations.
- Utilize conformal mapping and analytic functions to transform complex functions between different domains.
- Formulate the null and alternative hypotheses based on research questions and real-life scenarios.
- Classify the one-way and two-way ANOVA and interpret their applications in statistical analysis.

TEXT BOOKS:

1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 44th Edition, 2017.
2. Richard A. Johnson., "Probability and Statistics for Engineers", Pearson Education, 8th Edition, 2019.

REFERENCES:

1. Kreyszig Erwin, "Advanced Engineering Mathematics", John Wiley and Sons, 10th
2. Edition, New Delhi, 2018.
3. O'Neil, P.V. "Advanced Engineering Mathematics", Cengage Learning India Pvt., Ltd, 7th Edition New Delhi, 2013.
4. Devore. J.L.,"Probability and Statistics for Engineering and the Sciences, Cengage Learning, New Delhi, 8th Edition, 2021.
5. Spiegel Schiller "Probability and Statistics" Tata McGraw-Hill Publishing Company Limited, New Delhi. 3rd Edition, 2018.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	2	2	1	-	-	-	-	-	2
CO2	3	3	3	3	2	2	-	-	-	-	2
CO3	3	3	3	-	3	-	-	-	-	-	1
CO4	3	3	-	3	2	-	-	-	-	-	2
CO5	3	3	2	3	2	1	-	-	-	-	2

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24MC002	UNIVERSAL HUMAN VALUES 2 - UNDERSTANDING HARMONY (Common to All Branches)	L T P C 2 1 0 3

OBJECTIVES:

The students should be made to:

- Demonstrate an understanding of ethical principles and human values
- Apply critical thinking to analyze ethical dilemmas and conflicts
- Communicate effectively about ethical issues and human values
- Appreciate the importance of harmony in personal, social, and environmental contexts
- Engage in practices that promote ethical behavior and societal harmony

UNIT 1 INTRODUCTION TO VALUE EDUCATION 6+3

Value Education – need and process, Self-Exploration – process, Basic Human Aspirations - Continuous Happiness and Prosperity, Basic requirement for fulfilment of Human Aspirants, Understanding Happiness and Prosperity – Continuity of Happiness from Physical Facility.

UNIT II HARMONY IN THE HUMAN BEING 6+3

Human being as a co-existence of the self and the Body - The needs of Self and Body, Body as an Instrument - The Self as the Seer- Doer-Enjoyer, Harmony in the self, Harmony of the Self with the Body –Programme for Self – regulation and health.

UNIT III HARMONY IN THE FAMILY AND SOCIETY 6+3

Family as the basic unit of human interaction , Understanding Relationship, Trust as the foundational value, Respect as the Right Evaluation, Harmony in the society – Understanding Human Goal, Harmony from Family Order to World Family Order – Universal Human Order - Scope.

UNIT IV HARMONY IN THE NATURE AND EXISTENCE 6+3

Nature - as Collections of Units, Classification of Units into Four Orders, Interconnectedness, and mutual fulfilment among the four orders of nature, self-regulation in Nature, Understanding Existence as Units in Space, Existence as Co-existence.

UNIT V IMPLICATIONS OF THE ABOVE HOLISTIC UNDERSTANDING OF HARMONY ON PROFESSIONAL ETHICS 6+3

Natural Acceptance of Human Values - Definitiveness of Ethical Human Conduct, Basis for Humanistic Education, Constitution, Universal Human Order, Competence in Professional Ethics, Holistic Technologies, Production System and Management Models – Typical case, Strategies for Transition towards value based life and profession.

TOTAL: (30+15) PERIODS

OUTCOMES:

On successful completion of the course, the students will be able to,

- Understand the significance of value education and distinguish between values and skills
- Understand the concept of harmony within the self and how it relates to human values
- Analyze the role of family and society in fostering harmony
- Evaluate the relationship between human values and harmony in nature
- Develop skills to resolve conflicts and promote harmony in personal and professional life

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TEXT BOOKS:

1. R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics, Excel Books, New Delhi, 2nd Revised Edition, 2019.

REFERENCES:

1. Tripathi A N, "Human Values", New Age Intl. Publishers, New Delhi, 2009.
2. Govindarajan M, Natrajan S and Senthilkumar V S, "Engineering Ethics (Including HumanValues)" Eastern Economy, PHI, 12th Edition, 2011.
3. Govindarajan M and Natrajan S, "Professional Ethics and Human Values", PHI, 2011.
4. Banerjee B P, "Foundation of Ethics and Management", Excel Publication, 2005.
5. Bajpai B L, "Indian Ethos and Modern Management", New Royal Book Co, Lucknow,Reprinted 2008.
6. Seebauer and Robert L Berry, "Fundamentals of Ethics for Scientist and Engineers", OxfordUniversity Press, 2000.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	3	3	-	-	-	3
CO2	-	-	-	-	-	3	3	-	-	-	3
CO3	-	-	-	-	-	3	3	-	2	-	3
CO4	-	-	-	-	-	3	3	-	2	-	3
CO5	-	-	-	-	-	3	3	-	2	-	3

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BoS (S&H)

24CY201	ENVIRONMENTAL SCIENCES (Common to All Branches)	L T P C 3 0 0 3

OBJECTIVES:

The students should be made to:

- Understand the structure and function of different ecosystems and concepts of biodiversity.
- Recognize the causes and effects of environmental pollutants and disaster management.
- Explore the natural resources and their sustainability.
- Examine the principles of sustainable development and Green Chemistry.
- Analyze the impacts of population on environment and human health.

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY 9

Definition, scope and importance of environment - concept of an ecosystem - structure and function of an ecosystem - ecological succession - food chain - food web - structure and function of the (a) forest ecosystem (b) desert ecosystem (c) aquatic ecosystem - (pond and ocean) - Biodiversity: Hot spots of biodiversity - threats to biodiversity - values of biodiversity - endangered and endemic species - conservation of biodiversity: In-situ and ex-situ conservation methods.

UNIT II ENVIRONMENTAL POLLUTION AND NATURAL CALAMITIES 9

Definition - causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Marine pollution (d) Noise pollution (e) Nuclear hazards - solid waste and E-waste Management: role of an individual in prevention of pollution-disaster management: flood, earthquake, cyclone and landslides.

UNIT III NATURAL RESOURCES 9

Forest resources: deforestation, mining, dam and their effects on forest and tribal people - Water resources: Use and over - utilization of surface and ground water - dams-benefits and problems - Food resources: World food problems - effects of modern agriculture - fertilizer - pesticide problems, water logging, salinity - Energy resources: renewable energy sources - Solar energy, Tidal energy, Wind energy sources. Land resource: land degradation, Soil erosion and desertification - role of an individual in conservation of natural resources.

UNIT IV SOCIAL ISSUES AND SUSTAINABILITY 9

Water conservation - rain water harvesting- resettlement and rehabilitation of people; its problems and concerns - environmental ethics - acid rain, ozone layer depletion - waste land reclamation - Air (Prevention and Control of Pollution) act - Water (Prevention and control of Pollution) act - Wildlife protection act – Forest conservation act. Sustainable development- Green Chemistry: Principles of green chemistry - Environmental Impact Assessment. Sustainable habitat: Green buildings, Green materials, Energy efficiency, Sustainable transportation.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT 9

Population growth, variation among nations - population explosion - family welfare programme - environment and human health - value education - HIV / AIDS - threatening of communicable diseases for human population and its prevention - women and child welfare - role of information technology in environment and human health.

TOTAL: 45 PERIODS

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OUTCOMES:

On successful completion of the course, the students will be able to,

- Articulate the significance of ecosystems and biodiversity.
- Evaluate the preventive measures of pollution and calamities.
- Identify the strategies for the conservation of natural resources.
- Retrieve the measures of green chemistry to real-world scenarios.
- Evaluate the issues of overpopulation and communicable diseases on the environment.

TEXT BOOKS:

1. Benny Joseph, "Environmental Science and Engineering", Tata McGraw-Hill, Delhi, 2nd Edition, 2018.
2. Gilbert M. Masters, "Introduction to Environmental Engineering and Science", Pearson Education Pvt., Ltd., 3rd Edition, 2016.

REFERENCES:

1. G. Tyler Miller, St. Andrews Preshyterian, "Introduction to Environmental Science", Cengage Learning India Pvt., Ltd., 2010.
2. Dharmendra S. Sengar, "Environmental Law", Prentice hall of India Pvt. Ltd, Delhi, 2007.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	1	-	-	-	3	2	-	-	-	-
CO2	2	2	-	-	-	3	3	-	-	-	-
CO3	-	1	3	-	2	3	-	-	-	-	-
CO4	2	-	3	-	3	-	3	-	-	-	-
CO5	1	2	-	-	-	2	-	-	2	-	-

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24GE101 COMPUTER FUNDAMENTALS AND C PROGRAMMING

(Common to All Branches)

L	T	P	C
3	0	0	3

OBJECTIVES:

The Student should be made to:

- Learn the fundamentals of Computer and Programming.
- Understand the basics of C programming and decision making statements.
- Learn how to construct programs using array and pointer.
- Understand the concept of string and function.
- Study the concept of structure, union and files.

UNIT I FUNDAMENTALS OF COMPUTER AND PROGRAMMING 9

Computer System - Components of Computer Hardware - Data Representation - Number System and Conversion - Program Development Life Cycle - Algorithm - Control Structures - Flowchart – Pseudo code - Programming Paradigms.

UNIT II BASICS OF C PROGRAMMING 9

Overview of C - C Character Set - Identifiers and Keywords - Variable Declaration - Data types - Type Qualifiers and Type Modifiers - Structure of a C Program - Executing a C Program - Operators and Expressions - Decision-Making and Looping Statements.

UNIT III ARRAYS AND POINTERS 9

Introduction to Arrays - Types of Array - Pointers - void Pointer - Null Pointer - Arrays of Pointers - Pointer to a Pointer - Pointer to an Array - Pointer Arithmetic.

UNIT IV STRINGS AND FUNCTIONS 9

Strings - Reading String Input - String Library Functions - Command Line Arguments - Functions: Types - Declaration - Definition - Function Call - Pass by Value - Pass by Reference - Passing arrays to functions - Recursion.

UNIT V STRUCTURE, UNION AND FILES 9

Structures - Pointers to Structures - Array of Structures - Structures within a Structure - Functions and Structures - Unions - Storage Classes - Files: Streams - File type - File operations.

TOTAL: 45 PERIODS

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OUTCOMES:

On successful completion of this course, the students will be able to,

- Explain the fundamentals of computer and programming.
- Choose appropriate data types, variables and statements for solving simple problems.
- Construct programs using arrays and pointers for a given scenario.
- Build programs using strings and functions in C language.
- Develop programs using structure, union and files for a given scenario.

TEXT BOOKS:

1. Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", Pearson India Education Services Pvt. Ltd., 2016.

REFERENCES:

1. Ajay Mital, "Programming in C - A Practical Approach", Pearson Education, 2015.
2. Dromey R G, "How to Solve it by Computer", Pearson Education, Fifteenth Impression, 2014.
3. Herbert Schildt, "C - The Complete Reference", Tata McGraw-Hill, 2013.
4. Ashok N Kamthane, "Computer Programming", Pearson Education, Second Edition, 2012.
5. Juneja B L and Anita Seth, "Programming in C", Cengage Learning India Pvt. Ltd., 2011.

Mapping of COs with POs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	2	-	2	-	-	-	-	-	-	-
CO2	3	2	2	2	-	-	-	-	2	2	-
CO3	3	2	2	2	-	-	-	-	2	2	1
CO4	3	2	2	2	2	-	-	-	2	2	1
CO5	3	2	2	2	2	-	-	-	2	2	1

N. Ramesh

CHAIRMAN
BoS (IT) 27/11

24AG201 PRINCIPLES AND PRACTICES OF CROP PRODUCTION

L	T	P	C
3	0	0	3

OBJECTIVES:

The students should be made to:

- Introduce the basic principles of agriculture and crop production
- Familiarize in crop selection and establishment procedures
- Impart basic knowledge on nutrient, pest and disease management for better crop production
- Learn the cultivation practices of various field crops
- Understand the cultivation practices of horticultural crops

UNIT I AGRICULTURE AND CROP PRODUCTION **9**

Introduction to agriculture – History and Scope of agriculture in India – Agricultural sectors and Allied sectors – Field crop production and Horticulture – Principles of agronomy – Classification of crops – Cropping seasons – Factors affecting crop growth and production: genetic (internal) and environmental (external) factors – Crop management through environmental modification and adaptation of crops to the existing environment through crop cultural practices.

UNIT II CROP SELECTION AND ESTABLISHMENT **9**

Regional and seasonal selection of crops – Systems of crop production – Competition among crop plants – Spacing and arrangement of crop plants – Field preparation for crops including systems of tillage – Seed: seed selection, seed treatment, sowing and planting – Nursery production – Intercultural operations.

UNIT III CROP MANAGEMENT **9**

Crop water management – Crop Nutrition Management – sources of nutrients, generalized recommendation, methods and timing of applications – Crop protection: Weed, Pest and Disease management – Integrated methods of managing water, nutrients and plant protection – Harvesting: Types and methods of harvesting.

UNIT IV PRODUCTION PRACTICES OF FIELD CROPS **9**

Package and practices for important field crops – Cereals: Paddy, Maize – Pulses / Grain legumes: Red gram, Black gram and Green gram – Oil seeds: Groundnut and Gingelly – Sugar crops: Sugarcane – Fibre crops: Cotton – Special purpose crops such as those grown for green manure and fodder.

UNIT V PRODUCTION PRACTICES OF HORTICULTURAL CROPS **9**

Package and practices horticultural crops in Tamilnadu such as – Vegetable crops: Tomato, Chilli, Bhendi and Brinjal – Fruit crops: Mango and Banana – Flower crops: Jasmine and Chrysanthemum – Green house cultivation of horticultural crops.

TOTAL: 45 PERIODS

V. Gore

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BoS (AGE) 03/04/25

OUTCOMES:

On successful completion of this course, the students will be able to,

- Understand the basic principles of successful crop production with an engineering approach
- Apply engineering knowledge in field preparation practices for enhanced productivity
- Assess the different management techniques, including engineering-based solutions to control pest and diseases
- Analyze the field crop production practices with an engineering perspective
- Explain the innovative engineering techniques applied in the cultivation of horticultural crops

TEXT BOOKS:

1. Rajendra Prasad, "Textbook of Field Crops Production, Volume 1 and 2", Indian Council of Agricultural Research, New Delhi, 2017.
2. Reddy S R, "Principles of Agronomy", Kalyani Publishers, New Delhi, 2018.

REFERENCES:

1. Crop Production Guide, Tamilnadu Agricultural University Publication, Coimbatore, 2020.
2. Kumar N, "Introduction to Spices, Plantation crops, Medicinal and Aromatic plants", Oxford and IBH Publishing Co. Pvt. Ltd., 2nd Edition, 2018.
3. Kumar N, "Introduction to Horticulture", Medtech Publications, 8th Edition, 2018.

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	-	-	-	-	-	-	-	-	-	2	2	-
CO2	3	-	-	-	-	-	-	-	-	-	2	2	2
CO3	3	2	2	1	2	2	-	-	-	-	2	2	2
CO4	3	-	-	1	2	2	-	1	-	1	2	2	2
CO5	3	-	-	1	2	2	-	1	-	1	2	2	2

V. GOPI

CHAIRMAN
BoS (AGE) 03/04/25

24TA201	TAMILS AND TECHNOLOGY (Common to All Branches)	L T P C 1 0 0 1

OBJECTIVES:

Students should be made to:

- Gain knowledge about weaving and ceramic Technology
- Creating a design and construction Technology
- Analyzing manufacturing Technology
- Applying agriculture and irrigation Technology
- Remembering scientific and scientific Tamil and Tamil computing

UNIT I WEAVING AND CERAMIC TECHNOLOGY 3

Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.

UNIT II DESIGN AND CONSTRUCTION TECHNOLOGY 3

Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo -Saracenic architecture at Madras during British Period.

UNIT III MANUFACTURING TECHNOLOGY 3

Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting, steel -Copper and gold- Coins as source of history - Minting of Coins – Beads making-industries Stone beads - Glass beads - Terracotta beads -Sheil beads/ bone beats - Archeological evidences - Gem stone types described in Silappathikaram.

UNIT IV AGRICULTURE AND IRRIGATION TECHNOLOGY 3

Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoompu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing Knowledge of Sea - Fisheries– Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society.

UNIT V SCIENTIFIC TAMIL & TAMIL COMPUTING 3

Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries – Sorkuvai Project.

TOTAL: 15 PERIODS

OUTCOMES:

On successful completion of the course, the students will be able to,

- Understand weaving under ceramic Technology.
- Develop new design and construction Technology.
- Identify the manufacturing Technology.
- Understand agriculture and irrigation.
- Knowledge of scientific Tamil and Tamil computing.

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TEXT-CUM-REFERENCE BOOKS

1. தமிழகவரலாறு - மக்களும்பண்பாடும் – கே. கே. பிள்ளை– (வெளியீடு:தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை -ஆற்றங்கரை நாகரீகம். (தொல்லியல் துறை வெளியீடு).
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by:International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by : International Institute of Tamil Studies.)
9. Keeladi – 'Sangam City Civilization on the banks of the river Vaigai' (Jointly Published by: Department of Archaeology & Tamilnadu Textbook and Educational Services Corporation, Tamilnadu.)
10. Studies in the History of India with Special Reference to Tamilnadu (Dr.K.K.Pillay) (Published by: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamilnadu Textbook and Educational Services Corporation, Tamilnadu.)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	2	1	-	-	1
CO2	-	-	-	-	-	-	2	1	-	-	1
CO3	-	-	-	-	-	-	2	1	-	-	1
CO4	-	-	-	-	-	-	2	1	-	-	1
CO5	-	-	-	-	-	-	2	1	-	-	1

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24TA201	தமிழரும் தொழில்நுட்பமும் (அனைத்து துறைகளுக்கும் பொதுவானது)	L T P C 1 0 0 1

நோக்கம்:

மாணவர்கள் கண்டிப்பாக அறிய வேண்டுவன:

- நெசவு மற்றும் பீங்கான் தொழில்நுட்பம் பற்றிய அறிவைப் பெறுதல்.
- வடிவமைப்பு மற்றும் கட்டுமான தொழில் நுட்பத்தை உருவாக்குதல்.
- உற்பத்தி தொழில் நுட்பத்தை பகுப்பாய்வு செய்தல்.
- விவசாயம் மற்றும் நீர்ப்பாசனத் தொழில் நுட்பத்தைப் பயன்படுத்துதல்.
- அறிவியல் மற்றும் அறிவியல் தமிழ் மற்றும் தமிழ் கணிப்பொறி தொடர்பான அறிவை நினைவில் கொள்ளுதல்.

அலகு 1 நெசவு மற்றும் பானை தொழில் நுட்பம் 3

சங்க காலத்தில் நெசவுத்தொழில் - பானை தொழில் நுட்பம் - கருப்பு, சிவப்பு பாண்டங்கள் - பாண்டுகளில் கீறல் குறியீடுகள்.

அலகு 2 வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம் 3

சங்ககாலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் &சங்ககாலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு - சங்க காலத்தில் கட்டுமான பொருட்களும் நடுக்கல்லும் - சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் - மாமல்லபுரச் சிற்பங்களும், கோவில்களும் - சோழர் காலதது பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் நாயக்கர் கால கோயில்கள் - மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் - செட்டிநாட்டு வீடுகள் - பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ - சாரோசெனிக் கட்டிடக்கலை.

அலகு 3 உற்பத்தித் தொழில்நுட்பம் 3

கப்பல் கட்டும் கலை - உலோகவியல் - இரும்பு தொழிற்சாலை - இரும்பை உருக்குதல், எஃகு - வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள் - நாணயங்கள் அச்சடிகள் - மணி உருவாக்கும் தொழிற்சாலைகள் - கல்மணிகள், கண்ணாடி மணிகள் - சுடுமண் மணிகள் - சங்கு மணிகள் - எலும்பு துண்டுகள் - தொல்லியல் சான்றுகள் - சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.

அலகு 4 வேளாண்மை மற்றும் நீர்ப்பாசன தொழில்நுட்பம் 3

அணை, குளங்கள், மதகு - சோழர்கால குமுளி தூம்பின் முக்கியத்துவம் - கால்நடை பராமரிப்பு - கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் - வேளாண்மை மற்றும் வேளாண்மை சார்ந்த செயல்பாடுகள் - கடல்சார் அறிவு - மீன்வளம் - முத்து மற்றும் முத்து குளித்தல் - பெருங்கடல் குறித்த பண்டைய அறிவு - அறிவுசார் சமூகம்.

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அலகு 5 அறிவியல் தமிழ் மற்றும் கணித்தமிழ் 3

அறிவியல் தமிழின் வளர்ச்சி - கணித்தமிழ் வளர்ச்சி - தமிழ் நூல்களை மின்பதிப்பு செய்தல் - தமிழ் மென்பொருட்கள் உருவாக்கம் - தமிழ் இணையக் கல்விக் கழகம் - தமிழ் மின் நூலகம் - இணையத்தில் தமிழ் அகராதிகள் - சொற்குவைத் திட்டம்.

TOTAL: 15 PERIODS

முடிவுகள்:

பாடத்தின் முடிவில், மாணவர்கள் அறிந்து கொள்வன:

- பீங்கான் மற்றும் நெசவு தொழில்நுட்பத்தைப் புரிந்து கொள்ளுதல்.
- புதிய வடிவமைப்பு மற்றும் கட்டுமான தொழில் நுட்பத்தை உருவாக்குதல்.
- உற்பத்தித் தொழில் நுட்பத்தை அடையாளம் காணுதல்.
- விவசாயம் மற்றும் நீர்ப்பாசனத்தைப் புரிந்து கொள்ளுதல்.
- அறிவியல் தமிழ் மற்றும் தமிழ் கணிப்பொறி தொடர்பான அறிவை பெறுதல்.

உரை மற்றும் குறிப்பு புத்தகங்கள்:

1. தமிழகவரலாறு - மக்களும்பண்பாடும் – கே. கே. பிள்ளை– (வெளியீடு : தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை -ஆற்றங்கரை நாகரீகம். (தொல்லியல் துறை வெளியீடு).
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by:International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by : International Institute of Tamil Studies.)
9. Keeladi – 'Sangam City Civilization on the banks of the river Vaigai' (Jointly Published by: Department of Archaeology & Tamilnadu Textbook and Educational Services Corporation, Tamilnadu.)
10. Studies in the History of India with Special Reference to Tamilnadu (Dr.K.K.Pillay) (Published by: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamilnadu Textbook and Educational Services Corporation, Tamilnadu.)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

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Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	2	1	-	-	1
CO2	-	-	-	-	-	-	2	1	-	-	1
CO3	-	-	-	-	-	-	2	1	-	-	1
CO4	-	-	-	-	-	-	2	1	-	-	1
CO5	-	-	-	-	-	-	2	1	-	-	1

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24GE103L	C PROGRAMMING LABORATORY (Common to All Branches)	L	T	P	C
		0	0	3	1.5

OBJECTIVES:

The Student should be made to:

- Learn how to develop C programs using conditional and looping statements
- Understand the concept of functions, arrays and strings
- Learn how to access memory using pointers
- Group different kinds of data related to a single entity
- Understand the manipulation of data in permanent storage

LIST OF EXPERIMENTS:

1. Programs using decision making statements.
2. Programs using looping statements.
3. Programs using user defined functions and recursive functions.
4. Programs using one dimensional and two dimensional arrays.
5. Solving problems using string functions.
6. Programs using pointers and dynamic memory allocation.
7. Programs using structures and unions.
8. Programs using pointers to structures and other data types.
9. Programs using text files.
10. Programs using binary files.

TOTAL: 45 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Implement C programs using control statements.
- Write C programs using functions, arrays and strings.
- Write C programs to access data in memory using pointers.
- Develop C programs using structures and other user defined data structures to manipulate heterogeneous data.
- Build C programs to manipulate data stored on permanent storage.

List of Equipment for a Batch of 30 Students:

- Standalone desktops with C compiler or Server with C compiler for 30 Nos.

Mapping of COs with POs :

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	3	2	-	-	-	2	3	-	-
CO2	3	2	3	2	-	-	-	2	3	-	-
CO3	3	2	3	2	-	-	-	2	3	-	2
CO4	3	2	3	2	2	-	-	2	3	-	2
CO5	3	2	3	2	2	-	-	2	3	-	2

CHAIRMAN
BoS (IT) 27/11

24AG202L **CROP HUSBANDRY FIELD LABORATORY** **L T P C**
0 0 3 1.5

OBJECTIVES:

The students should be made to:

- Acquire knowledge to identify and field preparation for field crops and horticultural crops
- Illustrate the seed concept and seed rate requirement
- Impart basic knowledge on nutrient, water, pest and disease management
- Learn the basic principles of crop monitoring
- Understand the science of harvesting and post harvesting

LIST OF EXPERIMENTS:

1. Identification of field crops and horticultural crops
2. Studies of field preparation for field crops
3. Studies of Seed selection, sowing and treatment procedures
4. Estimation of seed rate and germination of seeds
5. Studies of Nutrient management
6. Practicing Water management and Irrigation scheduling
7. Practicing different weed management practices
8. Study the integrated pest and diseases management practices
9. Practicing the biometric observation of crops
10. Study the Harvesting and Post harvesting methods

OUTCOMES:

On successful completion of this course, the students will be able to,

- Identify the field crops and horticultural crops and their field preparation using engineering principles
- Understand the basic knowledge of seed selection and estimation of seed rate with an engineering approach
- Illustrate the different management practices in crops by integrating agricultural engineering techniques
- Analyze crop monitoring data using engineering knowledge for successful crop production
- Explain the new engineering techniques and tools to harvest the crops

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	-	-	-	-	-	-	-	-	-	2	2	-
CO2	3	-	-	-	-	-	-	-	-	-	2	2	-
CO3	3	2	-	-	2	-	-	-	-	-	2	2	1
CO4	3	2	2	-	2	-	-	2	-	1	2	2	1
CO5	3	-	-	-	-	-	-	2	1	1	2	2	1

V.GOPI
CHAIRMAN
BoS (AGE) 03/04/25

24AG202L **CROP HUSBANDRY FIELD LABORATORY**

Requirements for a batch of 30 students

1.	A wet land / garden land for a minimum of 5 cents area for each / group of students	01
2.	An open / borewell as water source to support cultivation	01

V. Gopie

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BoS (AGE) 03/04/25

24EEC201L PROFESSIONAL COMMUNICATION LABORATORY L T P C
(Common to All Branches) 0 0 2 1

OBJECTIVES:

The students should be made to:

- Establish effective time management techniques and professional grooming routines.
- Make progress on their own presentations by utilizing visual aids and interacting with the audience.
- Obtain the ability to participate in group conversations effectively and comprehend group dynamics.
- Recognize the protocol required for different types of interviews.
- Develop strategies for stress management, time management, and professional networking.

UNIT I SOFT SKILLS DEVELOPMENT **6**

Introduction to Soft Skills - Hard skills & soft skills - Employability and Career Skills - Grooming as a professional with values - Time Management - General awareness of Current Affairs.

UNIT II DEVELOPING SELF ESTEEM **6**

Self-Introduction-organizing the material - Introducing oneself to the audience - introducing the topic - answering questions - individual presentation practice - presenting the visuals effectively - Five minutes presentation

UNIT III PROFESSIONAL SKILLS **6**

Introduction to Group Discussion - Participating in group discussions - understanding group dynamics - brainstorming the topic - questioning and clarifying - GD strategies - activities to improve GD skills

UNIT IV COMMUNICATION ETIQUETTES **6**

Interview etiquette - dress code - body language - attending job interviews - telephonic interview - one to one interview & panel interview - FAQs related to job interviews

UNIT V MANAGEMENT SKILLS **6**

Recognizing the differences between groups and teams - managing time - managing stress-networking professionally- respecting social protocols - understanding career management-developing a long- term career plan-making career changes.

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of the course, the students will be able to,

- Develop employability skills such as communication, teamwork, adaptability, and problem-solving.
- Enhance confidence and competence in answering questions effectively during presentations and discussions.
- Apply group discussion techniques and real-world exercises to improve debating abilities.
- Prepare for various job interviews, including panel, one-on-one, and telephone interviews.
- Formulate a comprehensive career plan, focusing on networking and career progression.

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Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	-	3	3	-	3
CO2	-	-	-	-	-	-	-	3	2	-	3
CO3	-	-	-	-	-	-	-	2	3	-	3
CO4	-	-	-	-	-	-	-	3	3	-	3
CO5	-	-	-	-	-	-	-	3	2	-	2

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LIST OF EQUIPMENTS
Requirements for a batch of 30 students

Sl. No.	Description of Equipment/Software	Quantity required (Nos)
1	Computer	30
2	Headphones	30
3	**Software:** Globarena	30

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24MA302 PROBABILITY AND MATHEMATICAL TECHNIQUES (AGE only) **L T P C 3 1 0 4**

OBJECTIVES:

The Student should be made to:

- Introducing the basic concepts of probability and random variable
- Finding solution for probabilistic models using various distribution
- Construct numerical integration for given data
- Remember the concepts of Fourier series for solving problems in engineering disciplines
- Applying the standard techniques for solving boundary value problem

UNIT I PROBABILITY AND RANDOM VARIABLES **9+3**

Introduction to probability: Axioms of probability - Conditional probability - Total probability - Baye's theorem - Simple problems on Baye's theorem.

Random variables: Discrete and continuous random variables - Distribution function of random variable - Properties, probability mass function - Probability density function - Mathematical expectation - Properties- Moments - Moment generating functions and their properties.

UNIT II PROBABILITY DISTRIBUTIONS **9+3**

Discrete distributions: Binomial - Poisson - Geometric distribution and their properties. Continuous distributions: Uniform - Exponential - Gamma - Normal distributions and their properties.

UNIT III NUMERICAL INTEGRATION **9+3**

General quadrature formula of numerical integration - Trepezóidal rule, Simpsons one - third and three - eight's rule's - Romberg's method - Two point and three point Gaussian quadrature formulae.

UNIT IV FOURIER SERIES **9+3**

Dirichlet's conditions - General Fourier series - Odd and even functions - Half range sine series - Half range cosine series - Complex form of Fourier series - Parseval's identity - Harmonic analysis.

UNIT V APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS **9+3**

Classification of PDE - Method of separation of variables - Fourier Series Solutions of one dimensional wave equation - One dimensional equation of heat conduction - Steady state solution of two dimensional equation of heat conduction.

TOTAL: (45+15) PERIODS

OUTCOMES:

On successful completion of the course, the students will be able to,

- Relate real life problems with concept of probability and random variables
- Apply the concept of probability distributions in solving engineering problems
- Analyze the numerical integration for the given data
- Identify the Fourier series for standard periodic wave forms
- Evaluate the solutions of wave and heat equations using Fourier series

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TEXT BOOKS:

1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 43rd Edition, 2017.
2. Bali N.P, and Manish Goyal, " A Text Book of Engineering Mathematics", laxmi Publications(P) Ltd., 9th Edition, 2014.

REFERENCES:

1. Gerald C.F. and Wheatley P.O., "Applied Numerical Analysis", Pearson Education Asia, 8th Edition, New Delhi, 2014.
2. Grewal B.S. and Grewal J.S., "Numerical Methods in Engineering and Science", Khanna Publishers, 9th Edition, New Delhi, 2014.
3. Veerarajan T., "Probability Statistics & Random Processes with Queuing Theory & Queuing Networks" TMH Publications, 2018.
4. Ibe O.C., "Fundamentals of Applied Probability and Random Processes", Elsevier, 2nd Indian Reprint, 2014.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	2	1	-	-	-	2	1	-	1
CO2	3	2	2	1	-	-	-	2	1	-	1
CO3	3	3	3		-	-	-	2	1	-	1
CO4	3	2	2		-	-	-	2	1	-	2
CO5	3	3	3	2	-	-	-	2	1	-	2

CHAIRMAN
BoS (S&H) 09/10

24AG301	THERMODYNAMICS AND HEAT TRANSFER	L	T	P	C
		3	0	0	3

OBJECTIVES:

The students should be made to:

- Understand the basic concepts and different law of thermodynamics
- Apply the second law of thermodynamics and concept of entropy
- Examine the conduction heat transfer rate in steady and unsteady conditions
- Analyze the heat transfer mechanisms associated with free and forced convection in external and internal flows
- Evaluate the phenomena of radiation and heat exchangers

(Use of standard HMT data book permitted)

UNIT I BASIC CONCEPTS AND FIRST LAW OF THERMODYNAMICS 9

Basic concepts - concept of continuum, micro, macroscopic approach, thermodynamic systems - closed, open and isolated. Property, state, path, process and quasi-static process. Work - modes of work. Zeroth law of thermodynamics, First law of thermodynamics - Application of closed systems. Steady flow energy equation for various thermal equipments.

UNIT II SECOND LAW AND ENTROPY 9

Second law of thermodynamics - Kelvin-Planck and Clausius statements of second law. Carnot cycle, Reversed Carnot cycle, Carnot's theorem - Heat engine - efficiency - Refrigerator, Heat pump - COP. Inequality of Clausius - Concept of entropy, principle of increase in entropy, absolute entropy.

UNIT III CONDUCTION 9

General Differential equation of Heat Conduction– Cartesian and Polar Coordinates – One Dimensional Steady State Heat Conduction – Plane and Composite Systems – Extended Surfaces – Unsteady Heat Conduction – Lumped Analysis.

UNIT IV CONVECTION 9

Free and Forced Convection - Hydrodynamic and Thermal Boundary Layer. Free and Forced Convection during external flow over Plates, Cylinders and Internal flow through tubes.

UNIT V RADIATION AND HEAT EXCHANGERS 9

Black Body Radiation – Grey body radiation – Radiation Shields. Heat Exchanger - Types - Overall Heat Transfer Coefficient – Fouling Factors - Analysis – LMTD method - NTU method.

TOTAL: 45 PERIODS

V.GOPE

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BoS (AGE) 03/04/25

OUTCOMES:

On successful completion of this course, the students will be able to,

- Understand the various thermodynamic systems and processes to get engineering knowledge
- Apply the second law of thermodynamics in heat engines, heat pump and refrigerator to solve complex engineering problems
- Examine the heat transfer rate in one dimensional systems and composite systems for analysis and interpretation of data
- Analyze the phenomenon of free and forced convective heat transfer in external and internal flows for development of solutions
- Evaluate the heat transfer rate in radiation and the thermal performance of heat exchangers using LMTD and NTU method for designing and validation

TEXT BOOKS:

1. Nag P K, "Engineering Thermodynamics", Tata McGraw Hill Publishing Company, New Delhi, 6th Edition, 2017
2. Holman, J P, "Heat and Mass Transfer", Tata McGraw Hill, 10th Edition, 2017

REFERENCE BOOKS:

1. Rajput R K, "Engineering Thermodynamics", Laxmi Publications, New Delhi, 5th Edition, 2016
2. Arora C P, "Thermodynamics", Tata McGraw Hill Publishing Company, New Delhi, 2017
3. Kothandaraman, C P, "Fundamentals of Heat and Mass Transfer", New Age International, New Delhi, 4th Edition 2012
4. Yunus A Cengel, " Heat and Mass Transfer: Fundamentals & Applications in SI Units", Tata McGraw Hill, 6th Edition 2020

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	2	2	-	-	-	-	-	1	1	2	2
CO2	3	3	2	2	1	-	-	-	-	1	1	2	2
CO3	3	3	2	2	1	1	-	-	-	1	1	2	2
CO4	3	3	3	2	1	1	-	-	-	1	1	2	2
CO5	3	3	2	2	1	1	-	-	-	1	1	2	2

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24AG302	HYDRAULICS AND HYDRAULIC PUMPS	L T P C 3 0 2 4

OBJECTIVES:

The student should be made to:

- Understand the fundamental fluid properties
- Explain the functionality and applications of flow measuring devices
- Understand the Darcy-Weisbach equation and its application in calculating head losses in pipe systems
- Illustrate the different types of flow in channels, including uniform flow and critical flow
- Analyze the various types of pumps performance

UNIT I PROPERTIES OF FLUIDS **9**

Properties of fluids – definition – units of measurement. Fluid pressure and measurement – simple, differential and micro manometers - Mechanical gauges – calibration. Hydrostatic forces on surfaces – total pressure and centre of pressure - Horizontal- vertical and inclined plane surface - Pressure diagram – total pressure on curved surface. Archimedes principles – buoyancy– meta centre – metacentric height.

UNIT II FLOW MEASUREMENT **8**

Bernoulli's equation – applications - Venturimeter – orifice meter – nozzle meter - rotameter – elbow meter - pitot tube – Orifice – sharp edged orifice discharging free – submerged orifice – mouth piece - Flow through orifice under variable head – time of emptying a tank with and without inflow.

UNIT III FLOW THROUGH PIPES AND DIMENSIONAL ANALYSIS **10**

Reynolds experiment – Laminar flow through circular pipe – Darcy-Weisbach equation – Moody diagram – Major and minor losses in pipe flow – Total energy line – Hydraulic gradient line – Siphon –Pipes in series and parallel– Equivalent pipes. Dimensional analysis – Fundamental dimensions – dimensional homogeneity – Rayleigh's method and Buckingham Pi-Theorem – Important non dimensional numbers.

UNIT IV OPEN CHANNEL FLOW **9**

Types of flow in channel – uniform flow – most economical section of channel – rectangular – trapezoidal. Specific energy and critical depth - momentum in open channel flow – specific force – critical flow – computation. Flow measurement in channels – notches – rectangular, Cipolletti and triangular – float method - Flow measurement in rivers/ streams/ canals – weirs – free and submerged flow – current meter – Parshall flume.

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UNIT V PUMPS **9**

Pump terminology – suction lift, suction head, delivery head, discharge, water horse power – selection of pump capacity. Centrifugal pumps – components – working – types of impellers - Priming – cavitation – specific speed – characteristic curves. Submersible pumps - Jet pump – air lift pump - reciprocating pump - sludge pump and vacuum pump - Hydraulic ram.

TOTAL: 45 PERIODS

LIST OF EXPERIMENTS:

Flow Measurement

1. Flow through of Rotameter
2. Flow through Venturimeter
3. Flow through a circular Orifice
4. Determination of mean velocity by Pitot tube
5. Flow through a Triangular Notch
6. Flow through a Rectangular Notch

Losses in Pipes

7. Determination of friction coefficient in pipes
8. Determination of losses due to bends, fittings and elbows

Pumps

9. Characteristics of Centrifugal pump
10. Characteristics of Submersible pump
11. Characteristics of Reciprocating pump

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Recall the mathematical principles and fluid mechanics concepts to solve complex engineering problems involving fluid behavior and pressure measurements.
- Understand the complex fluid flow problems using Bernoulli's equation with venturimeters, orifice meters and rotameters with engineering knowledge
- Explain the principles of dimensional homogeneity and its significance with engineering equations
- Analyze the concepts of specific energy, critical depth and their significance in open channel flow using modern tools
- Classify the pumping systems that meet specific needs, ensuring considerations for complex conditions

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TEXT BOOKS:

1. Bansal RK, "Fluid Mechanics and Hydraulic Machines", Laxmi Publications Pvt. Ltd., New Delhi, 2019.
2. Modi PN and Seth S M, "Hydraulics and Fluid Mechanics", Standard Book House, New Delhi, 2022.

REFERENCE BOOKS:

1. Graebel W P, "Engineering Fluid Mechanics", Taylor & Francis, Indian Reprint, 2011.
2. Kumar K L, "Engineering Fluid Mechanics", Eurasia Publishing House Pvt. Ltd., New Delhi, 2016
3. Robert W Fox, Alan T McDonald and Philip J Pritchard, "Fluid Mechanics and Machinery", John Wiley and Sons, 9th Edition, 2015.
4. Streeter VL and Wylie EB, "Fluid Mechanics", McGraw Hill Publishing Co., 2017.

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	3	3	-	-	-	-	-	-	2	3	3
CO2	3	2	2	1	-	-	-	-	-	-	2	3	3
CO3	3	3	2	1	-	-	-	-	-	-	2	3	3
CO4	3	3	3	2	2	1	-	-	-	-	2	3	3
CO5	3	3	3	2	1	-	-	-	-	-	2	3	3

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24AG303 UNIT OPERATIONS IN AGRICULTURAL PROCESSING **L T P C**
3 0 0 3

OBJECTIVES:

The student should be made to:

- Understand the engineering knowledge in processing equipment like evaporation and concentration
- Compare the different mechanical separation equipment involved in agricultural processing
- Apply the basic principle in involved in various size reduction equipment for agricultural processing
- Illustrate the contact equilibrium separation processes, including gas-liquid and solid-liquid equilibrium
- Explain crystallization and distillation processes, including equipment construction, operation and factors influencing efficiency

UNIT I EVAPORATION AND CONCENTRATION **9**

Unit operations in food processing -conservation of mass and energy -overall view of an engineering process–dimensions and units - dimensional and unit consistency - dimensionless ratios–evaporation-definition - liquid characteristics - single and multiple effect evaporation performance of evaporators and boiling point elevation - capacity – economy and heat balance types of evaporators - once through and circulation evaporators - short tube evaporators and long tube evaporators – agitated film evaporator.

UNIT II MECHANICAL SEPARATION **9**

Filtration - definition - filter media - types and requirements-constant rate filtration - constant pressure filtration - filter cake resistance-filtration equipment - rotary vacuum filter - filter press sedimentation - gravitational sedimentation of particles in a fluid - Stoke's law, sedimentation of particles in gas-cyclones – settling under sedimentation and gravitational sedimentation– centrifugal separations – rate of separations - liquid - liquid separation - centrifuge equipment.

UNIT III SIZE REDUCTION **9**

Size reduction - grinding and cutting - principles of comminuting - characteristics of comminuted products - particle size distribution in comminuted products-energy and power requirements in comminuting - crushing efficiency – Rittinger's, Bond's and Kick's laws for crushing-size reduction equipment- crushers - jaw crusher, gyratory crusher-crushing rolls - grinders - hammer mills - rolling compression mills - attrition, rod, ball and tube mills – construction and operation.

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UNIT IV CONTACT EQUILIBRIUM SEPARATION 9

Contact equilibrium separation processes – concentrations – gas-liquid and solid-liquid equilibrium – equilibrium concentration relationships – operating conditions-calculation of separation in contact – equilibrium processes-gas absorption – rate of gas absorption – stage – equilibrium gas – absorption equipment-properties of tower packing – types – construction – flow through packed towers-extraction – rate of extraction – stage equilibrium extraction-equipment for leaching coarse solids – intermediate solids – basket extractor-extraction of fine material – Dorr agitator – continuous leaching – decantation systems – extraction towers-washing – equipment.

UNIT V CRYSTALLISATION AND DISTILLATION 9

Crystallization-Equilibrium –Rate of crystal growth stage-Equilibrium crystallization Crystallizers – Equipment – Classification- Construction and operation – Crystallizers-Tank Agitated batch – Swenson-Walker and Vacuum crystallizers – Distillation-Binary mixtures-Flash and differential distillation-Steam distillation –Theory-Continuous distillation with rectification – Vacuum distillation - Batch distillation-Operation and process-Advantages and limitation-Distillation equipment- Construction and operation-Factors influencing the operation.

TOTAL: 45 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Understand the engineering fundamentals in evaporation and concentration process to provide a suitable solution for complex problems
- Explain the engineering principles for filtration and mechanical separation equipment to provide suitable equipment for agricultural produces
- Apply the principle of comminution to identify and develop size reduction equipment and to meet specific needs
- Identify the principles of equilibrium concentration relationships to analyze gas-liquid and solid-liquid separation process
- Apply the process of crystallization and distillation to identify and design processing equipment

TEXT BOOKS:

1. Sahay K M and Singh K K, "Unit operations of Agricultural Processing", Vikas publishing House Pvt Ltd, New Delhi, 2007.
2. Earle R L and Earle M D, "Unit Operations in Food Processing", Pergamon Press Ltd., 2nd Edition, 2013.

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REFERENCE BOOKS:

1. Geankoplis C J, "Transport Processes and Separation Process Principles", Pearson India Education Services Pvt Ltd, 4th Edition, 2017.
2. McCabe W L, Smith J C and Harriot P, "Unit Operations of Chemical Engineering", McGraw - Hill Inc, Kosaido Printing Ltd, 7th Edition, Tokyo, 2017.
3. Coulson J M and Richardson J F, "Chemical Engineering", Volume I to V, The Pergamon Press, New York, 1999.

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	2	2	2	-	-	-	-	-	2	2	2
CO2	3	2	2	2	2	-	-	-	-	-	2	2	2
CO3	3	3	2	2	2	-	-	-	-	-	2	2	2
CO4	3	2	2	2	2	-	-	-	-	-	2	3	2
CO5	3	2	2	2	2	-	-	-	-	-	2	3	2

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BoS (AGE) 03/04/25

24CE303	SURVEYING (Common to Civil and AGE)	L T P C 3 0 0 3

OBJECTIVES:

The students should be made to:

- **Recognize** basic engineering knowledge about principles and fundamentals of surveying.
- **Explain** various methods in levelling and theodolite surveying for field construction.
- **Manipulate** skills using tacheometric surveying and triangulation.
- **Demonstrate** principles, calculations for azimuth in astronomical surveying.
- **Analyze** different types of advanced surveying techniques for various civil engineering projects.

UNIT I FUNDAMENTALS OF SURVEYING 9

Definition - Principles - Classification - Scales - Survey instruments, their care and adjustment - Ranging and chaining - Reciprocal ranging - Compass Surveying - Bearing - Systems and conversions - Local attraction - True and magnetic meridians - Magnetic declination - Dip - Plane table and its accessories - Merits and Demerits - Radiation - Intersection - Resection - Plane table traversing.

UNIT II LEVELLING AND THEODOLITE SURVEYING 9

Datum - Benchmarks - Levels - Temporary and permanent adjustments - Methods of Levelling - Fly and check levelling - contouring - Characteristics of contours - Methods of contouring -Theodolite - description and uses - temporary and permanent adjustments - horizontal - vertical angles - heights and distances - traversing - closing error and distribution.

UNIT III TACHEOMETRIC SURVEYING AND TRIANGULATION 9

Tacheometry - principle - tangential - stadia methods - horizontal and inclined sights - staff -vertical and normal - fixed and movable hairs - stadia constants - anallatic lens - Gale's table - Triangulation - classification - Signals and towers - Baseline measurement - Instruments and accessories - Tape corrections - extension of baseline - Satellite stations - Reduction to centre.

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UNIT IV ASTRONOMICAL SURVEYING **9**

Celestial sphere - Astronomical terms and definitions - Motion of sun and stars - Apparent altitude and corrections - Celestial co-ordinate systems - Spherical trigonometry - Latitude and longitude of a place - Field observations and calculations for azimuth.

UNIT V OVERVIEW OF MODERN SURVEYING **9**

EDM - Total Station Working Principles - Advantages - Fundamental quantities measured - Parts and accessories - GPS - Accessories - Advantages and Disadvantages - Different segments - space, control and user segments

TOTAL: 45 PERIODS

OUTCOMES:

On Successful completion of this course, the students will be able to,

- **Outline** the accessories, methods employed in fundamental surveying
- **Illustrate** elevation, horizontal and vertical angles using dumpy level and theodolite instruments
- **Develop** bearing, distances, height required in construction sites using tacheometric constants
- **Experiment** with apparent altitude, latitude, longitude, field observation using astronomical surveying
- **Examine** applications of modern instruments in construction field for various infrastructure projects.

TEXTBOOKS:

1. Punmia.B.C, Ashok K.Jain and Arun K.Jain, "Surveying Vol.I. and II", Lakshmi Publications Pvt Ltd, New Delhi, 17th Edition , 2016.
2. Kanetkar.T.P and Kulkarni.S.V, "Surveying and Levelling", Parts 1 & 2, Pune Vidyarthi Griha Prakashan, Pune, 2019

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REFERENCES:

1. Arora K.R., "Surveying Vol I , II and III", Standard Book house, 17th Edition 2019.
2. Satheesh Gopi, Sathishkumar R, Madhu N, "Advanced Surveying, Total Station, GPS and Remote Sensing", Pearson education, 2nd Edition, 2017.
3. Roy S.K "Fundamentals of Surveying", Prentice Hall of India, 2011.
4. Ramamrutham S, "Plane and Geodetic Surveying", Dhanpat Rai, Publishing Company, New Delhi, 2nd Edition, 2016

MAPPING OF COs WITH POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	2	2	-	1	-	-	-	-	2
CO2	3	3	3	3	3	2	-	-	-	-	1
CO3	3	3	3	3	1	1	-	-	-	-	2
CO4	3	3	3	3	3	1	-	-	-	-	1
CO5	3	3	3	3	3	2	-	-	-	-	2

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24EC307 **ELECTRONIC DEVICES AND MICROPROCESSOR** **L T P C**
3 0 2 4

OBJECTIVES:

The student should be made to:

- Introduce basic semiconductor devices, their characteristics and application
- Familiarize the student with the principle of operation of BJT and FET
- Learn basic techniques for the design of digital circuits and op-amp
- Enable the students to understand the fundamental concepts of 8085 Microprocessors
- Understand the interfacing techniques and applications

UNIT I SEMICONDUCTORS AND RECTIFIERS **9**

Classification of solids based on energy band theory - Intrinsic semiconductors - Extrinsic semiconductors - P type and N type- PN junction - Zenor effect - Zenor diode characteristics - Half wave and full wave rectifiers - Voltage regulation.

UNIT II TRANSISTORS AND AMPLIFIER **9**

Bipolar junction transistor - CB, CE, CC configuration and characteristics-Biasing circuits - Class A, and C amplifiers- Field effect transistor-Configuration and characteristic of FET amplifier-SCR, Diac, Triac, UJT-Characteristics and simple applications-Switching Transistors-Concept of feedback-Negative feedback- Application in temperature and motor speed control.

UNIT III DIGITAL ELECTRONICS AND OPAMP **9**

Binary number system – AND, OR, NOT, NAND, NOR circuits -Boolean algebra- Exclusive OR gate – Flip flops-Half and full adders-Registers-Counters-A/D and D/A conversion. Ideal OP-AMP characteristics. linear and non-linear applications of OP-AMP (adder, substractor, integrator, comparator. differentiator. OP-AMP voltage regulators. D/A converter, successive approximation A/D converter

UNIT IV 8085 MICROPROCESSOR **9**

Hardware Architecture, pin diagram – Functional Building Blocks of Processor – Instruction set-Addressing modes -Memory organization – I/O ports and data transfer concepts– Timing Diagram – Interrupts. - Simple programs using arithmetic and logical operations.

UNIT V INTERFACING AND APPLICATIONS OF MICROPROCESSOR **9**

Basic interfacing concepts – Interfacing of Input and Output devices - Applications of microprocessor Temperature control, Stepper motor control, traffic light control.

LIST OF EXPERIMENTS:

1. To study V-I characteristics of p-n junction diode
2. To study Half wave, Full wave and bridge rectifier
3. To study Transistor Characteristics in CE configurations
4. To study about AND, NOT, and OR gates.
5. To study an OP-AMP IC 741 as Inverting and Non-inverting Amplifier

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6. To study an OP-AMP IC741 as Differentiator amplifier;
7. Simple arithmetic operations: Addition / Subtraction / Multiplication / Division
8. Interface Experiments with 8085
   (i) A/D Interfacing,
   (ii) D/A Interfacing
   (iii) Traffic light Controller.

TOTAL: 75 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Apply the concept of diode in rectifiers filter circuits and transistors
- Interpret the concept of semiconductors in biasing of transistors and explore the characteristics and operation of JFET and MOSFET.
- Compile the different building blocks in digital electronics using logic gates and design simple circuits like amplifiers (inverting and non-inverting) using OPAMPS.
- Ability to perform performing on 8085 Microprocessor to control devices
- Create the circuits using microprocessor for given applications

TEXT BOOKS:

1. Salivahanan S, SureshKumar N, Vallavaraj A, "Electronic Devices and Circuits", 1st Edition, Tata McGraw-Hill, 2022.

REFERENCES:

1. Jacob Millman and C. Halkias, "Integrated Electronics", Tata Mc-Graw Hill,2009.
2. A.Kumar Anand, "Digital Electronics". PHI learning private limited, 2016.
3. Gupta Sanjeev and Sonthosh Gupta, "Electronic Devices and Circuits", Danapath Rai Publications, 2010.
4. Dougles V. Hall, "Microprocessor and Interfacing, Programming and Hardware", Tata McGraw-Hill, 1999.

MAPPING OF COs WITH POs AND PSOs

Course Outcomes	Program Outcomes											Program Specific Outcomes	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	1	2	-	-	1	1	-	2	-	2	2	1
CO2	3	1	2	-	-	1	1	-	2	-	2	2	1
CO3	3	1	2	-	-	1	1	-	2	-	2	2	1
CO4	3	1	2	-	1	1	1	-	2	-	2	2	-
CO5	3	1	2	-	1	2	1	-	2	-	2	2	-

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LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

1. CRO (Min 30MHz) - (05 Nos)
2. Signal Generator / Function Generators (2 MHz) - (05 Nos)
3. Dual Regulated Power Supplies (0 -30V) - (05Nos)
4. Digital Multimeter - (05 Nos)
5. Transistor (BJT-NPN-PNP) - (20Nos)
8. Components and Accessories: Transistors, Resistors, Capacitors, Inductors, Diodes, Bread Boards, Transformers.
9. 8085 Microprocessor Kits – (05 Nos.)
10. Interfacing Kits – (Each 02)

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24CE306L	SURVEYING LABORATORY	L	T	P	C
	(Common to Civil and AGE)	0	0	2	1

OBJECTIVES:

The students should be made to:

- **Recognize** basic engineering knowledge about principles and fundamentals of chain and plane table surveying.
- **Discuss** compass traversing and plot the layout of the building.
- **Describe** fly and check levelling using dumpy level and measurement of angles.
- **Illustrate** tacheometric constants by using stadia and tangential tacheometry.
- **Calculate** elevation of object using single plane method and using trigonometric levelling.

LIST OF EXPERIMENTS

1. Study of chains and its accessories, aligning, ranging, chaining and marking perpendicular offset.
2. Distance between two inaccessible points using plane table surveying.
3. Compass Traversing – Measuring bearings & arriving included angles.
4. Plot the layout of given plan of building.
5. Fly and check levelling using dumpy level.
6. Measurements of horizontal angles and vertical angles by reiteration and repetition methods.
7. Determination of tacheometric constants.
8. Determination of distance and elevation by stadia and tangential tacheometry.
9. Determination of elevation of an object using single plane method when base is accessible/ inaccessible.
10. Determination of elevation of point by trigonometric levelling.

TOTAL: 30 PERIODS

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OUTCOMES:

On Successful completion of this course, the students will be able to,

- **Explain** applications of conventional surveying using chain and plane table accessories.
- **Summarize** bearings and plot the layout of the building.
- **Apply** fly and check levelling and to measure horizontal and vertical angles
- **Develop** the additive and multiplying constants to calculate the linear and angular measurements
- **Examine** height of an accessible/ inaccessible points using single plane method and trigonometric levelling

REFERENCES:

1. Arora K.R, "Surveying Vol I , II and III", Standard Book house, 17th Edition, 2019.
2. Satheesh Gopi, Sathishkumar R, Madhu N, "Advanced Surveying, Total Station, GPS and Remote Sensing", Pearson education, 2nd Edition, 2017.
3. Roy S.K "Fundamentals of Surveying", Prentice Hall of India, 2011.
4. Ramamrutham S, "Plane and Geodetic Surveying", Dhanpat Rai, Publishing Company, New Delhi, 2nd Edition, 2016.

Mapping of Cos with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	2	2	2	2	-	-	-	-	2
CO2	3	3	3	3	2	1	-	-	-	-	2
CO3	3	3	3	2	-	2	-	-	-	-	2
CO4	3	3	3	3	-	1	-	-	-	-	1
CO5	3	3	3	3	2	2	-	-	-	-	1

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24EEC301L	SOFT SKILLS DEVELOPMENT (Common to All Branches)	L T P C 0 0 2 1

OBJECTIVES:

The students should be made to:

- Enhance the development of students by focusing on soft skills
- Develop skills of the students through individual and group activities
- Shape students' attitude and behaviour through activities
- Analyze the characteristics of the students for self-development
- Prepare themselves for the recruitment processes

UNIT I SOFT SKILLS ARE IMPORTANT FOR SUCCESS 6

Importance of Soft Skills - Types - Industrial needs - Development of skills – Employees' expectation - Success of employees.

UNIT II CORPORATE COMMUNICATION 6

Needs and Development of Communication - Customers Relationship - Improving informal communication - Formation of presentations - Public Speaking - Telephone and Email Etiquettes.

UNIT III DISCUSSIONS 6

Introduction to Discussion - Importance and types of discussion - Spontaneous conversation - Plan for discussions - Panel discussions - Visual Aid discussions - Debate.

UNIT IV SELF ANALYSIS 6

Who am I - Identifying or searching one's own Strength, Weakness - Opportunities and Threats (SWOT Analysis) - Benefits of SWOT Analysis - Importance of Self Confidence, Self Esteem, Self Development and Self Introspection.

UNIT V CREATIVITY AND GOAL SETTING 6

Thinking out of the box - Lateral thinking - Positive thinking - Results of smart work - Application of creativities - Short Term and Long Term Goals - Lifetime goals.

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Learners will recognize the importance of Soft skills in Professional life.
- Improve oral and Listening Skills.
- Enhance students' ability in GDs, Presentations and interviews.
- Develop one's strength in setting of goals and developing creative.
- Become a good team worker in the society.

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TEXT BOOKS:

1. "SOFT SKILLS", Career Development Centre, Green Pearl Publications, 2015.

REFERENCES:

1. Covey Sean, "Seven Habits of Highly Effective Teens", New York, Fireside Publishers, 1998.
2. Carnegie Dale, "How to win Friends and Influence People", New York: Simon & Schuster, 1998.
3. Jeff Butterfield, "Soft Skills for Everyone", Cengage Learning, 2011.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	-	-	2	2	-	2	2	-	-
CO2	-	3	-	3	2	-	3	2	2	2	2
CO3	2	-	-	-	3	-	2	3	2	2	2
CO4	2	-	2	-	-	2	-	3	2	3	-
CO5	-	3	2	1	-	2	2	3	2	-	-

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14/10

24AG401	STRENGTH OF MATERIALS FOR AGRICULTURAL ENGINEERING	L T P C 3 0 0 3

OBJECTIVES:

The students should be made to:

- Basics concepts of simple stresses, strains and deformation in components due to external loads
- Interpret the stability and load distribution based on centroid and moment of area analysis.
- Draw the shear force and bending moment due to external loads in beams and their effect on stresses
- Apply torsion equation in design of circular shafts and springs
- Evaluate the slope and deflection of beams under different load conditions

UNIT I STRESS, STRAIN AND DEFORMATION OF SOLIDS 9

Rigid bodies and deformable solids – Tension, Compression and Shear Stresses – Deformation of simple and compound bars – Thermal stresses – Elastic constants –Stresses on inclined planes – principal stresses and principal planes – Mohr's circle of stress.

UNIT II PROPERTIES OF SURFACES 9

Centroid - First moment of area and second moments of plane area of sections - Rectangle, circle, triangle from integration - Symmetrical and Unsymmetrical Sections - Parallel axis theorem and perpendicular axis theorem.

UNIT III TRANSVERSE LOADING ON BEAMS AND STRESSES IN BEAM 9

Beams – types transverse loading on beams – Shear force and bending moment in beams – Cantilevers – Simply supported beams and over – hanging beams. Theory of simple bending–bending stress distribution – Shear stress distribution - Flitched beams.

UNIT IV TORSION 9

Torsion formula - stresses and deformation in circular and hollows shafts – Stepped shafts– Stresses in helical springs – Deflection of helical springs - carriage springs.

UNIT V DEFLECTION OF BEAMS 9

Computation of slopes and deflections in determinate beams - Double Integration method – Macaulay's method – Area moment method – Conjugate beam method.

TOTAL: 45 PERIODS

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OUTCOMES:

On successful completion of this course, the students will be able to,

- Understand the stress, strain and elastic constant relations for simple and compound bars to get engineering knowledge.
- Apply the centroid and moment of inertia for various sections to get solution for complex engineering components.
- Analyze the shear force, bending moment diagrams and bending stresses in beams to develop engineering fundamentals.
- Estimate the deflection and stiffness in shaft and helical springs under axial loads to interpret the data for providing valid conclusions.
- Evaluate the slope and the deflection of beams to get knowledge engineering specialization.

TEXT BOOKS:

1. Bansal R K, "Strength of Materials", Laxmi Publications, New Delhi, 6th Edition, 2019.
2. Jindal U.C., "Strength of Materials", Asian Books Pvt. Ltd. Pearson; 1st edition, New Delhi, 2012

REFERENCES:

1. Rajput R K, "Strength of Materials", S Chand & Company Private Ltd, New Delhi, 7th Edition, 2018.
2. Khurmi R S and Khurmi N, "Strength of Materials", S Chand, New Delhi, 26th Edition, 2019
3. Subramanian R., "Strength of Materials", Oxford University Press, Oxford Higher Education Series, 2007.
4. Ferdinand P. Been, Russell Johnson, J.R. and John J. Dewole "Mechanics of Materials", Tata McGraw Hill Publishing Co. Ltd., New Delhi, 2005.

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	3	2	-	2	1	-	-	1	2	1	1
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CO3	3	3	3	2	-	2	1	-	-	1	2	1	1
CO4	3	3	3	2	-	2	1	-	-	1	2	1	1
CO5	3	3	3	2	-	2	1	-	-	1	2	1	1

V. Gore

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BoS (AGE) 03/04/25

24AG402	TRACTORS AND FARM ENGINES	L	T	P	C
		2	0	2	3

OBJECTIVES:

The students should be made to:

- Illustrate the types of tractors and its components
- Explain the principle of tractor engine system and draw the valve timing diagram
- Construct the principles and operation of hydraulic systems and tractor chassis mechanics
- Apply the thermodynamics process in otto and diesel cycle to determine the efficiency
- Analyze the various test code for performance testing of tractors and power tillers

UNIT I TRACTORS **5**

Classification of tractors - Tractor engines – construction of engine blocks, cylinder head and crankcase - features of cylinder, piston, connecting rod and crankshaft.

UNIT II TRACTOR ENGINE SYSTEMS **7**

Working principles, Valve timing diagram - Cooling systems - lubricating systems - fuel system. Transmission - clutch - gear box, Differential, final drive and wheels - Steering geometry - steering systems - front axle and wheel alignment

UNIT III HYDRAULIC SYSTEMS **6**

Hydraulic system - working principles, three point linkage - draft control - weight transfer, theory of traction - tractive efficiency – tractor chassis mechanics - stability – longitudinal and lateral.

UNIT IV ENGINE CYCLES **6**

Air Standard Cycles – Otto and Diesel – Cycle Analysis, Performance and Comparison

UNIT V POWER TILLER AND TRACTOR TESTING **6**

Power tiller – working, special features - clutch - gear box - steering and brake. Makes of tractors and power tillers. Types of tests- test procedure - need for testing & evaluation of farm tractor -Test code for performance testing of tractors and power tillers.

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Understand the different types of tractors and its components to gain the engineering knowledge.
- Demonstrate the working principle of farm engines and the valve timing diagram to get the knowledge of engineering fundamentals.
- Infer the knowledge on hydraulic system in farm equipment's to provide the solution for real world problems
- Apply thermodynamic principles to identify the performance of Otto and Diesel cycle engines
- Evaluate the function of key components in power tillers and its performance metrics for sustainable development.

V.Gopal

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TEXTBOOKS:

1. Jain S C and Rai C R, "Farm tractor maintenance and repair", Standard publishers and distributors, New Delhi, 2012.
2. Barger E L, Liljedahl J B and McKibben E C, "Tractors and their Power Units", Wiley Eastern Pvt. Ltd, New Delhi, 1997.

REFERENCES:

1. Domkundwar A V, "A course in internal combustion engines", Dhanpat Rai & Co. Pvt Ltd, Delhi, 2018.
2. Black P O, "Diesel engine manual", Taraporevala Sons & Co, Mumbai, 1996.
3. Crouse W H and Anglin D L, "Automative mechanics", Macmillan McGraw- Hill, 10th Edition, New Delhi, 2017.

List of Experiments

1. Study about various functional components of a Tractor engine and identification of its.
2. Study the working of two stroke and four stroke engines.
3. Study the valve system of an internal combustion engine and drawing valve timing diagram.
4. Study of different engine systems.
5. Study the three-point linkage of a tractor and draft control.
6. Performance test on four – stroke Diesel Engine.
7. Demonstrate the working of tractors in the Agri field.

TOTAL: 30 PERIODS

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	2	-	2	2	1	-	1	1	1	2
CO2	3	2	2	2	-	2	2	1	-	1	1	1	2
CO3	3	2	2	2	-	2	2	1	-	1	1	1	2
CO4	3	2	2	2	-	2	2	1	-	1	1	1	2
CO5	3	2	2	2	-	2	2	1	-	1	1	1	2

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24AG403	DESIGN OF BASIC MACHINE ELEMENTS	L	T	P	C
		3	0	0	3

OBJECTIVES:

The students should be made to:

- Understand the basic stresses in machine elements
- Demonstrating the knowledge on design of transmission systems
- Identify the effect of torque, bending moment and axial loads on shaft, keys an couplings design.
- Examine the effects of constant and varying loads on spring performance.
- Evaluate the forces acting on gear teeth and determine their strength under different conditions.

(Use of PSG Design Data book is permitted)

UNIT I STRESSES IN MACHINE MEMBERS **9**

Introduction to design process - factor influencing the machine design, selection of material based on mechanical properties - Direct, bending and torsional stress equations - calculation of Principal stresses for combined loading. Theories of failure-stress concentration - design of variable loading - Soderberg and Goodman relations.

UNIT II DESIGN OF POWER TRANSMISSION SYSTEMS **9**

Selection of V-Belts and pulleys - flat belts and pulleys - wire ropes and pulleys - chains and sprockets.

UNIT III DESIGN OF SHAFTS AND COUPLINGS **9**

Design of solid and hollow shafts based on strength and rigidity- Design of keys, keyways and splines- Design of rigid and flexible couplings. Design of bolts and nuts - knuckle and cotter joints.

UNIT IV DESIGN OF ENERGY STORING ELEMENTS **9**

Design of helical, leaf, disc and torsional springs under constant loads and varying loads – Concentric torsion springs.

UNIT V DESIGN OF GEARS AND BEARINGS **9**

Gears - spur gear and helical gear - terminology - strength of gear teeth - Lewis equation - Buckingham equation. - Failure of gear teeth- Applications of different types of Gears - Types of bearings – sliding contact and rolling contact types. – Bearing selection based on application - Lubrication in journal bearings – calculation of bearing dimensions.

TOTAL: 45 PERIODS

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OUTCOMES:

On successful completion of this course, the students will be able to,

- Understand the fundamental concepts of various stresses and material properties in machine elements to get engineering knowledge.
- Select appropriate power transmission components based on real-world requirements and constraints.
- Develop the design criteria of shafts and couplings to get creative solutions for complex engineering problems.
- Analyze the stress, deflection and fatigue resistance of springs under constant and varying loads using appropriate analytical techniques and methods
- Determine the design procedure of gears and bearings for investigations of complex engineering problems

TEXTBOOKS:

1. Khurmi R S, Gupta J K, "A Textbook of Machine Design", S.Chand & Company Pvt. Ltd, 25th edition, 2020.
2. Bhandari V B, "Design of Machine Elements", Tata McGraw-Hill Book Co, 4th edition, 2017.

REFERENCES:

1. Robert C. Juvinall and Kurt M. Marshek, "Fundamentals of Machine component Design",6th Edition, Wiley, 2017.
2. Joseph Shigley, Richard G. Budynas and J. Keith Nisbett "Mechanical Engineering Design", 10th Edition, Tata McGraw-Hill , 2015.
3. Ansel C Ugural, "Mechanical Design – An Integral Approach", 1st Edition, Tata McGraw-Hill Book Co, 2004.

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	3	3	-	2	2	-	-	1	2	2	2
CO2	3	3	3	3	-	2	2	-	-	1	2	2	2
CO3	3	3	3	3	-	2	2	-	-	1	2	2	2
CO4	3	3	3	3	-	2	2	-	-	1	2	2	2
CO5	3	3	3	3	-	2	2	-	-	1	2	2	2

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24AG404	SOIL SCIENCE AND ENGINEERING	L T P C 3 0 0 3

OBJECTIVES:

The students should be made to:

- Classify soil water into capillary and non-capillary and understand plasticity, soil air, temperature.
- Compare different types and methods of soil survey and interpret field mapping, mapping units, and base maps.
- Construct the mechanisms of nutrient transport to plants and analyze factors affecting nutrient availability.
- Analyze the factors affecting soil compaction and demonstrate field and laboratory methods for compaction.
- Determine the shear strength of cohesive and cohesionless soils using Mohr-Coulomb failure theory

UNIT I INTRODUCTION AND SOIL PHYSICS **9**

Soil - definition - major components – Soil forming minerals and processes - soil profile – Physical properties - texture – density-porosity – consistence – colour - specific gravity - capillary and non-capillary - plasticity. Soil air - soil temperature - soil water - classification of soil water - Movement soil water. Soil colloids – organic and inorganic matter - Ion exchange - pH – Plant nutrient availability.

UNIT II SOIL CLASSIFICATION AND SURVEY **9**

Soil taxonomy – Soils of Tamil Nadu and India. Soil survey - types and methods of soil survey – Field mapping- mapping units - base maps -preparation of survey reports - concepts and uses - land capability classes and subclasses - soil suitability - Problem soils – Reclamation for sustainable development.

UNIT III SOIL FERILITY AND NUTRIENT **9**

Soil fertility and plant nutrition - Criteria of essentiality - Role, deficiency and toxicity symptoms of essential plant nutrients - Mechanisms of nutrient transport to plant, factors affecting nutrient availability to plants - Chemistry of soil nitrogen, phosphorus, potassium, calcium, magnesium, sulphur and micronutrients.

UNIT IV PHASE RELATIONSHIP AND SOIL COMPACTION **9**

Phase relations - Gradation analysis - Atterberg Limits and Indices - Engineering Classification of soil – Soil compaction - factors affecting compaction - field and laboratory methods.

UNIT V ENGINEERING PROPERTIES OF SOIL **9**

Shear strength of cohesive and cohesionless – Mohr - Coulomb failure theory - Measurement of shear strength, direct shear, Triaxial and vane shear test – Permeability - Coefficient of Permeability - Darcy's law - field and lab methods - Assessment of seepage - Compressibility.

TOTAL: 45 PERIODS

V. Gopi

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OUTCOMES:

On successful completion of this course, the students will be able to,

- Understand engineering knowledge to classify soil water into capillary and non-capillary types and explain the concepts of plasticity, soil air and temperature
- Illustrate different soil survey methods using problem analysis and interpret field mapping, mapping units and base maps
- Apply the role of essential nutrients in plant nutrition and analyze the mechanisms of nutrient transport to plants to develop solutions.
- Examine complex problems to investigate soil compaction factors and demonstrate effective compaction methods
- Analyze the shear strength of soils using Mohr-Coulomb failure theory by applying Engineering Knowledge

TEXTBOOKS:

1. Nyle C Brady, "The Nature and Properties of Soil", Macmillan Publishing Company, 15th Edition, New York, 2016.
2. Punmia B C, "Soil Mechanics and Foundation" Laxmi Publishers, 16th Edition, New Delhi, 2017.

REFERENCES:

1. Edward J Plaster, "Soil Science and Management", Cengage Learning India Ltd, 6th Edition, New Delhi, 2013.
2. Arora K R, "Soil Mechanics and Foundation Engineering", Standard Publishers and Distributors, New Delhi, 2020.
3. Murthy V N S, "Text Book of Soil Mechanics and Foundation Engineering", CBS Publishers and Distributors, New Delhi, 2018.
4. Sehgal S B, "Text Book of Soil Mechanics", CBS Publishers and Distributors, 3rd Edition, New Delhi, 2012.

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	2	2	1	1	-	-	-	-	-	2	3
CO2	3	3	2	2	1	1	-	-	-	-	-	2	3
CO3	3	3	2	2	1	1	-	-	-	-	-	2	3
CO4	3	3	3	3	3	2	-	-	-	-	-	2	3
CO5	3	3	3	3	3	2	-	-	-	-	-	2	3

V.GOPP

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BoS (AGE) 03/04/25

24EC408 SENSORS AND TRANSDUCERS

L	T	P	C
3	0	2	4

OBJECTIVES:

The students should be made to:

- Understand static and dynamic characteristics of measurement systems.
- Study about various types of sensors for different applications.
- Understand the design concepts and signal conditioning of self-generating sensors.
- Understand the concept of Signal conditioning and self-generating motors
- Study about the performance of digital and semiconductor sensors

UNIT I INTRODUCTION TO MEASUREMENT SYSTEMS 9

Introduction to measurement systems: general concepts and terminology, measurement systems, sensor classification, general input-output configuration, methods of correction, performance characteristics: static characteristics of measurement systems, accuracy, precision, sensitivity, other characteristics: linearity, resolution, systematic errors, random errors.

UNIT II RESISTIVE AND REACTIVE SENSORS 9

Resistive sensors: potentiometers, strain gages, resistive temperature detectors, magneto resistors, Signal conditioning for resistive sensors: Wheatstone bridge, sensor bridge calibration and compensation, sources of interference and interference reduction, Reactance variation and electromagnetic sensors, inductive sensors, linear variable differential transformers (LVDT), magneto elastic sensors, hall effect sensors.

UNIT III SELF-GENERATING SENSORS 9

Self-generating sensors: thermoelectric sensors, piezoelectric sensors, pyroelectric sensors, photovoltaic sensors, electrochemical sensors, Signal conditioning for self-generating sensors: chopper and low-drift amplifiers, offset and drifts amplifiers, electrometer amplifiers, charge amplifiers, noise in amplifiers.

UNIT IV FLOW MEASUREMENT 9

Basic principle of flow meter, Differential pressure flow meters, Variable area flow meter, Volumetric flow meter, Hotwire anemometer, Magnetic and ultrasonic flow meter, Rota meter, Hall effect transducer working and measurement techniques.

UNIT V DIGITAL SENSORS AND SEMICONDUCTOR DEVICE SENSORS 9

Digital sensors: position encoders, variable frequency sensors - quartz digital thermometer, vibrating cylinder sensors, saw sensors, digital flow meters, Sensors based on semiconductor junctions: thermometers based on semiconductor junctions, photodiodes and phototransistors, sensors based on MOSFET transistors, CCD imaging sensors, ultrasonic sensors, fiber - optic sensors.

LIST OF EXPERIMENTS

1. Measurement of strain using strain gauges
2. Characteristics of temperature sensors
3. Study of AC and DC Characteristics of LVDT
4. Measurement of Natural frequency and damping ratio of the given system
5. Characteristics of Opto coupler
6. Level Measurement using proximity sensors
7. Loading effects of Potentiometer

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8. Characteristics of Hall effect sensor.

TOTAL: 75 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Understand how physical quantities are measured and how they are converted to electrical or other forms.
- Explain the construction and operation of variable resistance transducer and demonstrate the knowledge of inductance transducers.
- Utilize the Self-generating sensors in application.
- Understand working principles of actuators and its characteristics.
- Design State-of-the-art digital and semiconductor sensors

TEXT BOOKS:

1. Clarence W. de Silva, "Sensors and Actuators Control Systems Instrumentation", CRC Press, 2016.
2. Nathan Ida, "Sensors, Actuators, and their Interfaces" A Multidisciplinary Introduction University of Akron, SciTech Publishing, an imprint of the IET, 2014.

REFERENCES:

1. Andrzej M. Pawlak, "Sensors and Actuators in Mechatronics Design and Applications", 2007.
2. Johnson D, "Process Control Instrumentation Technology", John Wiley and Sons, 8th Edition, 2014.
3. Patranabis , "Sensors and Transducers", Prentice Hall India Pvt. Ltd, 2nd Edition, 2003.
4. Herman K P. Neubrat, "Instrument Transducers - An Introduction to Their Performance and Design", Oxford University Press, 2nd Edition, 1975.

MAPPING OF COs WITH POs AND PSOs

Course Outcomes	Program Outcomes											Program Specific Outcomes	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	2	1	2	-	--	1	1	-	2	-	2	2	1
CO2	2	1	2	-	--	1	1	-	2	-	2	2	1
CO3	2	1	2	-	--	1	1	-	2	-	2	2	1
CO4	2	1	2	-	1	1	1	-	2	-	2	2	1
CO5	2	1	2	-	3	2	1	-	2	-	2	2	1

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BOS/ECE

24MC003	CONSTITUTION OF INDIA (Common to All Branches)	L T P C 2 0 0 0

OBJECTIVES:

The students should be made to:

- Apply the understanding of fundamental rights and duties to real life situations and legal case studies.
- Illustrate the roles and responsibilities parliamentary framework.
- Analyze the general structure of the state executive roles in the state level.
- Investigate the powers and judicial responsibilities of the higher Judiciary.
- Judge the strength and limitations of India's federal power structure in practice.

UNIT 1 INTRODUCTION **6**

Historical background - Government of India act - Indian councils act - Making of the constitution - Philosophy of the Indian constitution - Preamble.

UNIT II GOVERNMENT OF THE UNION **6**

Powers and Functions of President and Prime Minister - Council of Ministers – President in relation to his council - Legislature structure and functions of Lok Sabha and Rajya Sabha - Speaker.

UNIT III GOVERNMENTS OF THE STATES AND LOCAL GOVERNMENT **6**

The state executive: General structure - Governor - Council of ministers - State legislature. Local government - Panchayat - Municipality - Power authority and responsibilities municipalities.

UNIT IV THE JUDICATURE **6**

Organization and Composition of Judiciary – Constitution – Appointment - Qualifications - Powers and functions of the supreme court– High courts – Control over subordinate courts.

UNIT V THE FEDERAL SYSTEM **6**

Distribution of financial powers: Need, principles-Underlying distribution of tax revenues-Distribution of legislative power – Interstate relation - Emergency provisions.

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of the course, the students will be able to,

- Distinguish and apply constitutional principles and democratic values of the Indian constitution.
- Emphasize on the powers and interactions of the president, prime ministers in the parliamentary structure.
- Evaluate the structure, powers and functions of state and local governance.
- Demonstrate the Indian judiciary, structure and functions of courts.
- Explore the financial, legislative provisions of Indian federation.

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TEXT BOOKS:

1. Basu D.D, "Introduction to Indian Constitution", Prentice Hall of India, New Delhi, 2015.
2. Gupta D.C, "Indian Government and Politics", Vikas Publishing House, New Delhi, 2010.

REFERENCES:

1. Pylee M.V, "Introduction to the Constitution of India", Vikas Publishing House, New Delhi, 2011.
2. Kashyap S, "Our Constitution", National Book Trust, New Delhi, 2010.
3. The Constitution of India, 1950 (Bare Act), Government Publication.
4. Jain M P, Indian Constitution Law, 7th Edition. Lexis Nexis, 2014.
5. Busi S N, Ambedkar B R framing of Indian Constitution, 1st Edition, 2015.

Mapping of COs with Pos

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	3	3	-	-	-	2
CO2	-	-	-	-	-	3	3	2	2	2	3
CO3	-	-	-	-	-	3	3	2	2	2	3
CO4	-	-	-	-	-	3	3	-	2	2	3
CO5	-	-	-	-	-	3	3	-	-	3	2

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BoS (S&H)

24AG405L	STRENGTH OF MATERIALS LABORATORY	L	T	P	C
		0	0	2	1

OBJECTIVES:

The students should be made to:

- Understand the stress strain behavior of mild steel rod
- Obtain the hardness value of various metals
- Determine impact strength of mild steel
- Evaluate the properties of wood and metal beam
- Estimate the deflection acting on springs by applying tensile and compressive load

LIST OF EXPERIMENTS:

1. Tension test on mild steel rod.
2. Yield strength, ultimate strength, percentage of elongation and young's modulus for the mild steel rod and torque steel using UTM.
3. Izod and charpy impact tests.
4. Determination of rockwell and brinell hardness number.
5. Torsion test on mild steel rod.
6. Maximum shear strength of the mild steel bar using double shear test.
7. Compression test on wood.
8. Static bending test on metal beam.
9. Tests on open coiled helical springs.
10. Tests on close coiled helical springs.

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Understand the engineering knowledge to illustrate the behavior of mild steel and torque steel under the action of tensile and compressive loads.
- Utilize engineering principles to calculate the hardness value of various metal specimens.
- Determine the shear and torsional strength of different materials by applying engineering concepts.
- Summarize the properties of wood and metal beams under external loads through engineering fundamentals.
- Evaluate the stiffness and deflection of open-coiled and close-coiled springs by leveraging engineering knowledge.

REFERENCES:

1. "Strength of Materials Laboratory Manual", Anna University, Chennai-600 025.
IS1786-2008, "High Strength Deformed Bars and Wires for Concrete Reinforcement – Specification", 2008.

V.GOPE

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Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	1	-	-	1	2	1	-	1	2	-	3	3
CO2	3	1	-	-	1	2	1	-	1	2	-	3	3
CO3	3	1	-	-	1	2	1	-	1	2	-	3	3
CO4	3	1	-	-	1	2	1	-	1	2	-	3	3
CO5	3	1	-	-	1	2	1	-	1	2	-	3	3

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List of Equipment's

Sl. No.	Description of Equipment
1.	UTM of minimum 400 KN capacity
2.	Torsion testing machine
3.	Izod impact testing machine
4.	Hardness testing machine-Rockwell
5.	Hardness testing machine-Vickers/Brinell
6.	Beam deflection test apparatus
7.	Extensometer
8.	Compressometer
9.	Dial gauges
10.	Le Chatelier's apparatus
11.	Vicat's apparatus
12.	Mortar Cube Moulds

V. Gopi

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24AG406L	SOIL SCIENCE AND ENGINEERING LABORATORY	L	T	P	C
		0	0	2	1

OBJECTIVES:

The student should be made to:

- Identify and classify different types of rocks and minerals
- Illustrate the electrical conductivity (EC), pH and organic carbon content present in water samples
- Analyze the nitrogen, phosphorus, and potassium (NPK) content in soil samples using standard testing methods
- Evaluate soil properties through standardized methods for determining texture, specific gravity and grain size distribution
- Examine the field density of soil using the core cutter method and the sand replacement method

List of Experiments

1. Identification of Rocks and minerals
2. Determination of soil moisture, EC and pH
3. Estimation of organic carbon
4. Determination of available Nitrogen in soil
5. Determination of available phosphorus in soil
6. Determination of available potassium in soil
7. Textural analysis of soils by International pipette method
8. Determination of specific gravity by pycnometer
9. Grain size analysis by using mechanical shaker
10. Determination of field density by core cutter method and Sand replacement method

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Demonstrate the ability to identify and classify various types of rocks and minerals by applying engineering knowledge
- Determine the electrical conductivity (EC), pH and organic carbon content in water samples using engineering principles
- Examine the nitrogen, phosphorus and potassium (NPK) content in soil samples through engineering fundamentals analysis and standard testing methods
- Evaluate soil properties such as texture, specific gravity and grain size distribution by developing engineering concepts.
- Assess the field density of soil using the core cutter method and the sand replacement method through engineering analysis application

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REFERENCES:

1. Punmia B C, "Soil Mechanics and Foundation Engineering", Laxmi Publishers, New Delhi. 2007.
2. Laboratory Manual, "Centre for Water Resources, Anna University", Chennai. 2012

Mapping of COs with POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	1	1	1	1	1	-	2	-	-	-	2	3
CO2	3	3	2	3	3	2	-	2	-	-	-	2	3
CO3	3	3	2	3	3	2	-	2	-	-	-	2	3
CO4	3	3	2	3	3	2	-	2	-	-	-	2	3
CO5	3	3	2	3	3	2	-	2	-	-	-	2	3

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List of Equipment's

Sl. No.	Description of Equipment
1	Igneous Rock - (Any 4)
2	Sedimentary Rock - (Any 4)
3	Metamorphic Rock - (Any 4)
4	Minerals - (Any 4)
5	Hot air oven
6	EC meter, potassium chloride, 100 ml beaker
7	pH meter, buffer tablet pH 4.0, 7.0 or 9.2, 100 ml beaker
8	Core sampler, aluminum tray, oven, balance upto 5 Kg, knife, spatula
9	Sand pouring cylinder, Calibrating can, Metal tray with a central hole, Dry sand (passing through 600 micron sieve), Balance of capacity 15 kg
10	A pycnometer, an analytical balance, filter paper, clean and dry cloth
11	A sieve shaker, complete set of I.S Sieve sizes generally 4.75 mm, 2.00mm, 1.18 mm, 425microns, 300microns, 150 microns and 75 microns along with a pan and a lid, Balance of 0.01 g sensitivity
12	500 ml conical flasks, Pipette, Burette, Potassium dichromate (K2Cr2O7), Ferrous sulfate heptahydrate (FeSO4.7 H2O), Sulfuric acid (H2SO4) concentrated, Diphenylamine indicator
13	Saturated calcum sulphate, Ammonium chloride-Ammonium hydroxide buffer, Erichrome black-T indicator, EDTA, mechanical shaker, whatman No. 3 filter paper,100 ml conical flasks, Pipette, Burette
14	Direct Shear test apparatus
15	Vane Shear test apparatus
16	Proctor Compaction test apparatus

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24EEC401L	LIFE SKILLS AND PERSONALITY DEVELOPMENT (Common to All Branches)	L	T	P	C
		0	0	2	1

OBJECTIVES:

The students should be made to:

- Create self- confident among the students by the training
- Develop good personality for mature outlook in different circumstances
- Encourage effective presentation skills
- Dramatize role play by assigning the best role
- Enhance team building and time management skills

UNIT I CAREER PLANNING **6**

Introduction - Benefits of Career Planning - Expectation and Development - Guidelines for choosing a Career - Future planning - Evaluation of planning.

UNIT II ATTITUDE **6**

Introduction - Rightness of Attitude and behaviour - Formation of Attitudes - Evolving Behaviour of a person - Creating right attitudes - Approaches of Challenges - Lessons from Attitude.

UNIT III ROLE PLAYING **6**

Introduction - settings of role plays - Principles and Purpose - importance of communication in role plays - Arrangement of points and character - Extempore Talk - Debates - Emotional Intelligence.

UNIT IV TEAM BUILDING **6**

Purpose of Creating Team - Exploring Team roles and Processes - Importance of Building and Developing Strong Team - Leadership Qualities - Success of Team Building.

UNIT V TIME MANAGEMENT **6**

Value of time - Concept and applications of time management - Causes for wasting of time - Methods of Time Management - Diagnosing Time Management - Planning for presentation - To - do - list - Prioritizing work

TOTAL: 30 PERIODS

OUTCOMES:

On successful completion of this course, the students will be able to,

- Improve the leadership skills by identifying the strengths of a team
- Learn to lead a team on a project in an organization
- Helps students to perform on a distinct role and learn to face the challenges
- Build a strong team to achieve their goals with the right choice of people
- Develop the time management skills to achieve success

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BoS (S&H)

TEXT BOOKS:

1. "Soft Skills", Career Development Centre, Green Pearl Publications, 2015.

REFERENCES:

1. Thomas A Harris, "IAm Ok, You Are Ok", Harper and Row, New York 1972.
2. Daniel Coleman, "Emotional Intelligence", Bantam Book, 2006.
3. Nira Konar, "Communication Skills for Professionals", Eastern Economy Edition, 2010.

Mapping of COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	2	1	2	2	1	1	2	3	1	3
CO2	1	2	1	2	2	1	1	2	3	1	3
CO3	1	2	1	2	2	1	1	3	3	1	3
CO4	1	2	1	2	2	1	1	3	3	1	3
CO5	1	2	1	2	2	1	1	3	3	1	3

CHAIRMAN
BoS (S&H) 14/10