KSR College of Engineering

AN AUTONOMOUS INSTITUTION

NAAC ACCREDITED A++ | NBA ACCREDITED PROGRAMMES

25 Years KSRCE 2001 – 2026 Celebrating Academic Excellence

B.E. - BIOMEDICAL ENGINEERING

REGULATIONS 2024

(Academic Year 2025-26 Onwards)

Curriculum & Syllabus
Semester I to II

K.S.R. COLLEGE OF ENGINEERING: TIRUCHENGODE-637215

(Autonomous)

DEPARTMENT OF BIOMEDICAL ENGINEERING

B.E.–BIOMEDICAL ENGINENG

(REGULATIONS 2024)

Vision of the Institution

IV	To become a globally renowned institution in Engineering and Management, committed to providing holistic education that fosters research, innovation and sustainable development.

Mission of the Institution

IM1	Deliver value-based quality education through modern pedagogy and experiential learning.
IM2	Enrich Engineering and Managerial Skills through cutting-edge laboratories to meet evolving global demands.
IM3	Empower research and innovation by integrating collaboration, social responsibility, and commitment to sustainable development.

Vision of the Department/Programme: Biomedical Engineering

DV	To produce erudite Biomedical Engineers, Researchers and Entrepreneurs with ethical values to develop a sustainable environment

Mission of the Department/Programme: Biomedical Engineering

DM1	Deliver value-based Biomedical Engineering education that fosters leadership, innovation, and ethical integrity
DM2	Strengthen engineering proficiency through state-of-the-art laboratories and clinical collaborations, addressing evolving healthcare needs.
DM3	Promote interdisciplinary research and entrepreneurial thinking in Biomedical Engineering with a focus on sustainability, innovation, and societal impact.

Programme Educational Objectives (PEOs): Biomedical Engineering

The graduates of the programme will be able to	
PEO 1	**Core Competency:** Apply engineering and life science knowledge to design and develop innovative and sustainable biomedical solutions, contributing to global healthcare needs.
PEO 2	**Professionalism:** Demonstrate ethical responsibility, leadership, and effective teamwork across multidisciplinary domains, addressing societal and environmental challenges.
PEO 3	**Career Development:** Pursue lifelong learning, higher studies, and entrepreneurial ventures to remain at the forefront of biomedical engineering and technological innovation.

Chairman (BoS)

Program Outcomes (POs)

PO1	**Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
PO3	**Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
PO4	**Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8)
PO5	**Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
PO6	**The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).
PO7	**Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
PO8	**Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
PO9	**Communication:** Communicate effectively and inclusively within the engineering. community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
PO10	**Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
PO11	**Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

Programme Specific Outcomes (PSO's)

PSO1	**Medical Device and Signal Processing**	Apply engineering principles to design, develop, and enhance medical devices, and analyze biomedical signals and medical images for effective diagnosis and treatment.
PSO2	**Healthcare Computing and Clinical Integration**	Design/ develop AI-driven healthcare solutions and collaborate with clinicians to enable sustainable medical innovation

Chairman (BoS)

	K.S.R COLLEGE OF ENGINEERING (Autonomous) Approved by AICTE and Affiliated to Anna University, Chennai Accredited by NAAC ('A++' Grade)	Curriculum UG R-2024
Department	BIOMEDICAL ENGINEERING	
Programme	B.E.	

SEMESTER I

S. No.	Course Code	Course Title	Category	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
Induction Programme			-	-	-	-	-	-	-	-	-	-
THEORY COURSES												
1.	24ENT19	Professional Communication	HSMC	45	0	0	45	90	3	40	60	100
2.	24EET06	Basics of Electrical and Electronics Engineering	ESC	45	0	0	45	90	3	40	60	100
3.	24GET19	தமிழர்மரபு/Heritage of Tamils	HSMC	15	0	0	15	30	1	40	60	100
THEORY COURSES WITH LABORATORY COMPONENT												
4,	24MAI19	Matrices and Calculus	BSC	45	0	30	45	120	4	50	50	100
5.	24PHI07	Engineering Physics	BSC	45	0	30	45	120	4	50	50	100
6.	24ITI16	Programming for Problem Solving	ESC	15	0	90	15	120	4	50	50	100
LABORATORY COURSES												
8.	24MEP16	Engineering Graphics Laboratory	ESC	15	0	30	15	60	2	60	40	100
9.	24GEP16	Engineering Experience Laboratory	ESC	0	0	30	0	30	1	60	40	100
EMPLOYABILITYENHANCEMENTCOURSES												
10.	24SDP19	Soft Skills Development-I	EEC	0	0	30	0	30	1	60	40	100
MANDATORYCOURSE												
11.	24MCP09	Mandatory Course-I	MC	0	0	30	0	30	0	-	-	-
			TOTAL	225	0	270	225	720	23	900		

Chairman (BoS)

SEMESTER II													
S. No.	Course Code	Course Title	Category	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
THEORY COURSES												
1.	24ECT21	Design Thinking	PCC	30	0	0	30	60	2	40	60	100
2.	24BMT21	Medical Physics	PCC	45	0	0	45	90	3	40	60	100
3.	24GET29	தமிழரும்தொழில்நுட்பமும்/ Tamils and Technology	HSMC	15	0	0	15	30	1	40	60	100
THEORY COURSES WITH LABORATORY COMPONENT												
4.	24MAI29	Probability and Statistics	BSC	45	0	30	45	120	4	50	50	100
5.	24CHI06	Chemistry for Engineers	BSC	45	0	30	45	120	4	50	50	100
6.	24CBI26	Python Programming	ESC	45	0	30	45	120	4	50	50	100
LABORATORY COURSES												
7.	24ENP29	Professional Communication Laboratory	HSMC	0	0	30	0	30	1	60	40	100
EMPLOYABILITY ENHANCEMENT COURSE												
8.	24SDP29	Soft Skills Development-II	EEC	0	0	30	0	30	1	60	40	100
			TOTAL	**225**	**0**	**150**	**225**	**600**	**20**	**800**		

SEMESTER III													
S. No.	Course Code	Course Title	Category	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
THEORY COURSES												
1.	24MAT38	Transforms and Partial Differential Equations	BSC	45	15	0	60	120	4	40	60	100
2.	24BMT31	Anatomy and Human Physiology	PCC	45	0	0	45	90	3	40	60	100
3.	24BMT32	Biocontrol Systems	PCC	45	15	0	60	120	4	40	60	100
THEORY COURSES WITH LABORATORY COMPONENT												
4.	24BMI31	Electronic Devices and Circuits	PCC	45	0	30	45	120	4	50	50	100
5.	24BMI32	Biosciences	PCC	45	0	30	45	120	4	50	50	100
LABORATORY COURSES												
6.	24BMP31	Anatomy and Human Physiology Laboratory	PCC	0	0	45	0	45	1.5	60	40	100
7.	24ECP36	Design Studio-I	PCC	0	0	30	0	30	1	60	40	100
EMPLOYABILITY ENHANCEMENT COURSES												
8.	24SDP39	Soft Skills Development-III	EEC	0	0	30	0	30	1	60	40	100
			TOTAL	**225**	**30**	**165**	**255**	**675**	**22.5**	**800**		

Chairman (BoS)

SEMESTER IV												
S. No.	Course Code	Course Title	Category	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
THEORY COURSES												
1.	24MAT46	Numerical and Computational Techniques	BSC	45	15	0	60	120	**4**	40	60	100
2.	24BMT41	Biomedical Instrumentation	PCC	45	0	0	45	90	**3**	40	60	100
3.	24GET09	Universal Human Values and Ethics	HSMC	45	0	0	45	90	**3**	40	60	100
4.	-	Open Elective - I	OEC	45	0	0	45	90	**3**	40	60	100
THEORY COURSES WITH LABORATORY COMPONENT												
5.	24BMI41	Analog and Digital Integrated Circuits	PCC	45	0	30	45	120	**4**	50	50	100
6.	24BMI42	Sensors and Measurements	PCC	45	0	30	45	120	**4**	50	50	100
LABORATORY COURSES												
7.	24BMP41	Biomedical Instrumentation Lab	PCC	0	0	45	0	45	**1.5**	60	40	100
8.	24ECP46	Design Studio-II	PCC	0	0	30	0	30	**1**	60	40	100
EMPLOYABILITY ENHANCEMENT COURSES												
9.	24SDP49	Soft Skills Development - IV	EEC	0	0	30	0	30	**1**	60	40	100
			TOTAL	**270**	**15**	**165**	**285**	**735**	**24.5**	**900**		

*The students should undergo 2 weeks Internship/Industrial Training during the IV semester summer vacation

SEMESTER V												
S. No.	Course Code	Course Title	Category	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
THEORY COURSES												
1.	24BMT51	Hospital Management	PCC	45	0	0	45	90	**3**	40	60	100
2.	-	Professional Elective-I	PEC	45	0	0	45	90	**3**	40	60	100
3.	-	Open Elective-II	OEC	45	0	0	45	90	**3**	40	60	100
THEORY COURSES WITH LABORATORY COMPONENT												
4.	24BMI51	Medical Image Processing	PCC	45	0	30	45	120	**4**	50	50	100
5.	24BMI52	Biosignal Processing	PCC	45	0	30	45	120	**4**	50	50	100
6.	24BMI53	Diagnostic and Therapeutic Equipment	PCC	45	0	30	45	120	**4**	50	50	100
LABORATORY COURSE												
7.	24BMP51	Modeling Laboratory	PCC	0	0	60	0	60	**2**	60	40	100
EMPLOYABILITYENHANCEMENTCOURSES												
8.	24BMP52	Internship - I*	EEC	-	-	-	-	-	**1**	100	-	100
9.	24BMP53	Seminar Presentation	EEC	0	0	30	0	30	**1**	100	-	100
10.	24BMP54	Industry oriented course-I	EEC	-	-	-	-	-	**1**	100	-	100
MANDATORYCOURSE												
11.	-	Mandatory Course - II	MC	30	0	0	0	30	**0**	100	-	100
			TOTAL	**300**	**0**	**180**	**270**	**750**	**26**	**1100**		

Chairman (BoS)

S. No.	Course Code	Course Title	Category	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
SEMESTER VI												
THEORY COURSES												
1.	24GET69	Entrepreneurship Development	HSMC	45	0	0	45	90	3	40	60	100
2.	-	Professional Elective-II	PEC	45	0	0	45	90	3	40	60	100
3.	-	Professional Elective-III	PEC	45	0	0	45	90	3	40	60	100
4.	-	Open Elective-III	OEC	45	0	0	45	90	3	40	60	100
THEORY COURSES WITH LABORATORY COMPONENT												
5.	24BMI61	AI and ML for Biomedical Engineers	PCC	45	0	30	45	120	4	50	50	100
6.	24BMI62	Embedded Systems and IoMT	PCC	45	0	30	45	120	4	50	50	100
EMPLOYABILITY ENHANCEMENT COURSE												
7.	24BMP61	Mini Project	EEC	0	0	60	0	60	2	60	40	100
8.	24BMP62	Technical Comprehension	EEC	0	0	30	0	30	1	100	-	100
9.	24BMP63	Industry oriented course-II	EEC	-	-	-	-	-	1	100	-	100
MANDATORY COURSE												
10.	-	Mandatory Course - III	MC	30	0	0	0	30	0	100	-	100
			TOTAL	**300**	**0**	**150**	**270**	**720**	**24**	**1000**		
SEMESTER VII												
THEORY COURSES												
1.	24BMT61	Radiological Equipment	PCC	45	0	0	45	90	3	40	60	100
2.	24GET79	Project Management	HSMC	45	0	0	45	90	3	40	60	100
3.	-	Professional Elective–IV	PEC	45	0	0	45	90	3	40	60	100
4.	-	Professional Elective–V	PEC	45	0	0	45	90	3	40	60	100
5.	-	Professional Elective-VI	PEC	45	0	0	45	90	3	40	60	100
EMPLOYABILITY ENHANCEMENT COURSES												
6.	24BMP71	Project Work–Phase I	EEC	0	0	60	0	60	2	60	40	100
			TOTAL	**225**	**0**	**60**	**255**	**510**	**17**	**600**		
SEMESTER VIII												
EMPLOYABILITY ENHANCEMENT COURSE												
1.	24BMP81	Project Work-Phase II	EEC	0	0	240	0	240	8	60	40	100
			TOTAL	**0**	**0**	**240**	**0**	240	**8**	**100**		
									TOTAL CREDITS	**165**		

TOTAL NUMBER OF CREDITS TO BE EARNED FOR AWARD OF THE DEGREE = 165

Note: HS-Humanities and Social Sciences including Management Courses, BS-Basic Science Courses, ES-Engineering Science Courses, PC-Professional Core Courses, PE-Professional Elective Courses, OE- Open Elective Courses, EEC-Employability Enhancement Courses and MC-Mandatory Courses.

	K.S.R. COLLEGE OF ENGINEERING (Autonomous) (Approved by AICTE & Affiliated to Anna University) K.S.R. Kalvi Nagar, Tiruchengode - 637 215	Curriculum UG R-2024
Department	Department of Biomedical Engineering	
Programme	B.E. Biomedical Engineering	

HUMANITIES, SCOCIAL SCIENCE AND MANAGEMENT COURSES(HSMC)

S. No.	Course Code	Course Title	Semester	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
1.	24ENT19	Professional Communication	I	45	0	0	45	90	3	40	60	100
2.	24GET19	தமிழர்மரபு / Heritage of Tamils	I	15	0	0	15	30	1	40	60	100
3.	24GET29	தமிழரும் தொழில்நுட்பமும்/ Tamils and Technology	II	15	0	0	15	30	1	40	60	100
4.	24ENP29	Professional Communication Laboratory	II	0	0	30	0	30	1	60	40	100
5.	24GET09	Universal Human Values and Ethics	IV	45	0	0	45	90	3	40	60	100
6.	24GET69	Entrepreneurship Development	VI	45	0	0	45	90	3	40	60	100
7.	24GET79	Project Management	VII	45	0	0	45	90	3	40	60	100
			TOTAL	210	0	30	210	450	15	700		

BASIC SCIENCE COURSES(BSC)

S. No.	Course Code	Course Title	Semester	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
1.	24MAI19	Matrices and Calculus	I	45	0	30	45	120	4	50	50	100
2.	24PHI07	Engineering Physics	I	45	0	30	45	120	4	50	50	100
3.	24MAI29	Probability and Statistics	II	45	0	30	45	120	4	50	50	100
4.	24CHI06	Chemistry for Engineers	II	45	0	30	45	120	4	50	50	100
5.	24MAT38	Transforms and Partial Differential Equations	III	45	15	0	60	120	4	40	60	100
6.	24MAT46	Numerical and Computational Techniques	IV	45	15	0	60	120	4	40	60	100
			TOTAL	240	60	120	300	720	24	600		

Chairman (BoS)

ENGINEERING SCIENCE COURSES(ESC)													
S. No.	Course Code	Course Title	Semester	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
1.	24EET06	Basics of Electrical and Electronics Engineering	I	45	0	0	45	90	3	40	60	100
2.	24ITI16	Programming for Problem Solving	I	15	0	90	15	120	4	50	50	100
3.	24MEP16	Engineering Graphics Laboratory	I	15	0	30	15	60	2	60	40	100
4.	24GEP16	Engineering Experience Laboratory	I	0	0	30	0	30	1	60	40	100
5.	24CBI26	Python Programming	II	45	0	30	45	120	4	50	50	100
			TOTAL	150	0	120	150	420	14	700		

EMPLOYABILITY ENHANCEMENT COURSES(EEC)													
S. No.	Course Code	Course Title	Semester	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
1.	24SDP19	Soft Skills Development-I	I	0	0	30	0	30	1	60	40	100
2.	24SDP29	Soft Skills Development-II	II	0	0	30	0	30	1	60	40	100
3.	24SDP39	Soft Skills Development- III	III	0	0	30	0	30	1	60	40	100
4.	24SDP49	Soft Skills Development– IV	IV	0	0	30	0	30	1	60	40	100
5.	24BMP52	Internship–I*	V	-	-	-	-	-	1	100	-	100
6.	24BMP53	Seminar Presentation	V	0	0	30	0	30	1	100	-	100
7.	24BMP54	Industry oriented course-I	V	-	-	-	-	-	1	100	-	100
8.	24BMP61	Mini Project	VI	0	0	60	0	60	2	60	40	100
9.	24BMP62	Technical Comprehension	VI	0	0	30	0	30	1	100	-	100
10.	24BMP63	Industry oriented course-II	VI	-	-	-	-	-	1	100	-	100
11.	24BMP71	Project Work – Phase I	VII	0	0	60	0	60	2	60	40	100
12.	24BMP81	Project Work – Phase II	VIII	0	0	240	0	240	8	60	40	100
			TOTAL	0	0	540	60	540	21	1200		

Chairman (BoS)

PROFESSIONAL CORE COURSES(PCC)													
S. No.	Course Code	Course Title	Semester	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
1.	24ECT21	Design Thinking	II	30	0	0	30	60	2	40	60	100
2.	24BMT21	Medical Physics	II	45	0	0	45	90	3	40	60	100
3.	24BMT31	Anatomy and Human Physiology	III	45	0	0	45	90	3	40	60	100
4.	24BMT32	Biocontrol Systems	III	45	15	0	60	120	4	40	60	100
5.	24BMI31	Electronic Devices and Circuits	III	45	0	30	45	120	4	50	50	100
6.	24BMI32	Biosciences	III	45	0	30	45	120	4	50	50	100
7.	24BMP31	Anatomy and Human Physiology Laboratory	III	0	0	45	0	45	1.5	60	40	100
8.	24ECP36	Design Studio-I	III	0	0	30	0	30	1	60	40	100
9.	24BMT41	Biomedical Instrumentation	IV	45	0	0	45	90	3	40	60	100
10.	24BMI41	Analog and Digital Integrated Circuits	IV	45	0	30	45	120	4	50	50	100
11.	24BMI42	Sensors and Measurements	IV	45	0	30	45	120	4	50	50	100
12.	24BMP41	Biomedical Instrumentation Lab	IV	0	0	45	0	45	1.5	60	40	100
13.	24ECP46	Design Studio-II	IV	0	0	30	0	30	1	60	40	100
14.	24BMT51	Hospital Management	V	45	0	0	45	90	3	40	60	100
15.	24BMI51	Medical Image Processing	V	45	0	30	45	120	4	50	50	100
16.	24BMI52	Biosignal Processing	V	45	0	30	45	120	4	50	50	100
17.	24BMI53	Diagnostic and Therapeutic Equipment	V	45	0	30	45	120	4	50	50	100
18.	24BMP51	Modeling Laboratory	V	0	0	60	0	60	2	60	40	100
19.	24BMI61	AI and ML for Biomedical Engineers	VI	45	0	30	45	120	4	50	50	100
20.	24BMI62	Embedded Systems and IoMT	VI	45	0	30	45	120	4	50	50	100
21.	24BMT61	Radiological Equipment	VII	45	0	0	45	90	3	40	60	100
			TOTAL	705	15	480	720	1920	64	2100		

Chairman (BoS)

PROFESSIONAL ELECTIVE COURSES(PEC): VERTICALS					
VERTICAL1: **BIOENGINEERING**	**VERTICAL 2:** **MEDICAL DEVICE INNOVATION AND DEVELOPMENT**	**VERTICAL 3:** **MECHANICS**	**VERTICAL 4:** **COMMUNICATION ENGINEERING**	**VERTICAL 5:** **ADVANCED HEALTHCARE DEVICES**	**VERTICAL 6:** **MANAGEMENT (HEALTH CARE)**
Biomaterials	Foundation Skills in integrated product Development	Biomechanics	Communication Systems	Bio MEMS	Clinical Engineering
Artificial Organs and Implants	Medical Device Design	Biofluids	Wearable devices	Critical Care Equipment	Hospital planning and Management
Biomedical Optics and Photonics	Patient safety, Standards and Ethics	Rehabilitation Engineering	Body Area Networks	Biomaterials and Human Assist Devices	Medical Waste Management
Advances in Drug Delivery	Medical Ethics and Regulatory Standards	Sports Biomechanics	Virtual reality and Augmented Reality in Healthcare	Advancements in Healthcare Technology	Quality Management and Accreditations in Healthcare
Principles of Tissue Engineering	Medical Innovation and Entrepreneurship	Assistive Technology	Telehealth Technology	Analytical Instrumentation	Hospital Information System
Genetic Engineering	Medical Device Testing	Ergonomics	Medical Informatics	Nuclear Medicine	Human Behavior for Biomedical Engineers
Bioprinting	Rapid Prototyping	Haptics	Virtual Instrumentation and DAQ systems	Bio-inspired Technology	Biostatistics
Nanotechnology in Medicine	Healthcare Data Analytics	Implant Design and Development	VLSI for Medical Devices	Robotics in Medicine	Forensic science in Healthcare

Chairman (BoS)

K.S.R. College of Engineering

K.S.R. College of Engineering, Tiruchengode-637215 Centre for Academic Courses

S. No.	Course Code	Course Title	Category	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
VERTICAL1: BIOENGINEERING												
1.	24BME01	Biomaterials	PEC	45	0	0	45	90	3	40	60	100
2.	24BME02	Artificial Organs and Implants	PEC	45	0	0	45	90	3	40	60	100
3.	24BME03	Biomedical Optics and photonics	PEC	45	0	0	45	90	3	40	60	100
4.	24BME04	Advances in Drug Delivery	PEC	45	0	0	45	90	3	40	60	100
5.	24BME05	Principles of Tissue Engineering	PEC	45	0	0	45	90	3	40	60	100
6.	24BME06	Genetic Engineering	PEC	45	0	0	45	90	3	40	60	100
7.	24BME07	Bioprinting	PEC	45	0	0	45	90	3	40	60	100
8.	24BME08	Nanotechnology in Medicine	PEC	45	0	0	45	90	3	40	60	100
VERTICAL2: MEDICAL DEVICE INNOVATION AND DEVELOPMENT												
1.	24BME09	Foundation Skills in integrated Product Development	PEC	45	0	0	45	90	3	40	60	100
2.	24BME10	Medical Device Design	PEC	45	0	0	45	90	3	40	60	100
3.	24BME11	Patient safety, Standards and Ethics	PEC	45	0	0	45	90	3	40	60	100
4.	24BME12	Medical Ethics and Regulatory Standards	PEC	45	0	0	45	90	3	40	60	100
5.	24BME13	Medical Innovation and Entrepreneurship	PEC	45	0	0	45	90	3	40	60	100
6.	24BME14	Medical Device Testing	PEC	45	0	0	45	90	3	40	60	100
7.	24BME15	Rapid Prototyping	PEC	45	0	0	45	90	3	40	60	100
8.	24BME16	Healthcare Data Analytics	PEC	45	0	0	45	90	3	40	60	100
VERTICAL3: MECHANICS												
1.	24BME17	Biomechanics	PEC	45	0	0	45	90	3	40	60	100
2.	24BME18	Biofluids	PEC	45	0	0	45	90	3	40	60	100
3.	24BME19	Rehabilitation engineering	PEC	45	0	0	45	90	3	40	60	100
4.	24BME20	Sports Biomechanics	PEC	45	0	0	45	90	3	40	60	100
5.	24BME21	Assistive Technology Engineers	PEC	45	0	0	45	90	3	40	60	100
6.	24BME22	Ergonomics	PEC	45	0	0	45	90	3	40	60	100
7.	24BME23	Haptics	PEC	45	0	0	45	90	3	40	60	100
8.	24BME24	Implant Design and Development	PEC	45	0	0	45	90	3	40	60	100

Chairman (BoS)

S. No.	Course Code	Course Title	Category	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
VERTICAL4: COMMUNICATION ENGINEERING												
1.	24BME25	Communication Systems	PEC	45	0	0	45	90	3	40	60	100
2.	24BME26	Wearable devices	PEC	45	0	0	45	90	3	40	60	100
3.	24BME27	Body Area Networks	PEC	45	0	0	45	90	3	40	60	100
4.	24BME28	Virtual reality and Augmented Reality in Healthcare	PEC	45	0	0	45	90	3	40	60	100
5.	24BME29	Telehealth Technology	PEC	45	0	0	45	90	3	40	60	100
6.	24BME30	Medical Informatics	PEC	45	0	0	45	90	3	40	60	100
7.	24BME31	Virtual Instrumentation and DAQ systems	PEC	45	0	0	45	90	3	40	60	100
8.	24BME32	VLSI for Medical Devices	PEC	45	0	0	45	90	3	40	60	100
VERTICAL5: ADVANCED HEALTHCARE DEVICES												
1.	24BME33	BioMEMS	PEC	45	0	0	45	90	3	40	60	100
2.	24BME34	Critical Care Equipment	PEC	45	0	0	45	90	3	40	60	100
3.	24BME35	Biomaterials and Human Assist Devices	PEC	45	0	0	45	90	3	40	60	100
4.	24BME36	Advancements in Healthcare Technology	PEC	45	0	0	45	90	3	40	60	100
5.	24BME37	Nuclear Medicine	PEC	45	0	0	45	90	3	40	60	100
6.	24BME38	Analytical Instrumentation	PEC	45	0	0	45	90	3	40	60	100
7.	24BME39	Bio-inspired Technology	PEC	45	0	0	45	90	3	40	60	100
8.	24BME40	Robotics in Medicine	PEC	45	0	0	45	90	3	40	60	100
VERTICAL6: MANAGEMENT (HEALTHCARE)												
1.	24BME41	Clinical Engineering	PEC	45	0	0	45	90	3	40	60	100
2.	24BME42	Hospital planning and Management	PEC	45	0	0	45	90	3	40	60	100
3.	24BME43	Medical Waste Management	PEC	45	0	0	45	90	3	40	60	100
4.	24BME44	Quality Management and Accreditations in Healthcare	PEC	45	0	0	45	90	3	40	60	100
5.	24BME45	Hospital Information System	PEC	45	0	0	45	90	3	40	60	100
6.	24BME46	Human Behavior for Biomedical Engineers	PEC	45	0	0	45	90	3	40	60	100
7.	24BME47	Biostatistics	PEC	45	0	0	45	90	3	40	60	100
8.	24BME48	Forensic science in Healthcare	PEC	45	0	0	45	90	3	40	60	100

Chairman (BoS)

S. No.	Course Code	Course Title	Category	Periods per Sem					Credit	Max. Marks		
				L	T	P	SL	Tot	C = T/30	CA	ES	Tot
MANDATORY COURSE – I, II & III												
1.	24MCP09	Yoga and Stress Management	MC	0	0	30	0	30	**0**	-	-	-
2.	24MCT51	Constitution of India	MC	15	0	0	15	30	**0**	100	-	100
3.	24MCT52	Environmental Sciences and Sustainability	MC	15	0	0	15	30	**0**	100	-	100
4.	24MCT53	Engineering Economics	MC	15	0	0	15	30	**0**	100	-	100
5.	24MCT54	Introduction to Gender Studies	MC	15	0	0	15	30	**0**	100	-	100
6.	24MCT61	Essence of Indian Traditional Knowledge	MC	15	0	0	15	30	**0**	100	-	100
7.	24MCT62	Life Science for Engineers	MC	15	0	0	15	30	**0**	100	-	100
8.	24MCT63	Disaster Management	MC	15	0	0	15	30	**0**	100	-	100
9.	24MCT64	Industrial Maintenance and Safety Engineering	MC	15	0	0	15	30	**0**	100	-	100

S. No.	Course Code	Course Title	Category	Periods / Semester					Credit	Max. Marks		
				L	T	P	SL	Tot	C= T/30	CA	ES	Tot
OPEN ELECTIVE DETAILS												
AUTOMOBILE ENGINEERING												
1	24AUO01	Basics of Automobile Engineering	OEC	45	0	0	45	90	**3**	40	60	100
2	24AUO02	Hybrid Vehicles	OEC	45	0	0	45	90	**3**	40	60	100
BIO-MEDICAL ENGINEERING												
3	24BMO01	Basics of Biomedical Instrumentation	OEC	45	0	0	45	90	**3**	40	60	100
4	24BMO02	Biometric systems	OEC	45	0	0	45	90	**3**	40	60	100
CIVIL ENGINEERING												
5	24CEO01	Smart Buildings	OEC	45	0	0	45	90	**3**	40	60	100
6	24CEO02	Climate Change	OEC	45	0	0	45	90	**3**	40	60	100
COMPUTER SCIENCE AND ENGINEERING												
7	24CSO01	Data structures and Algorithms using C	OEC	45	0	30	45	90	**4**	50	50	100
8	24CSO02	Fundamentals of Java Programming	OEC	15	0	90	15	90	**4**	50	50	100
9	24CSO03	Full Stack Framework	OEC	45	0	0	45	90	**3**	40	60	100
10	24CSO04	Digital Marketing	OEC	45	0	0	45	90	**3**	40	60	100

Chairman (BoS)

S. No.	Course Code	Course Title	Category	Periods / Semester					Credit	Max. Marks		
				L	T	P	SL	Tot	C= T/30	CA	ES	Tot
COMPUTER SCIENCE AND ENGINEERING (IoT)												
11	24IOO01	Industrial Internet of Things	OEC	45	0	0	45	90	3	40	60	100
12	24IOO02	Introduction to Sensors and IoT	OEC	45	0	0	45	90	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING (Cyber Security)												
13	24CBO01	Ethical Hacking	OEC	45	0	0	45	90	3	40	60	100
14	24CBO02	Digital and Mobile Forensics	OEC	45	0	0	45	90	3	40	60	100
15	24CBO03	Applied Java Programming	OEC	15	0	90	15	90	4	50	50	100
ARTIFICIAL INTELLIGENCE AND DATA SCIENCE												
16	24CSO06	Data Science Fundamentals	OEC	45	0	0	45	90	3	40	60	100
17	24CSO07	Artificial Intelligence and Machine learning	OEC	45	0	0	45	90	3	40	60	100
18	24CSO08	Data Exploration and Visualization	OEC	45	0	0	45	90	3	40	60	100
ELECTRONICS AND COMMUNICATION ENGINEERING												
19	24ECO01	Drone Technology	OEC	45	0	0	45	90	3	40	60	100
20	24ECO02	Wearable Devices	OEC	45	0	0	45	90	3	40	60	100
21	24ECO03	5G /6G Communication	OEC	45	0	0	45	90	3	40	60	100
22	24ECO04	Embedded IoT	OEC	45	0	0	45	90	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING												
23	24EEO01	Solar and Wind Energy System	OEC	45	0	0	45	90	3	40	60	100
24	24EEO02	Hydrogen and Hybrid Energy System	OEC	45	0	0	45	90	3	40	60	100
25	24EEO03	Electric Vehicle Technology	OEC	45	0	0	45	90	3	40	60	100
26	24EEO04	Energy Conservation and Management	OEC	45	0	0	45	90	3	40	60	100
INFORMATION TECHNOLOGY												
27	24ITO01	Introduction to Mobile Application Development	OEC	45	0	0	45	90	3	40	60	100
28	24ITO02	Introduction to Big Data and Analytics	OEC	45	0	0	45	90	3	40	60	100
29	24ITO03	Augmented Reality / Virtual Reality	OEC	45	0	0	45	90	3	40	60	100
MECHANICAL ENGINEERING												
30	24MEO01	3D Printing	OEC	45	0	0	45	90	3	40	60	100
31	24MEO02	Robotics and Automation	OEC	45	0	0	45	90	3	40	60	100
32	24MEO03	Lean Manufacturing	OEC	45	0	0	45	90	3	40	60	100
SAFETY AND FIRE ENGINEERING												
33	24SFO01	Occupational health and safety	OEC	45	0	0	45	90	3	40	60	100
34	24SFO02	Electrical safety	OEC	45	0	0	45	90	3	40	60	100

S. No.	Course Code	Course Title	Category	Periods / Semester					Credit	Max. Marks		
				L	T	P	SL	Tot	C= T/30	CA	ES	Tot
35	24SFO03	Building Fire Safety	OEC	45	0	0	45	90	3	40	60	100
36	24SFO04	Construction Safety	OEC	45	0	0	45	90	3	40	60	100

Summary										
Name of the Programme: B.E Biomedical Engineering										
CATEGORY	I	II	III	IV	V	VI	VII	VIII	TOTAL CREDITS	%
HSMC	4	2	-	3	-	3	3	-	15	9
BSC	8	8	4	4	-	-	-	-	24	15
ESC	10	4	-	-	-	-	-	-	14	8
PCC	-	5	17.5	13.5	17	8	3	-	64	39
PEC	-	-	-	-	3	6	9	-	18	11
OEC	-	-	-	3	3	3	-	-	9	5
EEC	1	1	1	1	3	4	2	8	21	13
MC	✓	-	-	-	✓	✓	-	-	-	-
Total	23	20	22.5	24.5	26	24	17	8	165	100%

Chairman (BoS)

24ENT19	PROFESSIONAL COMMUNICATION	Category	L	T	P	SL	C
		HSMC	45	0	0	45	3

(Common to All Branches)

PRE-REQUISITE:
A comprehensive understanding of basic English grammar, vocabulary, and sentence structure with familiarity in Communication and Technical Writing are considered as pre-requisite for the course.

OBJECTIVE:
To equip learners with essential verbal and written communication skills, including technical writing, necessary for academic, professional, and workplace success.

UNIT - I	UNDERSTANDING COMPARISONS AND CONTRASTS	(9)

Reading: Technical brochures, telephone messages, social media messages.
Writing: Emails/letters introducing oneself, Compare and Contrast Essay.
Grammar: Present Tenses, Framing WH and Yes-No questions.
Vocabulary: Portmanteau words, One–word substitutions.

UNIT - II	WRITING REPORTS AND PARAGRAPHS	(9)

Reading: Technical texts, biographies, travelogues, travel & technical blogs.
Writing: Paragraph writing, Short Report on an event/industrial visit.
Grammar: Past Tenses, Active & Passive Voice transformations, Prepositions.
Vocabulary: Word formations using Prefixes & Suffixes.

UNIT - III	DESCRIBING THE PROCESS/PRODUCT	(9)

Reading: Advertisements, gadget reviews, user manuals, news reports.
Writing: Definitions, Instructions, Product/Process description, Checklists.
Grammar: Future Tenses, If clauses, Concord.
Vocabulary: Nominal Compounds, Discourse Markers (connectives & sequence words).

UNIT - IV	TRANSCODING AND RECOMMENDATIONS	(9)

Reading: Newspaper articles, Journal reports.
Writing: Recommendations, Transcoding.(Conversion of non-verbal to verbal information)
Grammar: Articles, Relative pronouns, Modals.
Vocabulary: Collocations, Homonyms.

UNIT - V	SUMMATION AND DESCRIPTION	(9)

Reading: Editorials and Opinion blogs, Company profiles.
Writing: Descriptive/Narrative Essays, Job/Internship Application with Resume.
Grammar: Numerical adjectives, Relative Clauses.
Vocabulary: Cause & Effect Expressions, Homophones.

TOTAL (T:45 , SL:45) = 90 PERIODS

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode-637215, Centre for Academic Courses

COURSE OUTCOMES:

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

COs	Course Outcome	Cognitive Level
CO1	Recognize the structure of comparison texts using correct tenses and appropriate vocabulary.	Understand
CO2	Construct short paragraphs and reports using past tense and clear expressions.	Understand
CO3	Comprehend processes and products using future forms and appropriate vocabulary.	Understand
CO4	Interpret visuals like charts or graphs to produce well-structured written content.	Understand
CO5	Draft essays and job applications clearly, using proper grammar and structure.	Understand

TEXT BOOKS:

1. English for Engineers & Technologists, Orient Blackswan Private Ltd. Department of English, Anna University, 2023.
2. Nitin Bhatnagar, Communicative English for Engineers and Professionals, Pearson, 2024.

REFERENCES:

1. Dr. K.N. Shoba, and Dr. Lourdes Joevani, English for Science & Technology-II Cambridge University Press. Francis, Department of English, Anna University, 2023.
2. Lakshminarayanan, A Course Book on Technical English, Scitech Publications (India) Pvt. Ltd.2022.
3. Kulbhusan Kumar, RS Salaria, Effective Communication Skill, Khanna Publishing House, 2023.

Mapping of COs with POs and PSOs

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

1-Low, 2-Medium, 3-High

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode-637 215. Centre for Academic Courses

24EET06	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	Category	L	T	P	SL	C
		ESC	45	0	0	45	3

(Common to AE, BME, CSE, CSE (CS), CSD, CSE (IoT), IT, MECH, SFE)

PREREQUISITE:

Basic knowledge of calculus, differential equations, and physics (especially electromagnetism) with strong problem-solving skills for circuit analysis.

OBJECTIVE:

- To introduce the fundamentals of electrical and electronic systems, enabling analysis and application of basic circuits, machines and digital components.

UNIT - I	DC AND AC CIRCUITS	(9)

DC circuits: Electrical quantities – Ohm's law – Kirchhoff's current and voltage laws – Series and parallel resistors – Simple problems.

AC circuits: Waveforms, average value, RMS value, form factor, peak factor, power and power factor – Pure R, L and C – Series RL and RC circuits.

UNIT - II	ELECTRICAL MACHINES	(9)

DC machine: construction, working principle and applications – Single phase induction motor: Capacitor start capacitor run induction motor – Three phase induction motor: construction and working principle – Single phase transformer: construction and working principle.

UNIT - III	ELECTRICAL INSTALLATIONS	(9)

Classification of wiring system – Earthing – Types: pipe earthing, plate earthing, strip earthing – On-line and Off-line UPS – Lamps: Fluorescent tube, LED.

UNIT - IV	ANALOG ELECTRONICS	(9)

PN junction diode and Zener diode: Principle of operation and V-I characteristics – Half and full wave rectifier – Bipolar Junction Transistor: Construction and working.

UNIT - V	DIGITAL ELECTRONICS	(9)

Digital logic gates: NOT, AND, OR, NAND, NOR, EXOR – Digital circuits: half-adder, full-adder, JK and D flip flop – Introduction to Arduino components and IDE.

LECTURE = 45, SELF LEARNING = 45, TOTAL = 90 PERIODS

Chairman (BoS)

COURSE OUTCOMES:

Upon completion of the course, the students will be able to:

COs	Course Outcome	Bloom's Taxonomy Level
CO1	Interpret the fundamental concepts of electrical circuits to solve the DC and AC circuit problems.	Understand
CO2	Elaborate the construction and working principles of DC machines, induction motors and transformers.	Understand
CO3	Describe the wiring systems, earthing techniques and the functionality of UPS and lighting systems.	Understand
CO4	Identify the operation and characteristics of PN junction, Zener diode and BJT.	Understand
CO5	Illustrate the functionality of digital logic gates, adders, flip-flops and Arduino components.	Understand

TEXT BOOKS:

1 Kothari D.P and Nagrath I.J, "Basic Electrical and Electronics Engineering", Second Edition, McGraw Hill, Uttar Pradesh, 2020.

2 Bhattacharya S.K, "Basic Electrical and Electronics Engineering", Pearson Education, Delhi, Second Edition, 2017.

REFERENCES:

1 Jain V.K, Amitabh Bajaj, "Design of Electrical Installation", University Science Press, New Delhi, 2016.

2 Ramamoorty M, Chandra Sekhar O, "Electrical Machines", PHI Learning Pvt. Ltd, Delhi, 2018.

3 Christopher Siu, "Electronic Devices, Circuits, and Applications", Springer International Publishing, 2022.

4 Kothari D.P, Dhillon J.S, "Digital Circuits & Design", First Edition, Pearson, Delhi, 2015.

Mapping of COs with POs and PSOs

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

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode-637215, Centre for Academic Courses

24GET19	தமிழர்மரபு	CATEGORY	L	T	P	SL	C
		HSMC	15	0	0	15	1

(அனைத்து துறைகளுக்கும் பொதுவானது)

முன்கூட்டிய துறைசார் அறிவு : தேவை இல்லை

அலகு – I	மொழி மற்றும் இலக்கியம்	[03]

இந்திய மொழிக் குடும்பங்கள் – திராவிட மொழிகள் – தமிழ் ஒரு செம்மொழி – தமிழ் செவ்விலயக்கிகியங்கள் – சங்க இலக்கியத்தின் சமயச்சார்பற்ற தன்மை – சங்க இலக்கியத்தில் பகிர்தல் அறம் – திருக்குறளில் மேலாண்மைக் கருத்துக்கள் – தமிழ் காப்பியங்கள், தமிழகத்தில் சமணபௌத்த சமயங்களின் தாக்கம் – பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள் – சிற்றிலகியங்கள் தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி – தமிழ் இலக்கியவளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.

அலகு – II	மரபு – பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை – சிற்பக் கலை	[03]

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

அலகு – III	நாட்டுப் புறக் கலைகள் மற்றும் வீர விளையாட்டுக்கள்	[03]

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

அலகு – IV	தமிழர்களின் திணைக் கோட்பாடுகள்	[03]

தமிழகத்தின் தாவரங்களும், விலங்குகளும் – தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள் – தமிழர்கள் போற்றிய அறக்கோட்பாடு - சங்கக்காலத்தில் தமிழகத்தில் எழுத்தறிவும் கல்வியும் – சங்ககால நகரங்களும் துறை முகங்களும் – சங்ககாலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி – கடல் கடந்த நாடுகளில் சோழர்களின் வெற்றி.

அலகு – V	இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு	[03]

இந்திய விடுதலைப்போரில் தமிழர்களின் பங்கு – இந்தியாவின் பிறபகுதிகளில் தமிழ் பண்பாட்டின் தாக்கம் – சுயமரியாதை இயக்கம் – இந்திய மருத்துவத்தில் சித்தமருத்துவத்தின் பங்கு கல்வெட்டுகள் கையெழுத்துப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரலாறு.

Total (L= 15, SL=15) =30 Periods

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode, Centre for Academic Courses

பாடம் கற்றத்தின் விளைவுகள்:பாடத்தை வெற்றிகரகமாக கற்று முடித்த பின்பு, மாணவர்களால் முடியும் விளைவுகள்		அறிவாற்றல் நிலை
CO1:	தமிழ்மொழியின் செந்ததன்மை மற்றும் இலக்கியம் குறித்த தெரிதல்	புரிதல்
CO2:	தமிழர்களின் சிற்பக்கலை, ஓவியக்கலை மற்றும் இசைக் கருவிகள் குறித்த தெளிவு	புரிதல்
CO3:	தமிழர்களின் நாட்டுப் புரைக் கலைகள் மற்றும் வீரவிளையாட்டுகள் குறித்த தெளிவு	புரிதல்
CO4:	தமிழர்களின் திணைக் கோட்பாடுகள், சங்ககாலவணிகம் மற்றும் சோழர்களின் வெற்றிகள் குறித்த தகவல்கள்.	புரிதல்
CO5:	இந்திய தேசிய இயக்கம், சுயமரியாதை இயக்கம் மற்றும் சித்த மருத்தவம் பற்றிய புரிதல்.	புரிதல்

Text Books:

1	தமிழகவரலாறு-மக்களும்பண்பாடும்-கேகேபிள்ளை (வெளியீடு தமிழ்நாடு பாடநூல் மற்றும் கல்வியில் பணிகள் கழகம்) ,உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை, 2002
2	கணினித்தமிழ்முனைவர் இல. சுந்தரம், விகடன் பிரசுரம், 2016

Reference Books :

1	கீழடி-வைகை நதிக்கரையில் சங்ககால நகரநாகரிகம்.(தொல்லியல்துறைவெளியீடு)
2	பொருநை – ஆற்றங்கரை நாகரிகம் (தொல்லியல் துறை வெளியீடு)
3	Social Life of Tamils (Dr.K.K.Pillay) A joint Publication of TNTB & ESC and RMRL. – (in print)
4	Social Life of the Tamils – The Classical Period (Dr.S.Sigaravelu) (Published by: International Institute of Tamil Studies).

Mapping of COs with POs and PSOs

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	-	-	-	-	-	3	3	-	2	-	3	-	-
CO2	-	-	-	-	-	3	3	-	2	-	3	-	-
CO3	-	-	-	-	-	3	3	-	2	-	3	-	-
CO4	-	-	-	-	-	3	3	-	2	-	3	-	-
CO5	-	-	-	-	-	3	3	-	2	-	3	-	-
Avg.	-	-	-	-	-	**3**	**3**	-	**2**	-	**3**	-	-

1. சிறிது (குறைந்த) 2. மிதமான (நடுத்தர) 3. கணிசமான (உயர்)

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode-637215 * Centre for Academic Courses *

24GET19	HERITAGE OF TAMILS	CATEGORY	L	T	P	SL	C
		HSMC	15	0	0	15	1

(Common to all branches)

Prerequisite(s): *No prerequisites are needed for enrolling into the course*

UNIT - I	LANGUAGE AND LITERATURE	[03]

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	[03]

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	[03]

Therukoothu, Karagattam, VilluPattu, KaniyanKoothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.

UNIT - IV	THINAI CONCEPT OF TAMILS	[03]

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	[03]

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 (L= 15, SL=15) =30 Periods

Course Outcomes: **At the end of the course, the student will be able to**		**Cognitive Level**
CO1:	Recognize the extensive literature of Tamil and its classical nature.	Understand
CO2:	Apprehend the heritage of sculpture, painting and musical instruments of ancient people.	Understand
CO3:	Review on folk and martial arts of Tamil people.	Understand
CO4:	Insight thinai concepts, trade and victory of Chozha dynasty.	Understand
CO5:	Realize the contribution of Tamil in Indian freedom struggle, self-esteem movement and siddha medicine.	Understand

Chairman (BoS)

Text Books:	
1	Social Life of Tamils (Dr.K.K.Pillay) A joint Publication of TNTB & ESC and RMRL – (in print)
2	Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukarasu) (Published by : International Institute of Tamil Studies)
Reference Books:	
1	Social Life of the Tamils – The Classical Period (Dr.S.Sigaravelu) (Published by: International Institute of Tamil Studies).
2	The Contribution of the Tamil to Indian Culture (Dr.M.Valarmathi) (Puplished by International Institute of Tamil Studies).
3	Keeladi – 'Sangam City Civilzation on the banks of river Vaigai; (Jointly Published by: Department of Archaeology & Tamilnadu Text Book and Educational Services Corporation, Tamilnadu)
4	Studies in the History of India with Special Reference to Tamilnadu (Dr.K.K.Pillay) (Published by: The Author)

Mapping of COs with POs and PSOs

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	-	-	-	-	-	3	3	-	2	-	3	-	-
CO2	-	-	-	-	-	3	3	-	2	-	3	-	-
CO3	-	-	-	-	-	3	3	-	2	-	3	-	-
CO4	-	-	-	-	-	3	3	-	2	-	3	-	-
CO5	-	-	-	-	-	3	3	-	2	-	3	-	-
Avg.	-	-	-	-	-	**3**	**3**	-	**2**	-	**3**	-	-

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Chairman (BoS)

24MAI19	MATRICES AND CALCULUS	Category	L	T	P	SL	C
		BSC	45	0	30*	45	4

SEMESTER I - B.E / B.TECH (Common to All Branches)

PREREQUISITE:

The Students should have a basic understanding of calculus, matrices, and differential equations to effectively follow the concepts in this course.

OBJECTIVES:

Build a strong foundation in eigen values, eigen vectors, quadratic forms, and higher-order linear differential equations. Develop skills in differential and vector calculus to analyze curves, optimize multivariable functions, and interpret vector fields.

UNIT - I	LINEAR ALGEBRA	(9)

Characteristic equation – Eigen values and Eigen vectors of a real matrix – Properties of Eigen values and Eigen vectors (Excluding proof) – Cayley Hamilton theorem (excluding proof) – Quadratic forms – Reduction of quadratic form to canonical form by orthogonal transformation.

UNIT - II	ORDINARY DIFFERENTIAL EQUATIONS	(9)

Linear differential equations of second and higher order with constant coefficients – Differential equations with variable coefficients – Legendre's linear differential equations – Method of variation of parameters.

UNIT - III	DIFFERENTIAL CALCULUS	(9)

Curvature - Radius of curvature (Cartesian co-ordinates only) – Centre of curvature and Circle of curvature – Involutes and Evolutes (Parabola, Ellipse, Hyperbola and Rectangular hyperbola).

UNIT - IV	FUNCTIONS OF SEVERAL VARIABLES	(9)

Partial derivatives – Taylor's series expansion – Jacobians - Maxima and Minima for functions of two variables – Method of Lagrangian multipliers.

UNIT - V	VECTOR CALCULUS	(9)

Gradient, Divergence and Curl – Directional derivative – Irrotational and solenoid vector fields – Green's theorem in plane, Gauss divergence theorem and Stoke's theorem (Cube, Cuboid and Rectangular Paralleopiped only).

List of Experiments(R Software):

1. Calculate the characteristic equation and eigen values.
2. Find the eigenvector and diagonalization of a given matrix.
3. Solving ODE with constant coefficients.
4. Detect the solution of ODE with variable coefficients.
5. Identify the radius of curvature.
6. Reckon the Taylor's series for functions of two variables.
7. Estimate the divergence and curl.

* Alternative weeks : Tutorial and Laboratory

L = 45 , * P = 15 & *T = 15, SL = 45, TOTAL: 120 PERIODS

Chairman (BoS)

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

COs	Course Outcome	Cognitive Level
CO1	Apply eigen values, eigen vectors, and the Cayley-Hamilton theorem to solve matrix problems and diagonalize quadratic forms into canonical form.	Apply
CO2	Apply methods to solve second and higher-order linear differential equations with constant and variable coefficients.	Apply
CO3	Apply concepts of differential calculus to find curvature, center of curvature, and evolutes of standard Cartesian conic sections.	Apply
CO4	Apply partial derivatives, Jacobians, and lagrangian multipliers to determine local extremum of multivariable functions.	Apply
CO5	Apply vector differential operators to the vector fields and verify Green's, Gauss divergence, and Stokes' theorems for geometries.	Apply

TEXT BOOKS:

1.Ravish R Singh and Mukul Bhatt, "Engineering Mathematics – I", Mc-Graw Hill Publications, New Delhi, 2nd Edition, 2020.
2.B. S. Grewal, "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 40th Edition, 2020.

REFERENCES:

1. Bali N. P and Manish Goyal, "Engineering Mathematics", Laxmi Publications Pvt Ltd., 7th Edition, 2020.
2.Dass H.K, "Advance Engineering Mathematics", S. Chand and company, 11th Edition, 2014.
3. Jain R.K. and Iyengar S.R.K," Advanced Engineering Mathematics", Narosa Publications, 8th Edition, 2012.
4.Erwin Kreyszig, "Advanced Engineering Mathematics", Wiley India, New Delhi, 10th Edition 2016.
5.https://archive.nptel.ac.in/courses/111/108/111108157/

Mapping of COs with POs and PSOs

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

1-low, 2-medium, 3-high

LIST OF EQUIPMENTS (For a Batch of 30 Students)

S.No.	Name of the Equipments	Quantity
1.	A computer with Intel (R) Core (TM) i3 – 2130 CPU @ 3.40GHZ processor and 4 GB RAM – DDR3.	30 Nos.
2.	R software (Open source)	30 Nos.

Chairman (BoS)
K.S.R. College of Engineering

24PHI07	ENGINEERING PHYSICS	Category	L	T	P	SL	C
		BSc	45	-	30	45	4

(Common to AIDS, BME,CSE,CSE(IoT),CS,ECE,EEE &IT)

PREREQUISITE: The students must have knowledge about basic concepts of light sources, dual nature of radiation, conductivity of metals, semiconducting materials, different types of magnetic materials, super conducting materials and their applications.

OBJECTIVES: To provide a comprehensive understanding of the fundamental principles, mechanisms, applications of lasers, fiber optics, quantum physics, semiconductors, magnetic materials and superconductors in modern Science and technology.

UNIT – I **LASER AND FIBRE OPTICS** **(9)**

Lasers: Principles of spontaneous emission and stimulated emission - Einstein's co-efficient A & B– population inversion – CO_2 laser – semiconductor diode laser – homo – junction & hetero – junction (qualitative analysis only) – applications.

Fibre Optics: propagation of light in optical fibre– numerical aperture and acceptance angle – types of optical fibre (materials, refractive index profile and modes of propagation) – applications -fibre optic sensors: pressure and displacement sensors.

UNIT – II **QUANTUM MECHANICS** **(9)**

Introduction – black body radiation– Planck's theory (derivation) – deduction of Wien's displacement law and Rayleigh – Jean's Law from Planck's theory– Compton effect (derivation) – de-Broglie concept of matter waves – physical significance of a wave function – Schrödinger wave equations (Time dependent & time independent) – particle in a box (one dimensional).

UNIT – III **CONDUCTING MATERIALS** **(9)**

Classical free electron theory – expression for electrical conductivity – thermal conductivity – Wiedemann-Franz law – drawbacks of classical free electron theory – quantum theory – Fermi energy – Fermi -Dirac distribution function – density of states and carrier concentration of metals.

UNIT – IV **SEMICONDUCTING MATERIALS** **(9)**

Introduction – Intrinsic semiconductor: carrier concentration in an intrinsic semiconductor– Fermi level of an intrinsic semiconductor– variation of Fermi energy level with temperature – Extrinsic semiconductors: carrier concentration in n– type and p-type semiconductors (qualitative analysis only)– Fermi level of extrinsic semiconductors– variation of Fermi energy level with temperature and carrier concentration in an extrinsic semiconductors – Hall effect – determination of Hall co-efficient for n – and p – type semiconductors– applications.

UNIT – V **MAGNETIC AND SUPERCONDUCTING MATERIALS** **(9)**

Magnetic Materials: Introduction – origin of magnetic moment – dia, para and ferromagnetic martials– domain theory of ferro-magnetism – Hysteresis – soft and hard magnetic materials.

Superconducting Materials: Introduction to superconductivity – properties and types of superconductor – application of superconductors: magnetic levitation– SQUIDS– cryotron.

List of exercises/experiments:

1. Determine the thickness of the given thin paper using Air wedge method.
2. Find the acceptance angle and numerical aperture of a given optical fibre.
3. Evaluate the wavelength of semiconductor laser.
4. Estimate the particle size of the lycopodium powder using semiconductor laser
5. Enumerate the thermal conductivity of a bad conductor by Lee's disc method.
6. Compute the band gap of an intrinsic semiconductor.
7. Calculate the width of the CD groove with a help of semiconductor laser.
8. Assess the Hysteresis loss of magnetic materials using B-H curve.

K.S.R. College of Engineering, Tiruchengode-637 215. Centre for Academic Courses

Dr. R.V.M. RANGARAJAN
CHAIRMAN
BOARD OF STUDIES (S&H)
K.S.R. COLLEGE OF ENGINEERING
TIRUCHENGODE-637 215

Lecture: 45, Laboratory: 30, SL:45, TOTAL: 120 PERIODS

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

COs	Course Outcome	Cognitive level
CO1	Elucidate laser principles, types, light propagation and the applications of optical fibers.	Understand
CO2	Apply quantum theory for Planck's theory, Compton Effect and Schrödinger's equation of matter waves.	Apply
CO3	Calculate electrical conductivity and Fermi energy by considering quantum free electron theory.	Apply
CO4	Infer charge carrier behavior in intrinsic, extrinsic semiconductors and Hall effect.	Understand
CO5	Describe principles, classifications, applications of magnetic materials and superconductors.	Understand

Text Books :

1. M.N. Avadhanulu and P.G. Kshirsagar, "A text book of Engineering Physics", S. Chand and Company, New Delhi, 11th Edition, 2018.
2. R.K. Gaur & S.L. Gupta, "Engineering Physics", Dhanpat Rai Publication, New Delhi, 7th Edition, 2014.

Reference Books :

1. R. Murugeshan and Kiruthiga Sivaprasath, "Modern Physics", S. Chand & Company, New Delhi, 17th Edition, 2014.
2. V. Rajendran, "Engineering Physics", Tata McGraw-Hill, New Delhi, 1st Edition, 2011.
3. S.O. Pillai, "Solid State Physics", New Age Publication, Chennai, 10th Edition, 2023.
4. Arthur Beiser, Shobhit Mahajan, S. Rai Choudhury, "Concepts of Modern Physics", McGraw-Hill, New Delhi, 7th Edition, 2015.

Mapping of COs with POs and PSOs

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
CO1	3	2	-	-	-	-	1	2	2	-	2	-	-
CO2	3	3	2	-	-	-	1	2	2	-	2	-	-
CO3	3	3	2	-	-	-	1	2	2	-	2	-	-
CO4	3	2	-	-	-	-	1	2	2	-	2	-	-
CO5	3	2	-	-	-	-	1	2	2	-	2	-	-
Avg.	3	2	-	-	-	-	1	2	2	-	2	-	-

1-low, 2-medium, 3-high

BoS chairman

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode-637 215. Centre for Academic Courses

24PHI07 - ENGINEERING PHYSICS
I Year B.E (AIDS, BME, CSE, CSE (IOT), CS, ECE, EEE & B.Tech IT)
Requirements for a batch of 30 students
Regulation (2024)

S.No.	Description of Equipment	Quantity required
1.	Air wedge apparatus. (with traveling microscope and accessories)	5 Nos
2.	Acceptance angle and numerical aperture of an optical fibre. (with accessories)	5 Nos
3.	Wavelength of semiconductor laser beam. (with accessories)	5 Nos
4.	Particle size of Lycopodium powder. (with accessories)	5 Nos
5.	Lee's disc apparatus. (with accessories)	5 Nos
6.	Band gap apparatus. (with accessories)	5 Nos
7.	Width of the groove of CD using laser. (with accessories)	5 Nos
8.	B-H curve apparatus. (with accessories)	5 Nos

BoS chairman

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode-637215. Centre for Academic Courses

24ITI16	PROGRAMMING FOR PROBLEM SOLVING	Category	L	T	P	SL	C
		ESC	15	0	90	15	4

(COMMON TO AI&DS,BME,CSE,CS,ECE,EEE,IOT & IT)

PREREQUISITE:

A basic grasp of computer concepts is essential. Familiarity with logical thinking and simple algorithm design is recommended.

OBJECTIVES:

To enable students to understand the fundamentals of C programming and develop problem-solving skills. The course focuses on writing structured programs using control statements, functions, arrays, pointers, structures and file operations.

UNIT - I	C PROGRAMMING BASICS	(21)

Structure of C program -- C Character set - Identifies and Keywords - Data Types – Declarations- Expressions - Statements and Symbolic constants. Operators: Arithmetic Operators - Unary operators - Relational and Logical Operators - Assignment operators - Conditional operators. Unformatted and formatted Input/output functions - pre-processor directives and storage classes. **(Theory-3)**

List of Exercise:

1. Display Student Details Using Formatted I/O.
2. Arithmetic Operations on Two Numbers.
3. Check Whether a Number is Positive, Negative or Zero.
4. Find the Greatest of Three Numbers.
5. Grade Calculation Using Conditional Operator.
6. Temperature Conversion between Celsius and Fahrenheit.
7. Determine Whether a Number is Odd or Even.
8. Character Classification: Letter, Digit or Symbol.
9. Demonstrate Use of Storage Classes in C.
10. Macro Definition and Preprocessor Directive Example. **(Laboratory-18)**

UNIT - II	CONTROL STATEMENTS, ARRAYS AND STRING	(21)

Conditional statements - Unconditional statements - branching and looping statements - Arrays - Initialization - Declaration - One dimensional and Two dimensional arrays. String: String operations - String Arrays. Simple programs – sorting - searching - matrix operations. **(Theory-3)**

List of Exercise:

1. Check Whether a Number is Prime Using Looping Statements.
2. Generate Fibonacci Series Using Conditional and Looping Constructs.
3. Find Factorial of a Number Using while and for Loops.
4. Sum and Average of Elements in a One Dimensional Array.
5. Find the Largest and Smallest Elements in an Array.
6. Sort Array Elements in Ascending Order (Bubble Sort).
7. Search for an Element in an Array Using Linear Search.
8. Matrix Addition and Subtraction Using Two Dimensional Arrays.
9. Perform Matrix Multiplication Using Nested Loops.
10. String Manipulation: Concatenate, Reverse and Find Length of a String. **(Laboratory-18)**

Chairman (BoS)

UNIT - III	FUNCTIONS AND POINTERS	(21)

Functions: Library functions and user defined functions - Function prototypes and function definitions - Call by value - Call by reference - Recursion – Pointer: Definition - Initialization - Pointers arithmetic - Pointers and arrays - Pointers and Functions - Dynamic memory Allocation - Example Programs. **(Theory-3)**

List of Exercise:

1. Create and Use User Defined Functions for Basic Arithmetic Operations.
2. Demonstrate Call by Value and Call by Reference Using Swap Function.
3. Find Factorial of a Number Using Recursion.
4. Generate Fibonacci Series Using Recursive Function.
5. Count Vowels and Consonants in a String Using User Defined Function.
6. Demonstrate Pointer Arithmetic with Arrays.
7. Pass Arrays to Functions Using Pointers.
8. Access and Modify Array Elements Using Pointers.
9. Allocate and Free Memory Using malloc, calloc and free.
10. Create a Program Using Function Pointer for Menu Driven Operations. **(Laboratory-18)**

UNIT - IV	STRUCTURES AND UNIONS	(21)

Need for structure data type - structure definition - Structure declaration - Structure within a structure - Passing structures to functions - Array of structures - Pointers to structures - Union - Programs using structures and Unions. **(Theory-3)**

List of Exercise:

1. Define and Display Student Details Using Structure.
2. Calculate and Display Employee Salary Using Structure.
3. Store and Display Book Details Using Array of Structures.
4. Pass Structure Variables to Functions for Processing Student Marks.
5. Nested Structure Example: Store and Display Address Information.
6. Use Pointer to Structure to Access and Modify Data.
7. Create a Program to Sort Student Records Using Array of Structures.
8. Compare Two Dates Using Structures.
9. Demonstrate the Use of Union to Store Multiple Data Types.
10. Create a Program Using Structure to Perform Complex Number Addition. **(Laboratory-18)**

UNIT - V	FILE MANIPULATIONS	(21)

Files: File operations- Binary files and text files - Types of File Processing - Sequential access - Random Access File - Command line arguments. Case Studies: GEMINI Operating System.**(Theory-3)**

List of Exercise:

1. Write and Read Data from a Text File.
2. Append New Records to an Existing Text File.
3. Count the Number of Characters, Words, and Lines in a File.
4. Copy Contents from One File to Another.
5. Store and Retrieve Student Records Using Binary Files.
6. Search a Specific Record in a Binary File (Random Access).
7. Update a Record in a Binary File Using File Pointers.
8. Delete a Specific Record from a File Using Temporary File Technique.
9. Display File Content Using Command Line Arguments.
10. Merge Two Text Files into a Single File Using File Operations. **(Laboratory-18)**

L= 15, T=0, P=90, SL=15, TOTAL: 120 PERIODS

Chairman (BoS)

COURSE OUTCOMES:
At the end of the course, the learners will be able to:

COs	Course Outcome	Cognitive Level
CO1	Explain the use of console input and output functions in C programs.	Understand
CO2	Construct C programs using arrays, decision making and looping statements to solve basic problems.	Apply
CO3	Differentiate between call by value and call by reference while using functions and pointers in C.	Analyze
CO4	Implement real time applications using structures and unions to manage and organize complex data.	Apply
CO5	Assess the effectiveness of different file handling methods for managing data in real time applications.	Evaluate

TEXT BOOKS:

1. Deitel and Deitel, "C How to Program", Pearson Education, 9th Edition, March 2024.
2. Yashavant P. Kanetkar, "Let Us C", BPB Publications, 20th Edition, 2024.

REFERENCES:

1. Kernighan B.W and Ritchie D.M, "The C Programming language", Second Edition, Pearson Education, 2006.
2. Byron S Gottfried, "Programming with C", Schaum's Outlines, Second Edition, Tata McGraw-Hill, 2006.
3. Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.
4. E. Balagurusamy, "Programming in ANSI C", seventh edition, Tata McGraw Hill, 2016.
5. Ashok N. Kamathane, 'Computer Programming,PearsonEducation,India,ThirdEdition,2015.

Mapping of COs with POs and PSOs

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

1-low, 2-medium, 3-high

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode-637215, Centre for Academic Courses

24MEP16	ENGINEERING GRAPHICS LABORATORY	Category	L	T	P	SL	C
		ESC	15	0	30	15	2

(Common to BME, CSE, CSE(CS), CSD, CSE(IoT), IT, ECE, EEE)

PREREQUISITE

Engineering Graphics Laboratory requires a good understanding of geometry. This includes knowledge of shapes, angles, dimensions, and spatial reasoning. The ability to visualize and interpret three-dimensional objects from two-dimensional drawings is crucial.

OBJECTIVES:

Instruct the utility of drafting & modeling packages in orthographic and isometric drawings and train the usage of 2D and 3D modeling

List of Exercise/Experiments:

1. Study of drawing tools, commands and coordinate systems in 2D software.
2. Cycloid and Conic curves.
3. Orthographic projections of pictorial views.
4. Orthographic views of straight lines.
5. Orthographic views of planes.
6. Orthographic views of simple solids.
7. The sectional view and the true shape of simple solids.
8. Development of lateral surfaces of simple solids.
9. Isometric projection of simple solids.
10. Drafting the 2D multi-view drawings from 3D model.

LIST OF EQUIPMENT (for a batch of 30 Students)

S.No.	Name of the Equipment	Quantity
1.	Intel i3 Processor, 8 GB RAM with 2 GB Graphics Card	30 Nos
2.	Licensed software for drafting and modeling	30 Nos

L:15 P:30 SL:15 TOTAL: 60 PERIODS

COURSE OUTCOMES:

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

COs	Course Outcome	Exp. No.	Cognitive Level
CO1	Explain the fundamentals of engineering drawing and AutoCAD tool.	1	Understand
CO2	Construct projections of points, lines, and planes, then develop a virtual drawing using AutoCAD tool.	2,3 & 4	Apply
CO3	Apply projection principles to convert pictorial views into orthographic drawings	5,6	Apply
CO4	Model the Solid Projections and Sectioning of the solids by the AutoCAD tool.	7,8	Apply
CO5	Develop isometric drawings of simple objects reading the orthographic projections of those objects.	9,10	Apply

Chairman (BoS)

REFERENCES:

1. Bhatt. N. D., Engineering Drawing, Charotar Publishing House, Fifty Third Edition, 2014.
2. Basant Agarwal and Agarwal. C. M., Engineering Drawing, Tata McGraw Hill Publishing Company Limited, 2018.

Mapping of COs with POs and PSOs

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

1-low, 2-medium, 3-high

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode, Academic Courses

24GEP16	ENGINEERING EXPERIENCE LABORATORY	Category	L	T	P	SL	C
		ESC	0	0	30	0	1

(Common to BME, CSE, CSE(CS), CSD, CSE(IoT), ECE, EEE, IT)

PREREQUISITE:

A solid foundation in basic electrical components such as switches, wires, fuses, and light bulbs, including the roles of line, neutral, and ground wires. Basic understanding of physics and core principles of electrical and mechanical engineering.

OBJECTIVE:

To develop practical skills in basic electrical wiring, electronic interfacing with Arduino and IoT, and fundamental mechanical tools and systems.

LIST OF EXPERIMENTS

GROUP - A (ELECTRICAL)

1. Fluorescent lamp wiring.
2. Stair-case wiring.
3. Residential house wiring using switches, fuse, indicator and lamp.
4. Measurement of Energy in single phase system.

GROUP - B (ELECTRONICS)

1. Study of Electronic Components, Instruments, Internet of Things (IoT) and Arduino IDE.
2. Controlling the Light Emitting Diode (LED) with a push button using Arduino.
3. Interfacing of a Sensor (Ultrasonic, Rain, Voltage, Current & PIR) with Arduino Uno.
4. Controlling of LED through Wi-Fi using ESP8266.

GROUP - C (MECHANICAL)

1. Study of plumbing line sketches for water supply and carpentry tools.
2. Study of welding tools and centrifugal pump.

COURSE OUTCOMES:

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

COs	Course Outcome	Bloom's Taxonomy Level
CO1	Construct different types of wiring used in residential houses.	Apply
CO2	Measure the energy in single-phase system.	Apply
CO3	Demonstrate different electronic components, instruments, IoT and Arduino IDE.	Apply
CO4	Construct the control circuit with the help of Arduino and sensors.	Apply
CO5	Describe the plumbing, carpentry, welding components and centrifugal pump works for engineering practices and applications.	Understand

Chairman (BoS)

K.S.R. College of Engineering. Tiruchengode-637215. Centre for Academic Courses

REFERENCES:

1. Gupta J.P., "A Course in Electrical Installation Estimating and Costing", S.K. Kataria and Sons, Delhi, Reprint 2013 Edition, 2013.
2. Mike Cheich, "Arduino Book for Beginners", Programming Electronics Academy, 2021.

Mapping of COs with POs and PSOs													
COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	2	-	-	2	2	3	2	-	3	-	-
CO2	3	3	2	-	-	2	2	3	2	-	3	-	-
CO3	3	3	2	-	-	-	2	3	2	-	3	-	-
CO4	3	3	2	-	-	-	2	3	2	-	3	-	-
CO5	3	3	2	-	-	-	2	3	2	-	3	-	-

LIST OF EQUIPMENT (For a Batch of 30 Students)

S.No.	Name of the Equipment	Qty.
1.	Single-phase house wiring setup	2 Nos.
2.	Staircase wiring setup	2 Nos.
3.	Fluorescent lamp wiring setup	2 Nos.
4.	Energy Meter	5 Nos.
5.	Electrical Measuring Instruments	10 Nos.
6.	Ultrasonic Sensor	5 Nos.
7.	Rain Sensor	5 Nos.
8.	Voltage Sensor	5 Nos.
9.	Current Sensor	5 Nos.
10.	PIR Sensor	5 Nos.
11.	ESP8266 & Cable	15 Nos.
12.	Arduino UNO & Cable	15 Nos.
13.	DHT 11	5 Nos.
14.	Temperature sensor	5 Nos.
15.	Red LED	15 Nos.
16.	2-leg push Button	15 Nos.
17.	4-leg push Button	15 Nos.
18.	Personal Computer	15 Nos.

Chairman (BoS)

24SDP19	SOFT SKILLS DEVELOPMENT – I	Category	L	T	P	SL	C
		EEC	0	0	30	0	1

(Common to All Branches)

OBJECTIVES:

To introduce students to the fundamental concepts of aptitude, emphasizing its relevance in academic pursuits and career advancement. It also focuses on developing proficiency in verbal reasoning, which enhances the students' problem-solving abilities and critical thinking skills.

UNIT - I	NUMBER SYSTEM	(6)

Introduction to Number System and its Classification – Divisibility Rules and Problems – Remainder Theorem – HCF & LCM and its properties.

UNIT - II	NUMBERS	(6)

Introduction to Digits, Place value, Face value and Fractions – BODMAS Rule and Simplifications – Unit Digit, Squares and Cubes.

UNIT - III	AVERAGES	(6)

Introduction to Averages, Sum of Observations and Number of Observation – Average of Consecutive Numbers – Weighted Average – Change in Average – Averages in Real-life Scenarios.

UNIT - IV	LOGICAL REASONING	(6)

Analogies – Alphabet Series and Number Series – Directions and Distance.

UNIT - V	VERBAL ABILITY	(6)

Reading Comprehension – Synonyms and Antonyms – Sentence Formation – Paragraph Formation.

TOTAL: 30 PERIODS

COURSE OUTCOMES:

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

COs	Course Outcome	Cognitive Level
CO1	Explain the classification of number systems, apply divisibility rules to identify number properties, and understand the concepts of HCF and LCM.	Understand
CO2	Solve problems using face and place value, fractions, BODMAS and number properties.	Apply
CO3	Apply concepts of averages, to analyse and solve real-life and quantitative aptitude problems effectively.	Apply
CO4	Resolve problems with series & direction based logical reasoning.	Apply
CO5	Interpret passages to demonstrate reading comprehension, and explain the structure of correct sentence and paragraph formation.	Understand

Chairman (BoS)

K.S.R. College of Engineering, Centre for Academic Courses, Tiruchengode-637215

TEXT BOOKS:

1. R S Aggarwal, "Quantitative Aptitude for Competitive Examinations".
2. Abhijit Guha, "Quantitative Aptitude for Competitive Examinations".
3. Nishit K. Sinha, "Logical Reasoning and Data Interpretation for CAT".
4. R.S. Agarwal, "A Modern Approach to Verbal & Non-Verbal Reasoning".
5. Edgar Thorpe & Showick Thorpe, "English for Competitive Examinations".

REFERENCES:

1. Arun Sharma, Quantitative Aptitude for CAT, 11e, 2025.
2. Arun Sharma, Logical Reasoning for CAT, 7e, 2025.
3. Wren & Martin, High School English Grammar & Composition.
4. https://prepinsta.com/.
5. https://www.geeksforgeeks.org/quantitative-aptitude/?ref=shm.
6. https://www.youtube.com/@FeelFreetoLearn/playlists.

Mapping of COs with POs and PSOs

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

Chairman (BoS)

K.S.R. College of Engineering Tiruchengode-637215 Centre for Academic Courses

24ECT21	DESIGN THINKING	Category	L	T	P	SL	C
		PCC	30	0	0	30	2

(COMMON TO BME, EEE & ECE)

PRE-REQUISITE: Nil

OBJECTIVE:

To equip learners with a structured, human-centered approach to problem-solving using the principles and stages of Design Thinking, including empathy, problem definition, ideation, prototyping, and effective communication.

UNIT - I	FUNDAMENTALS OF DESIGN THINKING	(6)

What is Design Thinking? - When to use Design Thinking? - How to do it? - Who are involved in this? – Design The Thinking™– Personal Visualization, The Wheel of Life & Balancing Priorities – Appreciating 'Design' – The 3 Laws of Design Thinking.

UNIT - II	STEP 1: THE 'FEEL' STAGE	(6)

What is this stage about? – What role does a Design Thinker play in this stage? Tools – What is the purpose in this stage? – Persona – Journey Mapping – Stakeholder Mapping & CATWOE Analysis - Cartographic Perspective (LO) – Empathy Map – Case Study: Understanding the Stakeholders.

UNIT - III	STEP 2: THE 'DEFINE' STAGE	(6)

What is this stage about? – What role does a Design Thinker play in this stage? – What is the most important aspect of this stage? – Tools – What is the purpose in this stage? – Five-Whys – Anti-Pattern – Paraphrasing the Problem – Challenge Mapping – LORD: Definitive skill set for a Design Thinker – Case Study: Relooking at the Problem.

UNIT - IV	STEP 3: THE 'DIVERGENCE' & 'CONVERGENCE' STAGE	(6)

What is this stage about? – What role does a Design Thinker play in this stage? – What is the most important aspect of this stage? – Tools – What is the purpose in this stage? – Brainstorming – Metaphor – Random Association Technique – End-State Visualization - 10gm-100gm-1000gm – Prototyping – Wire framing for digital products – Case Study: Prototyping and Communicating for Effective Outcome.

UNIT - V	STEP 5: THE 'COMMUNICATION' STAGE	(6)

What is this stage about? – What role does a Design Thinker play in this stage? – What is the most important aspect of this stage? – Tools – What is the purpose in this stage? – The 4Cs Framework – Naming – Packaging – Story boarding – Presentation – Distribution.

TOTAL (L:30, SL:30): 60 PERIODS

COURSE OUTCOMES:

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

COs	Course Outcome	Cognitive Level
CO1	Demonstrate an understanding of Design Thinking concepts and principles by explaining their relevance in real-world contexts.	Understand
CO2	Articulate the significance of a Design Mindset and its impact on creative problem-solving.	Understand
CO3	Apply Design Thinking methods effectively at each stage of the problem-solving process.	Apply

C. Gunt
Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode-637215. Centre for Academic Courses

CO4	Identify and implement the phases of Design Thinking to address complex challenges systematically.	Apply
CO5	Use a variety of Design Thinking tools to develop innovative solutions and refine ideas through iteration.	Apply

TEXT BOOKS:

1. UnMukt – The Science & Art of Design Thinking, Arun Jain
2. Don Norman ,The Design of Everyday Things, MIT Press, 2013
3. Tim Brown, Change by Design: How Design Thinking Transforms Organizations and inspires innovation, Harper Collins Publishers Ltd, New York, First Edition, 2009.

REFERENCES:

1. Chrisitan Mueller-Roterberg, Handbook of Design Thinking – Tips & Tools for how to design thinking, kindle Direct Publishing, First Edition, 2018.
2. Johnny Schneider, Understanding Design Thinking, Lean and Agile, O'Reilly Media, California, First Edition, 2017
3. Roger Martin, The Design of Business, Why Design Thinking is the next competitive advantage, Harvard Business Press, United States, First Edition, 2009.
4. Idris Mootee, Design Thinking for Strategic Innovation, John Wiley & Sons Inc, New Jersey, First Edition, 2013.

Mapping of COs with POs and PSOs

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

1-low, 2-medium, 3-high

Chairman (BoS)

24BMT21	MEDICAL PHYSICS	Category	L	T	P	SL	C
		PCC	45	0	0	45	3

PREREQUISITE

Students should have a foundational understanding of basic physics, including concepts of mechanics, electromagnetism, and atomic structure. Basic knowledge of human anatomy and physiology is also essential to relate physical principles to biological systems.

OBJECTIVES:

To provide foundational knowledge of atomic and radiation physics and also aims to explore radiation interaction with matter, sensory principles, and techniques for radiation detection and measurement.

UNIT - I	ATOMIC PHYSICS AND IONIZING AND NON-IONIZING RADIATION	(9)

Atomic Physics: Electronic Structure of atom, Structure of the Nucleus, Nuclear Binding energy; Ionizing radiation: Absorption, scattering and attenuation of gamma-rays, Biological effects and protection from them; Non-Ionizing radiation: Tissue as a leaky dielectric, overview of non-ionizing radiation effects, Low Frequency Effects- Higher frequency effects, Ultraviolet.

UNIT - II	PHYSICS OF SENSES	(9)

Introduction and objectives, Cutaneous sensation-Mechanoreceptors, Thermoreceptors, Nociceptors; Chemical senses-Gustation(taste), Olfaction(smell); Audition- Physics of sound, Normal sound levels, Anatomy and physiology of the ear, Theories of hearing, Measurement of hearing; Vision- Physics of light, Anatomy and physiology of the eye, Intensity of light, Limits of vision, Colour vision; Psychophysics-Weber and Fechner laws, Power law.

UNIT - III	PRINCIPLES OF RADIONUCLEIDES	(9)

Radioactive Decay: Spontaneous Emission, Isometric Transition, Gamma ray emission, alpha, beta, Positron decay, electron capture; Production of Radioisotopes: Naturally occurring radioactivity, Man-made background radiation, Induced background radiation, Neutron reactions and man-made radioisotopes, Units of activity, Isotope generators, Medical applications; Production of radionuclides: Cyclotron produced Radionuclide; Reactor produced Radionuclide-fission and neutron capture reaction, radionuclide Generator-Technetium generator.

UNIT - IV	INTERACTION OF RADIATION WITH MATTER	(9)

Interaction of charged particles with matter –Specific ionization, Linear energy transfer, range, Bremsstrahlung, Annihilation; Interaction of Gamma radiation with matter- Photoelectric effect, Compton Scattering , Pair production, Attenuation of Gamma Radiation; Interaction of neutron with matter and their clinical significance (Radiation Dosimetry).

UNIT - V	PRINCIPLES OF RADIATION DETECTION AND DOSIMETERS	(9)

Principles of Radiation Detection: Gas filled detectors, Ionization Chambers, Geiger-Muller Counters; Dose and exposure measurement, Maximum permissible levels, Measurement methods: Ionization chambers, G-Mcounters, Scintillation counters, Film dosimeters, Thermoluminescent dosimetry(TLD).

L = 45, SL = 45, TOTAL: 90 PERIODS

Chairman (BoS)
K.S.R. College of Engineering

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

COs	Course Outcome	Cognitive Level
CO1	Explain the basics of atomic Physics, ionizing and non-ionizing radiations.	Understand
CO2	Classify the human senses and describe the mechanisms of vision and auditory perception.	Understand
CO3	Illustrate the process of radionuclide production and outline their uses in medical applications.	Understand
CO4	Interpret the interaction of radiation with matter and its relevance in clinical contexts.	Understand
CO5	Describe the radiation exposure, dosage effects and prevention measures.	Understand

TEXT BOOKS:

1. B.H. Brown, R.H. Smallwood, D.C. Barber, P.V. Lawford, D.R. Hose, —Medical Physics and Biomedical Engineering‖, Institute of physics publishing, Bristol and Philadelphia, 1999.
2. Gopal B. Saha —Physics and Radiobiology of Nuclear Medicine‖ Fourth edition Springer, 2006.

REFERENCES:

1. W.J. Meredith and J.B. Massey "Fundamental Physics of Radiology" Varghese Publishing house, Third Edition, 2013.
2. Steve Webb, The Physics of Medical Imaging, Taylor & Francis, Newyork, Second Edition, 2012.
3. R.S. Khandpur, "Handbook of Biomedical Instrumentation", Tata McGraw-Hill, New Delhi, 2003.
4. Ervin B. Podgorsak, "Radiation Physics for Medical Physicists", Springer International Publishing, 2018.

Mapping of COs with POs and PSOs

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

1-Low, 2-Medium, 3-High

Chairman (BoS)

24GET29	தமிழரும் தொழில் நுட்பமும்	CATEGORY	L	T	P	SL	C
		HSMC	15	0	0	15	1

(அனைத்து துறைகளுக்கும் பொதுவானது)

முன் கூட்டிய துறைசார் அறிவு : தேவை இல்லை

அலகு – I	நெசவு மற்றும் பானைத் தொழில்நுட்பம்	[03]

சங்ககாலத்தில் நெசவுத் தொழில் – பானைத் தொழில்நுட்பம் கருப்பு சிவப்பு பாண்டங்கள்–பாண்டகளில் கீறல் குறியீடுகள்

அலகு – II	வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்	[03]

சங்ககாலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு – சங்க காலத்தில் கட்டுமானப் பொருட்களும் நடுகல்லும்–சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள்–மாமல்லபுரச் சிற்பங்களும், கோவில்களும்–சோழர்காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள்–நாயக்கர் காலக்கோயில்கள்–மாநிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன்ஆலயம் மற்றும் திருமலைநாயக்கர்மஹால் – செட்டிநாட்டுவீடுகள்–பிரிட்டிஷ்காலத்தில் சென்னை இந்தோ-சாரோசெனிக் கட்டிடக் கலை.

அலகு – III	உற்பத்தித் தொழில்நுட்பம்	[03]

கப்பல் கட்டும் கலை–உலோகவியல்–இரும்புத்தொழிற்சாலை–இரும்பை உருக்குதல், எஃகு–வரலாற்றுச்சான்றுகளாக செம்பு மற்றும் தங்கநாணயங்கள்–நாணயங்கள் அச்சடித்தல்–மணி உருவாக்கும் தொழிற்சாலைகள்–கல் மணிகள்–கண்ணாடி மணிகள்–சுடு மண்மணிகள்–சங்குமணிகள்–எலும்புத்துண்டுகள்–தொல்லியல் சான்றுகள்–சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.

அலகு – IV	வேளாண்மை மற்றும் நீர்ப் பாசனத் தொழில்நுட்பம்	[03]

அணை,ஏரி,குளங்கள்,மதகு–சோழர்காலகுமிழித்தூம்பின் முக்கியத்துவம்–கால்நடை பராமரிப்பு–கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள்–வேளாண்மை மற்றும் வேளாண்மை சார்ந்த செயல்பாடுகள்–கடல்சார் அறிவு – மீன் வளம்–முத்து மற்றும் முத்துக் குளித்தல்–பெருங்கடல் குறித்த பண்டைய அறிவு–அறிவுசார் சமூகம்.

அலகு – V	அறிவியல் தமிழ் மற்றும் கணினித்தமிழ்	[03]

அறிவியல் தமிழின் வளர்ச்சி– கணினித்தமிழ் வளர்ச்சி–தமிழ் நூல்களை மின்பதிப்பு செய்தல்–தமிழ் மென் பொருட்கள் உருவாக்கம்–தமிழ் இணையக்கல்விக் கழகம்–தமிழ் மின்நூலகம்–இணையத்தில் தமிழ் அகராதிகள் சொற்குவைத் திட்டம்.

Total (L= 15, SL=15) =30 Periods

பாடம் கற்றத்தின் விளைவுகள் : பாடத்தை வெற்றிகரகமாக கற்று முடித்த பின்பு, மாணவர்களால் முடியும் விளைவுகள்		அறிவாற்றல் நிலை
CO1	*சங்ககாலத் தமிழிர்களின் நெசவு மற்றும் பானைவனைதல் தொழில் நுட்பம் குறித்து கற்றுணர்தல்.*	*புரிதல்*
CO2	*சங்ககாலத் தமிழிர்களின் கட்டிட தொழில் நுட்பம் கட்டுமான பொருட்கள் மற்றும் அவற்றை விளகும் தளங்கள் குறித்து அறிவு.*	*புரிதல்*
CO3	*சங்ககாலத் தமிழிர்களின் உலோகத் தொழில், நாணயங்கள் மற்றும் மணிகள் சார்ந்த தொல்லியல் சான்றுகள் பற்றிய அறிவு.*	*புரிதல்*
CO4	*சங்ககாலத் தமிழிர்களின் வேளாண்மை, நீர்ப்பாசன முறைகள் மற்றும் முத்து குளித்தல் குறித்த தெளிவு.*	*புரிதல்*
CO5	*நவீன அறிவியல் தமிழ் மற்றும் கன்னி தமிழ் குறித்த புரிந்துகொள்ளலும் மற்றும் பயன்படுத்தலும்.*	*பகுப்பாய்வு*

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode – 637215 – Centre for Academic Courses

Text Books :	
1	தமிழகவரலாறு- மக்களும் பண்பாடும்- கேகேபிள்ளை (வெளியீடு தமிழ்நாடு பாடநூல் மற்றும் கல்வியில் பணிகள் கழகம்)
2	கணினித்தமிழ் - முனைவர் இல. சுந்தரம் (விகடன் பிரசுரம்)
Reference Books :	
1	கீழடி- வைகை நதிக்கரையில் சங்ககால நகரநாகரிகம்.(தொல்லியல் துறை வெளியீடு)
2	பொருநை – ஆற்றங்கரை நாகரிகம் (தொல்லியல் துறை வெளியீடு)
3	Studies in the History of India with Special Reference to Tamilnadu (Dr.K.K.Pillay) (Published by : The Author)
4	Porunai Civilization (Jointly Published by: Department of Archaeology &Tamilnadu Textbook and Educational Services Corporation, Tamilnadu)

Mapping of COs with POs and PSOs

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	-	-	-	-	-	3	3	-	2	-	3	-	-
CO2	-	-	-	-	-	3	3	-	2	-	3	-	-
CO3	-	-	-	-	-	3	3	-	2	-	3	-	-
CO4	-	-	-	-	-	3	3	-	2	-	3	-	-
CO5	-	-	-	-	-	3	3	-	2	-	3	-	-
Avg.	-	-	-	-	-	**3**	**3**	-	**2**	-	**3**	-	-

1. சிறிது (குறைந்த) 2. மிதமான (நடுத்தர) 3. கணிசமான (உயர்)

Chairman (BoS)

24GET29	TAMILS AND TECHNOLOGY	CATEGORY	L	T	P	SL	C
		HSMC	15	0	0	15	1

(Common to All Branches)

Prerequisite(s): *No prerequisites are needed for enrolling into the course*

UNIT - I	WEAVING AND CERAMIC TECHNOLOGY	[03]

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

UNIT - II	DESIGN AND CONSTRUCTION TECHNOLOGY	[03]

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) – ThirumalaiNayakar Mahal –Chetti Nadu Houses, Indo –Saracenic architecture at Madras during British Period.

UNIT - III	MANUFACTURING TECHNOLOGY	[03]

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 –Shell beads/ bone beats – Archeological evidences – Gem stone types described in Silappathikaram.

UNIT - IV	AGRICULTURE AND IRRIGATION TECHNOLOGY	[03]

Dam, Tank, ponds, Sluice, Significance of KumizhiThoompu 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	[03]

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 (L= 15, SL=15) =30 Periods

Course Outcomes: At the end of the course, the student will be able to		***Cognitive Level***
CO1	Understand the weaving and ceramic technology of ancient Tamil People nature.	Understand
CO2	Comprehend the construction technology, building materials in sangam Period and case studies.	Understand
CO3	Infer the metal process, coin and beads manufacturing with relevant archeological evidence	Understand
CO4	Realize the agriculture methods, irrigation technology and pearl diving.	Understand
CO5	Apply the knowledge of scientific Tamil and Tamil computing.	Apply

Chairman (BoS)

Text Books:	
1	Social Life of Tamils (Dr.K.K.Pillay) A joint Publication of TNTB & ESC and RMRL – (in print)
2	Social Life of the Tamils – The Classical Period (Dr.S.Sigaravelu) (Published by: International Institute of Tamil Studies).
Reference Books:	
1	Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukarasu) (Published by : International Institute of Tamil Studies)
2	The Contribution of the Tamils to Indian Culture (Dr.M.Valarmathi)(Puplished by International Institute of Tamil Studies).
3	Keeladi – 'Sangam City Civilzation on the banks of river Vaigai; (Jointly Published by: Department of Archaeology &Tamilnadu Text Book and Educational Services Corporation, Tamilnadu)
4	Studies in the History of India with Special Reference to Tamilnadu (dr.K.K.Pillay) (Published by : The Author)

Mapping of COs with POs and PSOs													
COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	-	-	-	-	-	3	3	-	2	-	3	-	-
CO2	-	-	-	-	-	3	3	-	2	-	3	-	-
CO3	-	-	-	-	-	3	3	-	2	-	3	-	-
CO4	-	-	-	-	-	3	3	-	2	-	3	-	-
CO5	-	-	-	-	-	3	3	-	2	-	3	-	-
Avg.	-	-	-	-	-	3	3	-	2	-	3	-	-
1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)													

Chairman (BoS)

24MAI29	PROBABILITY AND STATISTICS	Category	L	T	P	SL	C
		BSC	45	0	30*	45	4

SEMESTER II - B.E / B.TECH (Common to All Branches)

PREREQUISITE:

A basic understanding of algebra, calculus, and introductory statistics is required to grasp the concepts of probability, hypothesis testing, and statistical methods used in engineering and quality control.

OBJECTIVES:

To build a foundational understanding of probability and random variables, enable the application of two-dimensional random variables in engineering contexts, develop the ability to perform hypothesis testing for both small and large samples, introduce the principles of experimental design in agricultural studies, and provide knowledge of statistical quality control techniques.

UNIT - I	ONE DIMESIONAL RANDOM VARIABLES	(9)

One dimensional Random Variable - Discrete and continuous random Variables -Expectations - Moment generating functions and their properties - Binomial, Poisson, Uniform and Normal distributions.

UNIT - II	TWO - DIMENSIONAL RANDOM VARIABLES	(9)

Joint distributions – Marginal and conditional distributions – Covariance – Karl Pearson's Coefficient of Correlation - Spearman's Rank Correlation - Regression Analysis.

UNIT - III	TESTING OF HYPOTHESIS	(9)

One sample and two sample test for means of large samples (Z- test), One sample and two sample test for means of small samples (t-test), Chi-square - Independent of Attributes - F test for equality of variances.

UNIT - IV	DESIGN OF EXPERIMENTS	(9)

Analysis of variance - One way and two way classifications - Completely Randomized Design - Randomized Block Design - Latin Square Design.

UNIT - V	STATISTICAL QUALITY CONTROL	(9)

Control charts for measurements $\bar{X}$ and R charts – Control charts for C and P charts.

List of Experiments (R Software):

1. Determine the probability by using binomial distribution.
2. Find the probability with the help of normal distribution.
3. Determine the correlation co-efficient between X and Y.
4. Examine the small samples using F distribution.
5. Inspect the data using Latin Square Design (LSD).
6. Find the $\bar{X}$ Charts.
7. Compute the R Charts.

* Alternative weeks : Tutorial and Laboratory

L = 45 , * P = 15 & *T = 15, SL = 45, TOTAL: 120 PERIODS

Chairman (BoS)
K.S.R. College of Engineering

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

COs	Course Outcome	Cognitive Level
CO1	Apply the concepts of one dimensional random variables to compute expectations and analyze the standard distributions.	Apply
CO2	Apply statistical methods to compute marginal and conditional distributions, and perform correlation and regression analysis.	Apply
CO3	Apply Z-test, t-test, Chi-square test, and F-test to analyze sample data and draw inferences on independence of attributes.	Apply
CO4	Apply analysis of variance techniques for one-way and two-way classifications, and implement experimental designs using CRD, RBD and LSD.	Apply
CO5	Construct control charts for measurements Mean and Range charts and attributes charts to assess process control and product quality.	Apply

TEXT BOOKS:

1. S.P. Gupta, "Statistical Methods", Sulthan Chand & Sons, 46th Edition, 2021.
2. Milton. J. S. and Arnold. J.C., "Introduction to Probability and Statistics", Tata McGraw Hill, 4thedition, 2007.

REFERENCES:

1. Devore. J.L., "Probability and Statistics for Engineering and the Sciences", Cengage Learning, New Delhi, 8th Edition, 2014.
2. Spiegel. M.R., Schiller. J. and Srinivasan, R.A., "Schaum's Outline of Theory and Problems of Probability and Statistics", Tata McGraw Hill Edition, 2004.
3. Walpole. R.E., Myers. R.H., Myers. S.L. and Ye. K., "Probability and Statistics for Engineers and Scientists", Pearson Education, Asia, 9th Edition, 2010.
4. R.C.Gupta, "Statistical Quality Controls", Khanna Publishers, Delhi, 8th Edition , 2008.

Mapping of COs with POs and PSOs

COs/ POs	PO1	PO2	PO3	PO4	PO 5	PO 6	PO7	PO8	P O 9	PO10	PO11	PSO1	PSO2
CO1	3	3	3	3	2	-	-	1	-	-	2	-	-
CO2	3	3	3	3	2	-	-	1	-	-	2	-	-
CO3	3	3	3	3	2	-	-	1	-	-	2	-	-
CO4	3	3	3	3	2	-	-	1	-	-	2	-	-
CO5	3	3	3	3	2	-	-	1	-	-	2	-	-
Avg.	3	3	3	3	2	-	-	1	-	-	2	-	-

1-low, 2-medium, 3-high

LIST OF EQUIPMENTS (For a Batch of 30 Students)

S.No.	Name of the Equipments	Quantity
1.	A computer with Intel (R) Core (TM) i3 – 2130 CPU @ 3.40GHZ processor and 4 GB RAM – DDR3.	30 Nos.
	R software (Open source)	30 Nos.

Chairman (BoS)
K.S.R. College of Engineering

24CHI06	CHEMISTRY FOR ENGINEERS	Category	L	T	P	SL	C
		BSC	45	0	30	45	4

(Common to AI&DS, BME, CSE, CSE(CS), CSE(CSD), CSE(IoT), ECE, EEE and IT)

PREREQUISITE

The students must have knowledge about the basic concepts of water parameters, electro chemistry, organic reactions and their applications.

OBJECTIVES:

To equip the leaners to apply the chemical principles and their applications in the engineering fields.

UNIT - I WATER TREATMENT (9)

Hardness – types, units – estimation of hardness by EDTA method; Boiler feed water – requirements, disadvantages of using hard water in boilers – scale and sludge – priming and foaming – caustic embrittlement – boiler corrosion. Softening methods – internal conditioning – calgon, phosphate – external conditioning – zeolite process and ion exchange process; Desalination – reverse osmosis. Domestic water treatment (Sterilisation process Only).

UNIT - II ELECTROCHEMISTRY AND CORROSION (9)

Introduction – electrode potential – Nernst equation – EMF series and its significance; E – Vehicles - Need - Types – Advantages and Disadvantages; Corrosion – causes, consequences – classification – chemical corrosion – electro chemical corrosion – mechanism; Galvanic & differential aeration corrosion – factors influencing corrosion – corrosion control (Sacrificial anode and Impressed Current Cathodic protection method).

UNIT - III ENERGY STORAGE DEVICES (9)

Batteries – primary battery – Dry cell, secondary batteries – lead-acid and lithium-ion batteries. Fuel cells – H_2-O_2 fuel cell, solar cells – principle, applications and advantages; Nuclear energy: Light water Nuclear power plant - breeder reactor.

UNIT - IV POLYMER CHEMISTRY (9)

Polymer – definition – degree of polymerization – functionality. Polymerization – addition, condensation and co-polymerization – free radical mechanism of addition polymerization; Preparation properties & uses of PVC, Nylon – 6,6 & Teflon. Plastics – classification – thermosetting and thermoplastics. Fabrication of polymers – compression and Injection moulding.

UNIT - V NANO CHEMISTRY AND COMPOSITES (9)

Introduction – basics of nanochemistry – distinction between nanoparticles, molecules and bulk materials - synthesis of nanomaterials [CVD, laser evaporation, pyrolysis] - applications of nanomaterials. Composite – Introduction: Definition and need for composite – Types of composites: Properties and application of FRP and MMC.

List of Exercise/Experiments:

1. Estimation of total, permanent and temporary hardness of water sample By EDTA method
2. Estimation of chloride content in water by Argentometric method [Mohr's Method]
3. Conductometric titration of strong acid with strong base (HCl Vs NaOH)
4. Estimation of dissolved oxygen in water (Winkler's Method)
5. Conductometric titration of mixture of acids (HCl & CH_3COOH) with strong base
6. Estimation of Fe^{2+} ion by potentiometric titration
7. Estimation of HCl by p^H- Metry
8. Conductometric precipitation titration using $BaCl_2$-Na_2SO_4

L = 45, P = 30, SL = 45, TOTAL = 120 PERIODS

Chairman (BoS)

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

COs	Course Outcome	Cognitive Level
CO1	Interpret the treatment solutions for drinking water, boiler feed water, and wastewater reuse.	Understand
CO2	Describe different types of electrochemical cells, including galvanic and electrolytic cells.	Understand
CO3	Categorize different energy storage methods, such batteries, fuel cell and solar cell for the production of electricity.	Understand
CO4	Summarize the basics concepts of polymer chemistry in designing the materials for engineering and technology.	Understand
CO5	Illustrate the nano materials and composites for engineering and technology.	Understand

TEXT BOOKS:

1. S S. Dara and S. S. Umare, "A Text book of Engineering Chemistry", S.Chand & Co.Ltd., 12th Edition, 2015.
2. P.C. Jain and Monica Jain, "Engineering Chemistry", Dhanpat Rai Pub. Co., 16th Edition, 2013.
3. Wiley, "Engineering Chemistry", Wiley India Pvt. Ltd., 2nd Edition, 2013.

REFERENCES:

1. Dr. A. Ravikrishnan, "Engineering Chemistry", Srikrishna Hi-tech Publishing Company Pvt. Ltd., 21st Edition, 2022.
2. J. Mendham, R. C. Denney, J. D. Barnes, M. J. K. Thomas and B. Sivasankar, "Vogel's Text book of Quantitative Chemical Analysis", Pearson Education Pvt., Ltd., 6th Edition, 2019.
3. Shashi Chala, "A Text book of Engineering Chemistry", Dhanpat Rai Pub. Co., 2015.
4. S. K. Bhasin and Sudha Rani, "Laboratory Manual of Engineering Chemistry", Dhanpat Rai Publishing Company Private Limited,3rd Edition, 2012.

Mapping of COs with POs and PSOs

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

1-low, 2-medium, 3-high

Laboratory Equipment Details
(Requirements for a batch of 30 students)

S.No.	Description of Equipment	Quantity required
1.	Electronic balance	1 No.
2.	pH meter	6 Nos.
3.	Conductivity meter	6 Nos.
4.	Potentiometer	6 Nos.

Chairman (BoS)

24CBI26	PYTHON PROGRAMMING	Category	L	T	P	SL	C
		PCC	45	0	30	45	4

(Common to ECE, EEE, Mech, Civil, SFE, BME)

PREREQUISITE:

Basic knowledge of programming concepts such as variables, data types, and control statements. Logical problem-solving ability and basic mathematical understanding are recommended.

OBJECTIVES:

The course helps the students to understand Python basics, write and debug programs, work with functions, files, and data structures, and use exception handling, NumPy, and Pandas for data analysis.

UNIT – I BASICS OF PYTHON PROGRAMMING (15)

Introduction – Python Interpreter – Interactive and Script mode – Values and types – Variables – Operators – Expressions – Statements – Precedence of operators – Multiple assignments – Comments – Input function – Print function – Formatting numbers and strings – Implicit/Explicit type conversion. **(Theory-9)**

List of Exercise:

1. Write a Python program to demonstrate values, types, variables, operators, expressions, multiple assignments, and operator precedence.
2. Develop a Python program to read user input and display formatted output using format () and f- strings.
3. Construct a Python program to perform implicit and explicit type conversion and demonstrate comments. **(Laboratory-6)**

UNIT – II CONTROL STATEMENTS AND STRINGS (15)

Conditional (if), alternative (if-else), chained conditional (if-elif-else). Iteration-while, for, infinite loop, break, continue, pass, else. Strings-String slices, immutability, string methods and operations.**(Theory-9)**

List of Exercise:

1. Construct a Python program using conditional statements (if, if-else, if-elif-else).
2. Develop a Python program demonstrating loop control statements using for, while, break, continue, pass, and infinite loop.
3. Write a Python program to perform string slicing, demonstrate immutability, and apply string methods. **(Laboratory-6)**

UNIT – III FUNCTIONS AND FILES (15)

Functions – Introduction – Inbuilt functions – User-defined functions – Passing parameters: positional, default, keyword arguments – Return values – Local and global scope – Recursion – Lambda functions. Files – Text files – Reading and writing files. **(Theory-9)**

List of Exercise:

1. Write a Python program demonstrating positional, keyword, and default arguments with return values.
2. Construct a Python program using recursion and lambda functions.
3. Develop a Python program to create, write, and read text files. **(Laboratory-6)**

UNIT – IV DATA STRUCTURES: LISTS, TUPLES, SETS, DICTIONARIES (15)

Lists – Creating lists – List operations – List methods – Mutability – List functions – Searching and sorting. Tuples – Tuple assignment – Operations on tuples – Lists and tuples – Tuple as return value. Sets – Creating sets – Set operations. Dictionaries – Operations and methods – Nested dictionaries. **(Theory-9)**

List of Exercise:

1. Write a Python program to create and manipulate lists including searching and sorting.
2. Develop a Python program to demonstrate set and tuple operations.
3. Construct a Python program using dictionaries and nested dictionaries. **(Laboratory-6)**

UNIT – V EXCEPTIONS HANDLING, NUMPY AND PANDAS (15)

Chairman (BoS)

Exceptions – Errors and Exceptions – Handling exception – Built-in and User-defined exceptions. NumPy – Introduction – Computations using NumPy functions – Computation on arrays – Aggregation – Indexing and Sorting. Pandas – Introduction and Basic concepts – DataFrames – Data handling. **(Theory-9)**

List of Exercise:

1. Write a Python program to demonstrate exception handling including built-in and user-defined exceptions.
2. Develop a Python program using NumPy to perform computations, aggregations, indexing, and sorting.
3. Apply Pandas DataFrame operations to create, update, filter, and describe datasets.

(Laboratory-6)

COURSE OUTCOMES:

Upon completion of the course, the students will be able to:

Course Outcome	Description	Bloom's Taxonomy
CO1	Illustrate fundamental Python programming constructs such as variables, operators, expressions, and control statements.	Understand
CO2	Demonstrate Python conditional statements, loops, and string operations for basic program logic.	Apply
CO3	Develop Python programs using functions, recursion, and file handling concepts.	Apply
CO4	Apply Python data structures including lists, sets, tuples, and dictionaries to solve problems.	Apply
CO5	Use to exception handling and perform data manipulation NumPy and Pandas.	Apply

TEXT BOOKS:

1	Eric Matthes, "Python Crash Course: A Hands-On, Project-Based Introduction to Programming", No Starch Press, 3rd Edition, 2025
2	Reema Thareja, "Python Programming Using Problem Solving Approach", Oxford University Press, 3rd Edition, 2025

REFERENCES:

1	Wes McKinney, "Python for Data Analysis: Data Wrangling with pandas, NumPy, and Jupyter", O'Reilly Media, 3rd Edition, 2022
2	Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", Green Tea Press, 2nd Edition, 2016
3	Robert Sedgewick, Kevin Wayne, Robert Dondero, "Introduction to Programming in Python: An Interdisciplinary Approach", Pearson Education / Addison-Wesley Professional, 1st Edition, 2016
4	David Beazley & Brian K. Jones, "Python Cookbook: Recipes for Mastering Python 3", O'Reilly Media, 3rd Edition, 2024
5	Luciano Ramalho, "Fluent Python: Clear, Concise, and Effective Programming", O'Reilly Media, 2nd Edition, 2022

Mapping of COs with POs and PSOs

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

1 - low, 2 - medium, 3 - high, '-' - no correlation

Chairman (BoS)
K.S.R. College of Engineering

24ENP29	PROFESSIONAL COMMUNICATION LABORATORY	Category	L	T	P	SL	C
		HSMC	0	0	30	0	1

(Common to All Branches)

OBJECTIVE:

To enhance learners' proficiency in listening, speaking, reading, and writing through structured activities and professional communication practices relevant to academic and workplace settings.

UNIT - I	VERBAL AND CRITICAL REASONING	(6)

Syllogism – Drawing conclusions from given logical statements, **Assertion and Reason** – Judging the link between a claim and its reason, **Verbal Analogies** – Completing word pairs based on relationships, **Statement and Assumption** – Identifying hidden assumptions in statements, **Statement and Conclusion** – Choosing valid conclusions from given data, **Critical Reasoning** – Evaluating arguments for logic and consistency.

UNIT - II	LISTENING	(6)

Listening to Announcement – Understanding key details and context from public messages, **Short Conversation** – Extracting specific information from brief dialogues, **Motivational Speech** – Grasping main ideas, tone, and speaker's intent, **Telephone Conversation** – Comprehending spoken exchanges over the phone.

UNIT - III	SPEAKING	(6)

Talking about Oneself – Sharing personal details clearly and confidently, **Oral-presentation on a General Topic** – Presenting ideas briefly with clarity and structure, **Group Discussion on Current Affairs** – Expressing and support opinions in group settings, **Role Play** – Performing situational conversations using appropriate language, **Mock & HR Interview** – Answering common interview questions with clarity and confidence.

UNIT - IV	READING	(6)

Reading Short Texts – Understanding the main message and key ideas, **Reading for General and Specific Information** – Locating relevant details in various texts, **Case Studies on Problem Solving** – Analyzing real-life scenarios to identify issues and solutions.

UNIT - V	WRITING	(6)

Written communication: Letters (Apology & Complaint) – Writing formal letters using appropriate tone and structure, **E-mails (Appreciation & Permission)** – Composing clear and courteous emails, **Technical Report** – Using standard format for preparing structured technical report, **Agenda / Minutes** – Preparing format for meeting agendas and recording minutes.

TOTAL (P:30) = 30 PERIODS

Chairman (BoS)

List of Experiments:

1. Syllogism, Assertion & Reason and Verbal Analogies
2. Statement & Assumption, Statement & Conclusion and Critical Reasoning
3. Listening: Announcement and Short Conversation
4. Listening: Motivational Speech and Telephone Conversation
5. Speaking: Taking about oneself, Mock & HR Interview and Mini-presentation
6. Speaking: Group Discussion and Role Play
7. Reading: Multiple Choice & Fill in the Blanks
8. Reading: Analyzing Case Studies on Problem Solving
9. Writing: Complaint/Apology Letter and Appreciation/Permission Email
10. Writing: Format of Technical Report and Format of Agenda/Minutes

COURSE OUTCOMES:

Upon completion of the course, the students will be able to:

COs	Description	Ex. No.	Cognitive Level
CO1	Comprehend assumptions and draw conclusions from verbal reasoning tasks.	1 & 2	Understand
CO2	Understand spoken texts to identify key points and the speaker's intent.	3 & 4	Understand
CO3	Use appropriate language and tone in personal, group, and interview conversations.	5 & 6	Understand
CO4	Recognize main ideas and supporting points in short texts and case studies.	7 & 8	Understand
CO5	Draft formal letters, emails, reports, and meeting notes in the correct format.	9 & 10	Understand

TEXT BOOKS:

1. Bhatnagar Nitin, Communicative English for Engineers and Professionals, Pearson India, 2010.
2. Kulbhusan Kumar, RS Salaria, Effective Communication Skill, Khanna Publishing House, 2018.

REFERENCES:

1. Jack C Richards, Interchange, Cambridge University Press, 2022.
2. RS Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S Chand, 2024.

Mapping of COs with POs and PSOs

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

1-Low, 2-Medium, 3-High

Chairman (BoS)

Lab Requirement for a batch of 30 Students

Sl. No.	Description of Equipment / Software	Quantity required
1.	Server	1
	Intel core i3 - 2120	
	4 GB RAM / 240 GB SSD	
	OS: Windows 2011	
	Headphones with mike	
2.	Client Systems	30
	Intel core i3 - 2120	
	4 GB RAM / 240 GB SSD	
	OS: Windows 2011	
	Headphones with mike	
3.	Software	1
	a) Interactive Teacher control software	
	b) English Language Lab Software	
	c) Career Lab Software	

Chairman (BoS)

24SDP29	SOFT SKILLS DEVELOPMENT – II	Category	L	T	P	SL	C
		EEC	0	0	30	0	1

(Common to All Branches)

OBJECTIVES:

To introduce students to the basics of aptitude, helping them understand its core concepts and real-world applications. A key focus is placed on developing proficiency in verbal reasoning, which supports improved problem-solving and analytical thinking. Additionally, the course works toward building a strong foundation in English grammar to enhance language accuracy and communication skills.

UNIT - I	PERCENTAGE	(6)

Concept of Percentage – Successive Percentage – Increasing and Decreasing Percentage – Population – Depreciation.

UNIT - II	PROFIT AND LOSS	(6)

Concepts of Cost Price, Selling Price, Profit and Loss – Profit Percentage – Loss Percentage – Problems on Dishonest Seller.

UNIT - III	RATIO PROPORTIONS AND PARTNERSHIP	(6)

Introduction and Ratio Calculation – Mean Proportion – Share Calculation Based on Ratio – Ages – Partnership.

UNIT - IV	LOGICAL REASONING	(6)

Coding and Decoding – Blood Relations – Ranking and Ordering.

UNIT - V	VERBAL ABILITY	(6)

Sentence Improvement – Ordering of Sentence – Cloze Test – Spellings.

TOTAL: 30 PERIODS

COURSE OUTCOMES:

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

COs	Course Outcome	Cognitive Level
CO1	Apply percentage concepts to solve problems on growth, depreciation, and population change effectively.	Apply
CO2	Apply concepts of profit, loss, and pricing to analyse transactions, including cases of dishonest selling.	Apply
CO3	Demonstrate proficiency in applying ratio, proportion, and partnership principles	Apply
CO4	Solve the problems on coding-decoding, blood relations, and ranking using logical reasoning techniques	Apply
CO5	Improve the sentence structure, logical sequencing, contextual understanding, and spelling accuracy for effective communication.	Understand

Chairman (BoS)

K.S.R. College of Engineering Centre for Academic Courses

TEXT BOOKS:

1. R S Aggarwal, "Quantitative Aptitude for Competitive Examinations".
2. Abhijit Guha, "Quantitative Aptitude for Competitive Examinations".
3. Nishit K. Sinha, "Logical Reasoning and Data Interpretation for CAT".
4. R.S. Agarwal, "A Modern Approach to Verbal & Non-Verbal Reasoning".
5. Edgar Thorpe & Showick Thorpe, "English for Competitive Examinations".

REFERENCES:

1. Arun Sharma, Quantitative Aptitude for CAT, 11e, 2025.
2. Arun Sharma, Logical Reasoning for CAT, 7e, 2025.
3. Wren & Martin, High School English Grammar & Composition.
4. https://prepinsta.com/.
5. https://www.geeksforgeeks.org/quantitative-aptitude/?ref=shm.
6. https://www.youtube.com/@FeelFreetoLearn/playlists.

Mapping of COs with POs and PSOs

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

Chairman (BoS)

K.S.R. College of Engineering, Tiruchengode, 637215 – Centre for Academic Courses