

K.S.Rangasamy College of Technology (Autonomous)



Curriculum & Syllabus of B.E. Electronics Engineering (VLSI Design and Technology) (For the batch admitted in 2026 – 2027)

R 2026

**Accredited by NAAC with 'A++' Grade, Approved by AICTE
Affiliated to Anna University, Chennai**

**KSR Kalvi Nagar, Tiruchengode - 637 215
Namakkal District, Tamil Nadu, India**

B.E. Electronics Engineering (VLSI Design and Technology)

Vision:

- To emerge as a distinguished center of academic excellence, offering exceptional education in Electronics Engineering, with a distinct focus on VLSI design and advanced research.

Mission:

- To nurture and develop professionals and technology leaders who uphold the highest standards of professional ethics in the realm of Electronics Engineering, with a focused specialization in VLSI design.
- To address the evolving needs of society by pushing the boundaries of disciplinary and multidisciplinary research in the field of Electronics Engineering, with our specialized focus on VLSI design.

PEOs:

PEO1: To empower graduates with the skills and knowledge necessary to achieve successful technical and professional career growth.

PEO2: To equip graduates with a profound understanding of the scientific, mathematical, and engineering fundamentals relevant to Electronics Engineering, with a specialized focus on VLSI design.

PEO3: To develop graduates who possess a commitment to lifelong learning, demonstrate creativity and innovation, and exhibit ethical and professional behavior, all while addressing the evolving needs of society.

PSOs :

Engineering Graduates will be able to:

PSO1: Develop graduates who are capable of solving complex engineering problems by applying their engineering knowledge in the fields of AI (Artificial Intelligence), IoT (Internet of Things), Signal Processing, VLSI design and related fields.

PSO2: Develop graduates who possess the capability to design system components and develop products that meet the specific needs of the industry and society in the field of Electronics Engineering, with a specialized focus on VLSI design.

PSO3: Develop graduates who possess essential interpersonal skills and attitudes required for ethical leadership and effective teamwork, including effective listening and communication, presentation skills, team building, and assertiveness.

PROGRAMME OUTCOMES (POs)

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

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

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

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)

MAPPING OF PEOs WITH POs and PSOs

Programme Educational Objectives	Programme Outcomes											PSOs		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
PEO1	3	3	3	3	3	2	2	3	3	3	2	3	3	2
PEO2	3	3	3	3	3	3	3	3	3	3	3	3	3	2
PEO3	2	2	2	2	2	3	2	3	3	3	2	3	3	3

Contributions: 1- low, 2- medium, 3- high

Credit Distribution for B.E Electronics Engineering (VLSI Design and Technology) Program – 2026 - 2027 Batch

S.No.	Category	Credits per Semester								Total Credits	%
		I	II	III	IV	V	VI	VII	VIII		
1.	HS	3	3	-	1	-	-	-	-	7	04.21
2.	GE	1	1	-	-	-	-	-	-	2	01.20
3.	BS	12	4	4	4	-	-	-	-	24	14.45
4.	ES	4.5	5.5	-	-	-	-	-	-	10	06.02
5.	PC	2.5	9.5	17	17	17	17	14	8	102	61.44
6.	PE	-	-	-	-	6	6	6	-	18	10.84
7.	OE	-	-	-	3	-	-	-	-	3	01.80
8.	CG	CSD I	CSD II	CSD III	CSD IV	CSD V	CSD VI	-	-	-	-
9.	MC	MC I	MC II	MC III	MC IV	-	MC V	-	-	-	-
10.	AC	-	-	-	-	-	-	AC	-	-	-
Total		23	23	21	25	23	23	20	8	166	100

HS – HUMANITIES

BS – BASIC SCIENCE

ES – ENGINEERING SCIENCE

PC – PROFESSIONAL CORE

PE – PROFESSIONAL ELECTIVES

OE – OPEN ELECTIVES

CG – EMPLOYABILITY ENHANCEMENT COURSES

MC – MANDATORY COURSES

AC- AUDIT COURSES

GE- GENERAL ELECTIVE

Open Electives are courses offered by different departments that do not have any prerequisites and could be of interest to students of any branch.

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215
(An Autonomous Institution affiliated to Anna University)
HUMANITIES AND SOCIAL SCIENCES (HS)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1.	26EN1C1I	English Essentials -I	HS	4	2	0	2	3
2.	26EN2C1I	English Essentials -II	HS	4	2	0	2	3
3.	26EN1E*T	Foreign Language*	HS	3	3	0	0	3^
4.	26TP3G1P	Language Laboratory	HS	2	0	0	2	1
5.	26GE7C1T	NCC\NSS\NSO\YRC\RRC\Yoga\Fine Arts	HS	0	0	0	0	1^

BASIC SCIENCE (BS)

S.No	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1.	26MA1C2T	Vector Space and Calculus	BS	5	3	1	0	4
2.	26PH1C3T	Semiconductor physics and Devices	BS	3	3	0	0	3
3.	26PH1C3L	Semiconductor Physics Laboratory	BS	2	0	0	2	1
4.	26CH1C2L	Engineering Chemistry Laboratory	BS	2	0	0	2	1
5.	26MA2C2T	Multiple Integrals and Vector Calculus	BS	5	3	1	0	4
6.	26MA3C2T	Numerical Techniques and Linear Algebra	BS	5	3	1	0	4
7.	26MA4C3T	Graph theory and Optimization Techniques	BS	5	3	1	0	4

ENGINEERING SCIENCES (ES)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1.	26CS1C1T	C Programming	ES	3	3	0	0	3
2.	26CS1C1L	C Programming Laboratory	ES	3	0	0	3	1.5
3.	26CS2C3T	Data Structures and Algorithms	ES	3	3	0	0	3
4.	26CS2C2L	Data Structures and Algorithms Laboratory	ES	3	0	0	3	1.5

PROFESSIONAL CORE (PC)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1.	26EV101L	Device Characterization Laboratory	PC	3	0	0	3	1.5
2.	26EV201T	Basics of Electrical, Electronics and PCB design	PC	3	3	0	0	3
3.	26EV202T	Circuit Theory and Network analysis	PC	5	3	1	0	4
4.	26EV201L	Circuit Theory and Network analysis Laboratory	PC	3	0	0	3	1.5
5.	26EV301T	Electromagnetic Waves	PC	3	3	0	0	3
6.	26EV302T	Analog Electronics	PC	3	3	0	0	3
7.	26EV303T	Digital Electronics	PC	4	2	1	0	3
8.	26EV304T	Computer Architecture and Organization	PC	3	3	0	0	3
9.	26EV301L	Analog Electronics Laboratory	PC	3	0	0	3	1.5

10.	26EV302L	Digital Electronics Laboratory	PC	3	0	0	3	1.5
11.	26EV303T	Mini Project	PC	4	0	0	4	2
12.	26EV401T	Linear IC & Applications	PC	3	3	0	0	3
13.	26EV402I	VLSI Design and Technology	PC	5	3	0	2	4
14.	26EV403T	Microcontrollers & Microprocessors	PC	3	3	0	0	3
15.	26EV404I	Verilog HDL and FPGA Designing	PC	5	3	0	2	4
16.	26EV401L	Linear Integrated Circuits Laboratory	PC	3	0	0	3	1.5
17.	26EV402L	Microprocessor Laboratory	PC	3	0	0	3	1.5
18.	26EV501T	CMOS Analog IC Design	PC	5	3	1	0	4
19.	26EV502T	Control Systems Engineering	PC	5	3	1	0	4
20.	26EV503T	VLSI Digital Signal Processing	PC	5	3	1	0	3
21.	26EV504T	ASIC Design	PC	3	3	0	0	3
22.	26EV501L	Signal Processing Laboratory	PC	3	0	0	3	1.5
23.	26EV502L	ASIC Design Laboratory	PC	3	0	0	3	1.5
24.	26EV601T	Embedded and IoT Devices	PC	3	3	0	0	3
25.	26EV602T	CMOS Digital IC design	PC	5	3	1	0	4
26.	26EV603T	Universal verification Methodology	PC	3	3	0	0	3
27.	26EV604T	Analog and Digital Communication	PC	5	3	1	0	4
28.	26EV601L	VLSI Verification and Testing Laboratory	PC	3	0	0	3	1.5
29.	26EV02L	Embedded Systems Laboratory	PC	3	0	0	3	1.5
30.	26EV701T	VLSI Microfabrication Techniques	PC	3	3	1	0	4
31.	26EV702I	Machine Learning in VLSI System design	PC	5	3	0	2	4
32.	26EV703T	Design for Testability	PC	5	3	1	0	4
33.	26EV701L	Microfabrication Laboratory	PC	3	0	0	4	2

AUDIT COURSES (AC)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1.	26AC7Y1T	Research Skill Development	AC	1	1	0	0	0

MANDATORY COURSES (MC)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1.	26MY1Y1T	Environmental Science and Sustainable Practices	MC	2	2	0	0	2 [#]
2.	26MY3Y1T	Life Skill for Engineers [§]	MC	1	1	0	0	1 [§]
3.	26MY3Y1T	Disaster Management	MC	2	2	0	0	0
4.	26MY6Y1T	Startup and Entrepreneurship	MC	2	2	0	0	2 [#]

GENERAL ELECTIVE COURSES (GE)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1.	26TA1YIT	Heritage of Tamils / தமிழர்மரபு	GE	1	1	0	0	1
2.	26TA2Y1T	Tamils and Technology / தமிழரும் தொழில்நுட்பமும்	GE	1	1	0	0	1

CAREER ENHANCEMENT COURSES (CG)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1.	26TP1G1P	Career Skill Development I	CG	2	0	0	2	1*
2.	26TP2G1P	Career Skill Development II	CG	2	0	0	2	1*
3.	26TP3G1P	Career Skill Development III	CG	2	0	0	2	1*
4.	26TP4G1P	Career Skill Development IV	CG	2	0	0	2	1*
5.	26TP5G1P	Career Skill Development V	CG	2	0	0	2	1*
6.	26TP6G1P	Career Skill Development VI	CG	2	0	0	2	1*
7.	26TP3G2P	Summer Internship@	CG	0	0	0	0	2@
8.	26TP5G2P	Summer Internship@	CG	0	0	0	0	2@
9.	26TP7G2P	Summer Internship@	CG	0	0	0	0	2@
10.	26EV801L	Project Work / Startup / Internship Project	CG	16	0	0	16	8

K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE -637215
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COURSES OF STUDY
(For the candidates admitted in 2026-2027)
SEMESTER I

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	26EN1C1I	English Essentials -I	HS	4	2	0	2	3
2.	26MA1C2T	Vector Space and Calculus	BS	5	3	1	0	4
3.	26PH1C3T	Semiconductor physics and Devices	BS	3	3	0	0	3
4.	26CS1C1T	C Programming	ES	3	3	0	0	3
5.	26CH1C3T	Chemistry for Electrical Sciences	BS	3	3	0	0	3
6.	26MY2Y1T	Universal Human Values	MC	3	3	0	0	3 [#]
7.	26TA1YIT	Heritage of Tamils / தமிழர்மரபு	GE	1	1	0	0	1
8.	26EN1E*T	Foreign Language*	HS	3	3	0	0	3 [^]
PRACTICALS								
9.	26CS1C1L	C Programming Laboratory	ES	3	0	0	3	1.5
10.	26PH1C3L	Semiconductor Physics Laboratory	BS	2	0	0	2	1
11.	26CH1C2L	Engineering Chemistry Laboratory	BS	2	0	0	2	1
12.	26EV101L	Device Characterization Laboratory	PC	3	0	0	3	1.5
13.	26EV102L	Design Thinking	PC	2	0	0	2	1
14.	26TP1G1P	Career Skill Development I	CG	2	0	0	2	1*
Total				39	21	1	16	23

* Career Skill Development I - Additional Credit

Foreign Language - Additional Credit

Universal Human Values – Additional Credit

Indian Knowledge System

Heritage of Tamil (தமிழர் மரபு)/Tamils and Technology (தமிழரும் தொழில்நுட்பமும்)

SEMESTER II

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	26EN2C1I	English Essentials -II	HS	4	2	0	2	3
2.	26MA2C2T	Multiple Integrals and Vector Calculus	BS	5	3	1	0	4
3.	26CS2C3T	Data Structures and Algorithms	ES	3	3	0	0	3
4.	26EV201T	Basics of Electrical, Electronics and PCB design	PC	3	3	0	0	3
5.	26EV202T	Circuit Theory and Network analysis	PC	5	3	1	0	4
6.	26MY2Y1T	Environmental Science and Sustainable Practices	MC	2	2	0	0	2 [#]

7.	26TA2Y1T	Tamils and Technology / தமிழரும் தொழில்நுட்பமும்	GE	1	1	0	0	1
PRACTICALS								
8.	26EE2C1L	MakerSpace	ES	2	0	0	2	1
9.	26EV201L	Circuit Theory and Network analysis Laboratory	PC	3	0	0	3	1.5
10.	26CS2C2L	Data Structures and Algorithms Laboratory	ES	3	0	0	3	1.5
11.	26EV202L	Innovation for Engineering and Technology	PC	2	0	0	2	1
12.	26TP2G1P	Career Skill Development II	CG	2	0	0	2	1*
Total				35	17	2	14	23

*Career Skill Development II- Additional Credit

Environmental Science and Sustainable Practices – Additional Credit

SEMESTER III

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	26MA3C2T	Numerical Techniques and Linear Algebra	BS	5	3	1	0	4
2.	26EV301T	Electromagnetic Waves	PC	3	3	0	0	3
3.	26EV302T	Analog Electronics	PC	3	3	0	0	3
4.	26EV303T	Digital Electronics	PC	4	2	1	0	3
5.	26EV304T	Computer Architecture and Organization	PC	3	3	0	0	3
6.	26MY3Y1T	Life Skill for Engineers [§]	MC	1	1	0	0	1 [§]
7.	26MY3Y1T	Disaster Management	MC	2	2	0	0	0
PRACTICALS								
8.	26EV301L	Analog Electronics Laboratory	PC	3	0	0	3	1.5
9.	26EV302L	Digital Electronics Laboratory	PC	3	0	0	3	1.5
10.	26EV303T	Mini Project	PC	4	0	0	4	2
11.	26TP3G1P	Career Skill Development III	CG	2	0	0	2	1*
12.	26TP3G2P	Summer Internship [@]		0	0	0	0	2 [@]
Total				33	17	2	12	21

[§] Life Skill for Engineers for Biology Students – Additional Credit

[@] Summer Internship – Additional Credit

SEMESTER IV

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	26MA4C3T	Graph theory and Optimization Techniques	BS	5	3	1	0	4
2.	26EV401T	Linear IC & Applications	PC	3	3	0	0	3
3.	26EV402I	VLSI Design and Technology	PC	5	3	0	2	4

4.	26EV403T	Microcontrollers & Microprocessors	PC	3	3	0	0	3
5.	26EV404I	Verilog HDL and FPGA Designing	PC	5	3	0	2	4
6.	26EV4N*T	Open Elective	OE	3	3	0	0	3
PRACTICALS								
7.	26EV401L	Linear Integrated Circuits Laboratory	PC	3	0	0	3	1.5
8.	26EV402L	Microprocessor Laboratory	PC	3	0	0	3	1.5
9.	26TP3G1P	Language Laboratory	HS	2	0	0	2	1
10.	26TP4G1P	Career Skill Development IV	CG	2	0	0	2	1*
Total				34	18	1	14	25

® Summer Internship Additional Credit – 2 weeks

* Career Skill Development IV – Additional Credit

SEMESTER V

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	26EV501T	CMOS Analog IC Design	PC	5	3	1	0	4
2.	26EV502T	Control Systems Engineering	PC	5	3	1	0	4
3.	26EV503T	VLSI Digital Signal Processing	PC	5	3	1	0	3
4.	26EV504T	ASIC Design	PC	3	3	0	0	3
5.	26EV5E1I	Professional Elective I	PE	4	2	0	2	3
6.	26EV5E12	Professional Elective II	PE	4	2	0	2	3
7.	26TP5G1P	Career Skill Development V	CG	2	0	0	2	1*
PRACTICALS								
8.	26EV501L	Signal Processing Laboratory	PC	3	0	0	3	1.5
9.	26EV502L	ASIC Design Laboratory	PC	3	0	0	3	1.5
10.	26TP5G2P	Summer Internship®		0	0	0	0	2®
Total				37	19	3	12	23

® Summer Internship – Additional Credit

* Career Skill Development V - Additional Credit

SEMESTER VI

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	26EV601T	Embedded and IoT Devices	PC	3	3	0	0	3
2.	26EV602T	CMOS Digital IC design	PC	5	3	1	0	4
3.	26EV603T	Universal verification Methodology	PC	3	3	0	0	3
4.	26EV604T	Analog and Digital Communication	PC	5	3	1	0	4
5.	26EV6E1I	Professional Elective III	PE	4	2	0	2	3

6.	26EV6E2T	Professional Elective IV	PE	3	3	0	0	3
7.	26MY6Y1T	Startup and Entrepreneurship	MC	2	2	0	0	2 [#]
8.	26TP6G1P	Career Skill Development VI	CG	2	0	0	2	1 [*]
PRACTICALS								
9.	26EV601L	VLSI Verification and Testing Laboratory	PC	3	0	0	3	1.5
10.	26EV02L	Embedded Systems Laboratory	PC	3	0	0	3	1.5
Total				37	25	2	8	23

[®] Summer Internship Additional Credit – 4 weeks

[#] Startup and Entrepreneurship - Additional Credit

SEMESTER VII

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	26EV701T	VLSI Microfabrication Techniques	PC	3	3	1	0	4
2.	26EV702I	Machine Learning in VLSI System design	PC	5	3	0	2	4
3.	26EV703T	Design for Testability	PC	5	3	1	0	4
4.	26EV7E1T	Professional Elective V	PC	3	3	0	0	3
5.	26EV7E2T	Professional Elective VI	PC	3	3	0	0	3
6.	26GE7C1T	NCC\NSS\NSO\YRC\RRC\Yoga\Fine Arts	HS	0	0	0	0	1 [^]
7.	26AC7Y1T	Research Skill Development	AC	1	1	0	0	0
PRACTICALS								
8.	26EV701L	Microfabrication Laboratory	PC	3	0	0	4	2
9.	26TP7G2P	Summer Internship [®]		0	0	0	0	2 [®]
Total				23	16	1	6	20

[^] NCC B Certificate / Sports Certificates in National & International Level 3 Extra Credits Waiving)
Capstone Project by Minor and Honour Students

SEMESTER VIII

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
PRACTICALS								
1.	26EV801L	Project Work / Startup / Internship Project	CG	16	0	0	16	8
Total				19	3	0	16	8

26 EN 1C11	English Essentials - I	Category	L	T	P	Credit
		HS	2	0	2	3

Objectives

- To develop students' foundational skills in reading, writing, grammar and vocabulary to enable them to understand and produce various forms of communication.
- To enhance students' proficiency in reading comprehension, narrative and comparative writing.
- To comprehend and analyse descriptive texts and visual images
- To articulate similarities and differences in oral and written forms.
- To improve students' proficiency in reading and writing formal letters and emails.

Pre-requisites

- Basic Knowledge in English Language

Course Outcomes

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

CO1	Relate appropriate grammar and vocabulary to read different types of text and converse appropriately.	Remember
CO2	Construct coherent, descriptive and comparative sentences in essay writing.	Understand
CO3	Comprehend and interpret different kinds of texts and audio-visual materials	Understand
CO4	Critically evaluate reviews and articulate similarities and differences	Understand
CO5	Draft formal letters and emails using appropriate language structure and format	Remember

Mapping with Programme Outcomes

COs	POs											PSOs		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
CO1									3	3	3			
CO2									3	3	3			
CO3									3	3	3			
CO4									3	3	3			
CO5									3	3	3			

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)		End Sem Examination (Marks)	
	Test 1		Test 2		Theory	Lab	Theory	Lab
	Theory	Lab	Theory	Lab				
Remember	20	40	20	40	40	-	40	-
Understand	40	60	40	60	60	-	60	-
Total	60	100	60	100	100	-	100	-

Syllabus								
K.S.Rangasamy College of Technology – Autonomous R2022								
B.E. / B.Tech. (Common to all Branches)								
26 EN 1C1I – English Essentials - I								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	2	0	2	60	3	50	50	100
Basics of Communication Listening – Telephone conversation & Writing message, gap filling Reading – Telephone message, bio-note Writing –Personal profile Grammar – Simple present tense, Present continuous tense, Asking questions (wh questions) Vocabulary – One word substitution, Synonyms								[6]
Narration Listening –Travel podcast / Watching a travel documentary Reading – An excerpt from a travelogue, Newspaper Report Writing – Narrative (Event, personal experience etc.) Grammar – Subject – verb agreement, Simple past, Past continuous Tenses Vocabulary – Antonyms, Word formation (Prefix and Suffix)								[6]
Description Listening – Conversation, Radio/TV advertisement Reading – A tourist brochure and planning an itinerary, descriptive article / excerpt from literature Writing – Definitions, Descriptive writing, Checklists Grammar – Future tense, Perfect tenses, Preposition Vocabulary – Adjectives and Adverbs								[6]
Classification Listening – Announcements and filling a table Reading – An article, social media posts and classifying (channel conversion – text to table) Writing – Note making, Note taking and Summarizing, a classification paragraph; Grammar – Connectives, Transition words Vocabulary –Contextual vocabulary, Words used both as noun and verb, Scientific and Technical vocabulary								[6]
Expression of Views Listening – Debate / Discussion Reading – Formal letters, Letters to Editor, Opinion articles / Blogs Writing –Letter writing/E-mail writing (Enquiry/Permission, Letter to Editor) Grammar –Question tags, embedded questions , Yes / No questions Vocabulary – Compound words, Phrasal verbs.								[6]
Lab Activity - Speaking 1. Self-Introduction a) Introducing oneself b) Telephone conversation c) Relaying telephone message d) Role play 2. Narration a) Narrating one's personal experience in front of a group (formal and informal context) Ex.: First day in college / vacation / first achievement etc. 3. Conversation a) Making conversation - formal and informal b) Turn taking and Turn giving c) Small talk (JaM) 4. Short Speech a) Giving short speeches on topics like College Clubs and their activities in the college / Campus Facilities / native place and its major attractions.								[30]

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5. Discussion		
a) Taking part in a group discussion on general topics		
b) Debating on topics of interest and relevance.		
Total Hours: (Lecture - 30; Lab Activity- 30)		60
Text Book(s):		
1.	"English for Engineers and Technologists" Volume I by Orient Blackswan, 2022	
2.	"English for Science & Technology-I" by Cambridge University Press, 2023	
Reference(s):		
1.	"Interchange" by Jack C. Richards, Fifth Edition, Cambridge University Press, 2017.	
2.	"English for Academic Correspondence and Socializing" by Adrian Wallwork, Springer, 2011.	
3.	"The Study Skills Handbook" by Stella Cortrell, Red Globe Press, 2019	
4.	www.uefap.com	

- **SDG 4 -Quality Education**

Course Contents and Lecture Schedule		
S. No.	Topics	No. of Hours
1	Basics of Communication	
1.1	Telephone conversation & Writing message	1
1.2	gap filling & bio-note	1
1.3	Simple present tense & Present continuous tense	1
1.4	Asking questions (wh-questions)	1
1.5	Personal profile	1
1.6	One word substitution & Synonyms	1
2	Narration	
2.1	Antonyms, Word formation (Prefix and Suffix)	1
2.2	Travel podcast / Watching a travel documentary	1
2.3	An excerpt from a travelogue, Newspaper Report	1
2.4	Simple past, Past continuous Tenses	1
2.5	Subject – verb agreement	1
2.6	Narrative (Event, personal experience etc.)	1
3	Description	
3.1	A tourist brochure and planning an itinerary, descriptive article / excerpt from literature	1
3.2	Future tense & Perfect tenses	1
3.3	Adjectives and Adverbs	1
3.4	Checklists	1
3.5	Definitions	1
3.6	Descriptive writing	1
4	Classification	
4.1	Connectives & Transition words	1
4.2	Note making, Note taking and Summarising	1
4.3	Contextual vocabulary & Words used both as noun and verb	1
4.4	Scientific and Technical vocabulary	1
4.5	An article, social media posts and classifying (channel conversion – text to table)	1
4.6	A classification paragraph	1
5	Expression of Views	
5.1	Debate / Discussion	1
5.2	Letter writing (Enquiry/Permission, Letter to Editor)	1
5.3	E-mail writing	1

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5.4	Question tags, embedded questions, Yes / No questions	1
5.5	Compound words	1
5.6	Phrasal verbs	1
Lab Activity - Speaking		
1.	Introducing oneself	2
2.	Role Play	4
3.	Narrating one's personal experience	2
4.	Turn taking and Turn giving	2
5.	Small talk (JaM)	4
6.	Making conversation - formal and informal	4
7.	Giving short speeches on topics	2
8.	Group Discussion 1	4
9.	Group Discussion 2	4
10.	Debating on topics	2

Course Designer(s):

1. Dr.A.Palaniappan – palaniappan@ksrct.ac.in

26MA1C2T	Vector Space and Calculus	Category	L	T	P	Credit
		BS	3	1	0	4

Objectives

- To familiarize the basic concepts and solve the problems by using matrices.
- To get exposed to the fundamentals of differentiation
- To impart the knowledge of function of several variables
- To solve various linear differential equations and method of variation of parameters
- To learn various techniques and methods in solving definite and indefinite integrals

Pre-requisites

- Nil

Course Outcomes

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

CO1	Apply the concepts of Eigen Vectors and transformation to the matrices.	Apply
CO2	Understand the basic concepts of differentiation.	Apply
CO3	Know the techniques of solving functions of two variables.	Apply
CO4	Employ various methods in solving differential equations.	Apply
CO5	Apply different techniques to evaluate definite and indefinite integrals.	Apply

Mapping with Programme Outcomes

Cos	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2			2								2		
CO2	3	2			2								2		
CO3	3	2			2								2		
CO4	3	2			2								2		
CO5	3	2			2								2		

3 - Strong; 2 - Medium; 1 – Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	10	10	10
Understand	10	10	10
Apply	40	40	80
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Syllabus								
K.S. Rangasamy College of Technology – Autonomous R2026								
26MA1C2T - Vector Space and Calculus								
Common to ECE, EEE and VLSI(DT)								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	3	1	0	60	4	40	60	100
Matrices Characteristic equation - Eigen values and Eigen vectors of a real matrix - Properties of Eigen values and Eigen vectors - Cayley-Hamilton theorem - Diagonalization of matrices by orthogonal transformation – Reduction of a quadratic form to canonical form by orthogonal transformation – Nature of quadratic forms								[9]
Differentiation Representation of Functions - Limit of a Function - Continuity - Derivatives - Differentiation Rules (Sum, Product, Quotient, Chain Rules) – Successive Differentiation-Leibnitz's Theorem- Maxima and Minima of functions of one variable.								[9]
Functions of Several Variables Partial differentiation – Homogeneous functions and Euler's theorem – Jacobians – Taylor's series for functions of two variables – Applications: Maxima and minima for functions of two variables – Constrained maxima and minima: Lagrange's method of undetermined multipliers.								[9]
Ordinary Differential Equations Linear differential equations of second and higher order with constant co-efficient - R.H.S is of the form e^{ax} , $\sin \alpha x$, $\cos \alpha x$, x^n , $n > 0$, - Differential equations with variable coefficients: Cauchy's and Legendre's form of linear equations – Method of variation of parameters.								[9]
Integral Calculus Definite and indefinite integrals - Substitution rule - Techniques of integration: Integration by parts, integration of rational functions by partial fraction, integration of irrational functions - Improper integrals.								[9]
Total Hours: 45 + 15 (Tutorial)								60
Text Book(s):								
1.	Kreyszig Erwin, "Advanced Engineering Mathematics", 10 th Edition, John Wiley and Sons (Asia) Limited, 2022.							
2.	Grewal B.S, "Higher Engineering Mathematics", 44 th Edition, Khanna Publishers, Delhi, 2017.							
Reference(s):								
1.	Dass H.K, "Higher Engineering Mathematics", 3 rd (Revised) Edition, S.Chand & Company Ltd, New Delhi, 2014.							
2.	Veerarajan T, "Engineering Mathematics", for Semesters I & II, 1 st Edition, Tata McGraw Hill Publishing Co., New Delhi, 2019.							
3.	Kandasamy P, Thilagavathy K and Gunavathy K, "Engineering Mathematics - I", S.Chand & Company Ltd, New Delhi, 2017.							

*SDG 4 – Quality Education

List of MATLAB Programmes:

1. Introduction to MATLAB.
2. Calculations with vectors and matrices.
3. Find Eigenvalues and Eigenvectors of Matrices.
4. Determining Maxima and Minima of a function of variables.
5. Introduction to solving ordinary differential equations.
6. Solving the ordinary differential equations with MATLAB.

Course Contents and Lecture Schedule			
S. No.	Topics	No. of hours	Mode of Content Delivery
1.0	Eigen Values and Eigen Vectors		
1.1	Characteristic equation and Eigen vectors	2	Lecture with Discussion
1.2	Eigen values and Eigen vectors of a real matrix	2	Lecture with Discussion
1.3	Properties of Eigen values and Eigen vectors	2	Lecture with Discussion
1.4	Cayley-Hamilton theorem.	1	Lecture with Discussion
1.5	Orthogonal transformation of a symmetric matrix to diagonal form	2	Lecture with Discussion
1.9	Tutorial	2	
2.0	Differentiation		
2.1	Representation of Functions	1	Lecture with Discussion
2.2	Limit of a Function and Continuity	2	Lecture with Discussion
2.3	Derivatives and Differentiation Rules (Sum, Product, Quotient, Chain Rules)	1	Lecture with Discussion
2.4	Successive Differentiation	2	Lecture with Discussion
2.5	Leibnitz's Theorem	1	Lecture with Discussion
2.6	Applications: Maxima and Minima of Functions of One Variable.	2	Lecture with Discussion
2.7	Tutorial	2	
3.0	Functions of Several Variables		
3.1	Partial Differentiation.	1	Lecture with Discussion
3.2	Homogeneous Functions	1	Lecture with Discussion
3.3	Euler's Theorem	1	Lecture with Discussion
3.4	Jacobians	1	
3.5	Taylor's Series for Functions of Two Variables	1	Lecture with Discussion
3.6	Applications: Maxima and Minima of Functions of Two Variables	2	Lecture with Discussion
3.7	Constrained Maxima and Minima: Lagrange's Method of Undetermined Multipliers	2	Lecture with Discussion
3.8	Tutorial	2	
4.0	Differential Equations		
4.1	Linear Differential Equations of Second and Higher Order with Constant Co-efficient	1	Lecture with Discussion
4.2	R.H.S is of the form e^{ax} , $\sin ax$, $\cos ax$	2	Lecture with Discussion
4.3	R.H.S is of the form x^n , $n > 0$	2	Lecture with Discussion
4.4	Differential Equations with Variable Coefficients: Cauchy's	2	Lecture with Discussion
4.5	Legendre's form of Linear Equations	1	Lecture with Discussion
4.6	Method of Variation of Parameters.	1	Lecture with Discussion
4.7	Tutorial	2	
5.0	Integration		
5.1	Definite and Indefinite Integrals.	1	Lecture with Discussion
5.2	Substitution Rule	1	Lecture with Discussion
5.3	Techniques of Integration: Integration by Parts.	2	Lecture with Discussion
5.4	Integration of Rational Functions by Partial Fraction.	2	Lecture with Discussion
5.5	Integration of Irrational Functions.	2	Lecture with Discussion
5.6	Improper Integrals	1	Lecture with Discussion
5.9	Tutorial	2	
	Total	60	

Course Designer(s)

Ms. D. PADMAVATHI, padmavathi@ksrct.ac.in

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26PH1C3T	Semiconductor Physics and Devices	Category	L	T	P	Credit
		BS	3	0	0	3

Objectives

- To understand semiconductor properties, carrier concentration, and transport mechanisms such as drift, diffusion, and mobility, along with four-probe and Hall effect methods.
- To introduce crystallography and silicon technology, including crystal structures, defects, and single-crystal growth, and their impact on device performance.
- To develop understanding of PN junction formation, energy bands, biasing, and diode characteristics including capacitance and switching.
- To study semiconductor diodes and their applications in rectification, voltage regulation, and optoelectronic devices used in VLSI systems.
- To understand advanced semiconductor devices, IC fabrication processes, and emerging technologies like CMOS, MOSFETs, and IGBTs.

Pre-requisites

Nil

Course Outcomes

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

CO1	Appraise the knowledge of semiconductor properties, carrier concentration, and carrier transport mechanisms, and apply four-probe and Hall effect methods for material characterization.	Understand
CO2	Understand crystal structures, lattice parameters, and silicon processing techniques, and analyze their influence on semiconductor device performance.	Understand
CO3	Analyze PN junction behavior under different biasing conditions and evaluate diode characteristics including capacitance and switching.	Analyze
CO4	Apply the working principles of semiconductor diodes in rectifiers, voltage regulators, and optoelectronic devices for practical applications.	Apply
CO5	Apply advanced semiconductor devices, IC fabrication processes, and emerging technologies such as CMOS, MOSFETs, and IGBTs in VLSI applications.	Apply

Mapping with Programme Outcomes

COs	POs											PSOs		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
CO1	3	2	-	-	-	-	-	2	-	2	-	2	2	-
CO2	3	2	-	-	-	-	-	2	-	2	-	2	2	-
CO3	3	2	-	-	-	-	-	2	-	2	-	2	2	-
CO4	3	2	-	-	-	-	-	2	-	2	-	2	2	-
CO5	3	2	-	-	-	-	-	2	-	2	-	2	2	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests(Marks)		End Sem Examination(Marks)
	1	2	
Remember	10	10	15
Understand	35	35	65
Apply	05	05	10
Analyse	10	10	10
Evaluate	0	0	0
Create	0	0	0

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

Syllabus								
K.S.Rangasamy College of Technology – Autonomous R2026								
Semiconductor Physics and Devices (EE VLSIDT)								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	3	0	0	45	3	40	60	100
**BASICS OF SEMICONDUCTOR PHYSICS: Properties - Elemental and compound semiconductors - Carrier concentration in intrinsic semiconductor - Carrier concentration in extrinsic semiconductors (qualitative) - Carrier transport in semiconductor - Random motion – Drift - Mobility and Diffusion - Experimental determinations of resistivity of semiconductor by four probe method - Hall coefficient - Experimental determination of Hall coefficient – Applications of Hall effect Case study: Impact of carrier transport mechanisms on high-speed VLSI								[9]
**CRYSTALLOGRAPHY AND SILICON TECHNOLOGY: Lattice - Unit cell – Crystal systems and Bravais lattice - Miller indices – d-spacing in cubic lattice - Calculation of number of atoms per unit cell - Atomic radius – Coordination number - Packing factor for HCP structure - Production of single crystal silicon by melt growth techniques (Bridgman and Czochralski) - Basic properties of silicon wafers - Wafer orientation – Wafer cleaning – Pattern alignment - Imperfections in crystals. Case study: Importance of crystal orientation in CMOS performance								[9]
*PN JUNCTION AND CHARACTERISTICS: Formation of PN junction - built-in potential - Depletion region - Energy band diagram of PN junction at equilibrium and under bias - Forward and reverse bias operation - Current–voltage characteristics of a diode - Static and dynamic resistances - Transition and diffusion capacitances - Temperature dependence and diode switching Case study: Junction capacitance and switching in high-speed diodes								[9]
*SEMICONDUCTOR DIODES AND APPLICATIONS : Ideal vs. practical diode models- Rectifiers: Half-wave, full-wave, bridge rectifier, and filters-Zener diode – Breakdown mechanisms and voltage regulation-Light-emitting diode (LED) – Photodiode - Solar cell – Principles and characteristics - Varactor diode and Tunnel diode Case study: Semiconductor materials and PN junction devices for modern VLSI circuits								[9]
**ADVANCED SEMICONDUCTOR DEVICES AND APPLICATIONS: Power semiconductor devices: SCR, TRIAC, DIAC, UJT – structure and characteristics- Photonic and optoelectronic devices: phototransistor, photoconductive cells, and optocoupler- Introduction to IC fabrication: oxidation, diffusion, photolithography, and doping-Emerging devices: CMOS basics, power MOSFET, and IGBT overview. Case study: Emerging semiconductor devices and their influence on next-generation VLSI technology								[9]
Total Hours:								45
Text Book(s):								
1.	M. N. Avadhanulu, P. G. Kshirsagar, T.V.S. Arun Murthy “A Text Book of Engineering Physics”, S Chand Publications, New Delhi, 2022.							
2.	D. Halliday, R. Resnick and J. Walker “Fundamentals of Physics” 12 th Edition, John Wiley & Sons, Inc., New York, 2022							
3.	Anil K. Maini, Varsha Agrawal, “Electronics Devices and Circuits”, 2nd Edition, Wiley India Pvt.Ltd, 2019.							
Reference(s):								
1.	H. K. Malik, A. K. Singh “Engineering Physics” McGraw Hill Education Private Limited, New Delhi, 2018.							
2.	Robert L. Boylestad, Louis Nashelsky, “Electronic Devices and circuit theory”, 11th Edition, Pearson Education, 2017.							

*SDG 7: Affordable and Clean Energy

**SDG 9: Industry, Innovation, and Infrastructure

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	BASICS OF SEMICONDUCTOR PHYSICS:	
1.1	Properties - Elemental and compound semiconductors	1
1.2	Carrier concentration in intrinsic semiconductor	2
1.3	Carrier concentration in extrinsic semiconductors(qualitative)	1
1.4	Carrier transport in semiconductor	1
1.5	Random motion – Drift - Mobility and Diffusion	1
1.6	Experimental determinations of resistivity of semiconductor by four probe method	1
1.7	Hall coefficient - Experimental determination of Hall coefficient	1
1.8	Applications of Hall effect	1
2.0	CRYSTALLOGRAPHY AND SILICON TECHNOLOGY:	
2.1	Lattice - Unit cell	1
2.2	Crystal systems and Bravais lattice	1
2.3	Miller indices	1
2.4	d-spacing in cubic lattice	1
2.5	Calculation of number of atoms per unit cell - Atomic radius – Coordination number - Packing factor for HCP structure -	2
2.6	Production of single crystal silicon by melt growth techniques (Bridgman and Czochralski)	2
2.7	Basic properties of silicon wafers - Wafer orientation – Wafer cleaning -Pattern alignment	1
3.0	PN JUNCTION AND CHARACTERISTICS	
3.1	Formation of PN junction	1
3.2	Built-in potential - Depletion region	1
3.3	Energy band diagram of PN junction at equilibrium and under bias	1
3.4	Forward and reverse bias operation	1
3.5	Current–voltage characteristics of a diode	2
3.6	Static and dynamic resistances	1
3.7	Transition and diffusion capacitances	1
3.8	Temperature dependence and diode switching	1
4.0	SEMICONDUCTOR DIODES AND APPLICATIONS	
4.1	Ideal vs. practical diode models	1
4.2	Rectifiers - Half-wave - full-wave	2
4.3	Bridge rectifier - filters	1
4.4	Zener diode - Breakdown mechanisms and voltage regulation	2
4.5	Light-emitting diode (LED)	1
4.6	Photodiode - Solar cell – Principles and characteristics	1
4.7	Varactor diode and Tunnel diode	1
5.0	ADVANCED SEMICONDUCTOR DEVICES AND APPLICATIONS:	
5.1	Power semiconductor devices: SCR, TRIAC	2
5.2	DIAC, UJT – structure and characteristics	1
5.3	Photonic and optoelectronic devices: phototransistor, photoconductive cells,	2
5.4	Optocoupler	1
5.5	Introduction to IC fabrication: oxidation, diffusion, photolithography, and doping	1
5.6	Emerging devices: CMOS basics, power MOSFET	1
5.7	IGBT	1

Course Designers

1. Dr. V. Vasudevan - vasudevanv@ksrct.ac.in
2. Dr. P. Suthanthira Kumar - suthanthirakumar@ksrct.ac.in

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26CS1C1T	C PROGRAMMING	Category	L	T	P	Credit
		ES	3	0	0	3

Objectives

- To develop computational thinking and structured problem-solving skills
- To design algorithms and implement solutions using C programming
- To understand control structures, arrays, and modular programming
- To analyze memory concepts using pointers and dynamic allocation
- To apply file handling techniques for real-world applications

Pre-requisites

NIL

Course Outcomes

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

CO1	Apply basic problem-solving techniques to develop simple C programs using fundamental programming concepts.	Apply
CO2	Develop programs using control structures, arrays, and strings	Apply
CO3	Design modular programs using functions and recursion and memory concepts using pointers and dynamic memory allocation	Apply
CO4	Construct programs using structures and file handling concepts	Apply
CO5	Apply file handling techniques for real-world applications	Apply

with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3	-	3	-	-	-	2	2	-	2	3	-	-
CO2	3	3	3	-	3	-	-	-	2	2	-	2	3	-	-
CO3	3	3	3	-	3	-	-	-	2	2	-	2	3	-	-
CO4	3	3	3	-	3	-	-	-	2	2	-	2	3	-	-
CO5	3	3	3	-	3	-	-	-	2	2	-	2	3	2	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	10	10	20
Understand	10	10	20
Apply	40	40	60
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

Syllabus								
K.S.Rangasamy College of Technology – Autonomous R2026								
26CS1C1T – C Programming								
Common to all Branches								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	3	0	0	45	3	40	60	100
Computational Thinking and C Fundamentals Problem solving techniques – Algorithm – Flowchart – Pseudocode – Structure of a C program – Compilation process – Data types – Variables – Constants – Operators and expressions – Console I/O – Debugging basics (syntax and logical errors).								[9]
Control Structures Conditional statements – if, if-else, nested if – switch case – Looping: while, do-while, for loops – break, continue, goto, One-dimensional arrays – Two-dimensional arrays – Matrix operations – Strings – String handling functions								[9]
Functions and Pointers* Functions – Function prototypes – Call by value and reference – Recursion – Passing arrays to functions – Pointer variables – Memory visualization concepts - Pointer arithmetic – Pointers and arrays – Dynamic memory allocation.								[9]
Structures, Unions, Enumerations, Typedef and Preprocessors* Structures - Introduction to Structures and Initialization - Arrays of Structures- Arrays and Structures, Nested Structures - Passing Structures to Functions - Structure Pointers - Unions – Bit Fields - Enumerations - typedef –The preprocessor and commands.								[9]
File Handling* File: Streams –Reading and Writing Characters - Reading and Writing Strings - File System functions – File Manipulation-Sequential access - Random Access Files – Command Line arguments– Application development.								[9]
Total Hours:							45	
Text Book(s):								
1.	Herbert Schildt, “The Complete Reference C”, Fourth Edition, Tata McGraw Hill Edition, 2010.							
2.	Brian W. Kernighan and Dennis M. Ritchie, “C Programming Language”, Prentice-Hall.							
Reference(s):								
1.	Balagurusamy E, “Programming in ANSI C”, Seventh Edition, Tata McGraw Hill Edition, New Delhi, 2016.							
2.	Byron Gottfried, “Programming with C”, Third Edition, McGraw Hill Education, 2014							
3.	ReemaThareja, “Computer Fundamentals and Programming in C”, Second Edition, Oxford Higher Education, 2016.							
4.	King K N, “C Programming: A Modern Approach”, Second Edition, W.W.Norton, New York, 2008.							

*SDG:4- Quality Education

Course Designers

1. Dr.P.Kaladevi- kaladevi@ksrct.ac.in

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26CH1C3T	Chemistry for Electrical Science	Category	L	T	P	Credit
		BS	3	0	0	3

Objectives

- To help the learners to identify the hardness of water and its removal
- To recognize the concepts of electrochemistry and its applications
- To study the construction and working principle of batteries and fuel cells.
- To explain the characteristics and applications of various types of sensors
- To explore the working principles of smart materials and its applications

Pre-requisites

- Electro Chemistry, Batteries, Sensors, Smart materials

Course Outcomes

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

CO1	Identify the types of hardness of water and its removal.	Apply
CO2	Analyse the basic concepts of electro chemistry.in engineering applications	Understand
CO3	Recognize the significances of the types of batteries and fuel cells.	Understand
CO4	Categorize the types of sensors for various applications.	Apply
CO5	Understand the properties, principles, and applications of various smart materials in modern technologies.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-	
CO4	3	3	-	-	-	-	-	-	-	-	-	-	2	2	-	
CO5	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-	

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	20	20	20	20
Understand	30	30	60	60
Apply	10	10	20	20
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	60	60	100	100

K.S.Rangasamy College of Technology – Autonomous R2026								
B.E – EEE, ECE & EE (VLSI DT)								
26CH1C3T- Chemistry for Electrical Science								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	3	0	3	45	3	40	60	100
Unit I Water Technology* Introduction –Domestic and Industrial Uses of Water - Hardness - Types – Estimation of Hardness by EDTA Method- Internal Conditioning - Colloidal, Phosphate, Calgon and Carbonate Conditioning Methods – External Conditioning - Zeolite Process- Demineralization Process - Desalination Methods -Reverse Osmosis and Electro Dialysis -Domestic Water Treatment.								[9]
Unit II Electro Chemistry** Electrode Potential - Nernst Equation - Derivation and Problems - Reversible and Irreversible Cells – Electro Chemical Series- Significances -Types of Electrodes and its Applications - Reference Electrodes - pH, Conductometric and Potentiometric Titrations - Principles of Electro Plating and Electroless Plating- Fabrication Process of Printed Circuit Board.								[9]
Unit III Energy Storage Devices Batteries - Types of Batteries. Fabrication and Working of Alkaline Battery - Lead-Acid Battery-Ni-Cd-Lithium Ion Batteries – Fuel Cells: Hydrogen-Oxygen Fuel Cell - Microbial Fuel Cell (MFC). Organic Solar Cells-Working Principle and Applications- Super capacitors- Organic Transistors- Construction-Working Principle and Applications in Electronic Industries.								[9]
Unit IV Chemical Sensors*** Sensors – Chemical Sensors – Characteristics – Elements and Characterization – Potentiometric Sensors - Amperometric Sensors – Sensors Based on Electrochemical Methods – Electrochemical Biosensors – Optical Biosensors: Enzyme Sensors – Bio affinity Sensors - DNA Sensors– Separation Methods. Nano Technology in Chemical Sensors.								[9]
Unit V Electronic Materials Liquid Crystal Polymers – Organic Light Emitting Diode (OLED) – Polythiophene – Working and Applications – Conductive Polymers and Semi Conducting Polymers: Principle and Applications- Organic Dielectric Material -Polystyrene and PMMA - Smart Screen- Components: Indium Tin Oxide -Properties and Applications – Touch Screen - Resistive and Capacitive — Optical Storage - Photo Chromic Materials – Solid Storage								[9]
Total Hours:								45
Text Book(s):								
1.	O.G. Palanna “Engineering Chemistry” Tata McGraw-Hill New Delhi, 2017.							
Reference(s):								
1.	Jain. P.C. and Monica Jain, “Engineering Chemistry”, Dhanpatrai publishing, New Delhi, 16 th edition, 2016.							
2.	Pletcher D and Walsh F C, “Industrial Electrochemistry”, Chapman and Hall, 2 nd Edition, New York, 2012							
3.	O.V. Roussak and H.D. Gesser, Applied Chemistry-A Text Book for Engineers and Technologists, Springer Science Business Media, New York, 2 nd Edition, 2013.							
4.	Shikha Agarwal, “Engineering Chemistry-Fundamentals and Applications”, Cambridge University Press, Delhi, 2 nd Edition, 2019							
5.	Hagen Klauk, “Organic Electronics: Materials, Manufacturing and Applications”, Wiley-VCH, 2007							

S. No.	Topic	No. of hours
1.0	Water Technology	
1.1	Introduction – Domestic and Industrial Uses of Water	1
1.2	Hardness – Types	1
1.3	Estimation of Hardness of Water by EDTA Method	1
1.4	Internal Conditioning -Colloidal, Phosphate, Calgon and Carbonate	1
1.5	External Conditioning -Zeolite Process & Demineralization Process	1
1.6	Desalination methods - Reverse Osmosis and Electrodialysis	1
1.7	Domestic Water Treatment	2
1.8	Break point chlorination	1
2.0	Electro Chemistry	
2.1	Electrode Potential - Nernst Equation - Derivation and Problems	2
2.2	Reversible and Irreversible Cells-Electrochemical series and significances	1
2.3	Types of Electrodes and its Applications	1
2.4	Reference Electrodes - pH	1
2.5	Conductometric and Potentiometric Titrations	1
2.6	Principles of Electro Plating and Electroless Plating-	2
2.7	Fabrication Process of Printed Circuit Board.	1
3.0	Energy Storage Devices	
3.1	Reversible and Irreversible Cells – Batteries - Types of Batteries	2
3.2	Fabrication and Working of Alkaline Battery	1
3.3	Lead-Acid Battery	1
3.4	Ni-Cd-Lithium Ion Batteries	1
3.5	Fuel Cells: Hydrogen-Oxygen Fuel Cell	1
3.6	Microbial Fuel Cell (MFC)	1
3.7	Organic Solar Cells	1
3.8	Organic Transistors	1
4.0	Chemical Sensors	
4.1	Sensors – Chemical Sensors - Characteristics	2
4.2	Elements and Characterization	1
4.3	Potentiometric Sensors, Amperometric Sensors	1
4.4	Sensors Based on Electrochemical Methods	1
4.5	Electrochemical Biosensors	1
4.6	Optical Biosensors: Enzyme Sensors – Bio affinity Sensors	1
4.7	DNA Sensors.	1
4.8	Separation Methods. Nano Technology in Chemical Sensors.	1
5.0	Electronic Materials	
5.1	. Liquid Crystal Polymers - Organic Light Emitting Diode (OLED) – Polythiophene - Working and Applications	2
5.2	Conductive Polymers and Semi Conducting Polymers: Principle and Applications	2
5.3	Organic Dielectric Material -Polystyrene and PMMA	1
5.4	Conductive Components: Indium Tin Oxide -Touch Screen	2
5.5	Magnetic Storage - Iron Oxide and Cobalt Alloy	1
5.6	Optical Storage -Photo Chromic Materials - Solid Storage.	1

Course Designer

1. **Dr.T.A.Sukantha P/Che**
2. **Dr.R.Palanivelu P/Che**

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26MY1Y2T	Universal Human Values	Category	L	T	P	Credit
		MC	3	0	0	3*

Objectives

- To identify the essential complementarity between 'values' and 'skills'
- To ensure core aspirations of all human beings.
- To acquire ethical human conduct, trustful and mutually fulfilling human behaviour
- To enrich interaction with Nature
- To achieve holistic perspective towards life and profession

Pre-requisites

- Nil

Course Outcomes

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

CO1	Understand the significance of value inputs in formal education and start applying them in their life and profession	Understand
CO2	Evaluate coexistence of the "I" with the body.	Analyze
CO3	Identify and evaluate the role of harmony in family, society and universal order.	Analyze
CO4	Classify and associate the holistic perception of harmony at all levels of existence and Nature	Analyze
CO5	Develop appropriate human conduct and management patterns to create harmony in professional and personal lives.	Create

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	-	-	-	-	-	-	3	2	-	2	3	-	-	-
CO2	-	-	-	-	-	3	-	3	3	-	-	3	-	-	-
CO3	-	-	-	-	-	3	3	3	3	-	-	3	-	-	-
CO4	-	-	-	-	-	3	3	3	3	-	-	3	-	-	-
CO5	-	-	-	-	-	3	3	3	3	3	-	3	-	-	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	10	10	No End Semester Examination
Understand	10	10	
Apply	20	20	
Analyse	20	20	
Evaluate	-	-	
Create	-	-	
Total	60	60	

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

Syllabus								
K.S.Rangasamy College of Technology – Autonomous R2026								
B.E – Electronics Engineering (VLSI Design and Technology)								
26MY1Y2T - Universal Human Values								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	3	0	0	45	3*	100	--	100
Introduction to Value Education* Understanding Value Education-Self Exploration as The Process for Value Education-Continuous Happiness And Prosperity-The Basic Human Aspirations-Right Understanding-Relationship and Physical Facility –Happiness and Prosperity - Current Scenario – Method to Fulfill The Basic Human Aspirations.								[9]
Harmony in the Human Being** Understanding Human Being as the Co-Existence of the Self and the Body-Distinguishing Between the Needs of the Self and the Body-the Body as an Instrument of the Self-Understanding Harmony in The Self-Harmony of the Self With The Body – Programme to Ensure Self-Regulation And Health.								[9]
Harmony in the Family and Society** Harmony in The Family –The Basic Unit of Human Interaction-Values in Human- to - Human Relationship –‘Trust’ the Foundation Value In Relationship –‘Respect’- As the Right Evaluation-Understanding Harmony in the Society –Vision for the Universal Human Order.								[9]
Harmony in the Nature/Existence*** Understanding Harmony in the Nature-Interconnectedness, Self-Regulation and Mutual Fulfillment Among the four Orders of Nature – Realizing Existence as Co-Existence At All Levels –The Holistic Perception of Harmony In Existence.								[9]
Implications of the Holistic Understanding*** Natural Acceptance of Human Values- Definitiveness of Human Conduct- A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order- Competence in Professional Ethics –Holistic Technologies, production Systems and Management Models-Typical Case Studies – Strategies for Transition Towards Value Base Life and Profession								[9]
Total Hours								45
Text Book(s):								
1.	Gaur, R R, Asthana, R and Bagaria, G P. “A Foundation Course in Human Values and Professional Ethics”, 2 nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47-1							
2.	Gaur, R R, Asthana, R and Bagaria, G P. “Teachers’ Manual for A Foundation Course in Human Values and Professional Ethics”, 2 nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-53-2							
Reference(s):								
1.	Jeevan Vidya: EkParichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.							
2.	Human Values, A.N. Tripathi, New Age International. Publishers, New Delhi, 2004.							

*SDG 4 – Quality Education

**SDG 3 – Good Health and Well Being

***SDG 16 – Peace, Justice and Strong Institutions

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

Course Contents and Lecture Schedule		
S. No.	Topics	No. of hours
1.0	Introduction to Value Education	
1.1	Discussion on Present Education System and Skill Based Education	1
1.2	Understanding Value Education	1
1.3	Self-exploration as the process for value education	1
1.4	Basic Human Aspirations - Continuous Happiness and Prosperity	1
1.5	Basic requirements to fulfill Human Aspirations - Right understanding, Relationship and Physical facility	1
1.6	Transformation from Animal Consciousness to Human Consciousness	1
1.7	Sources of Happiness and Prosperity – Harmony and Disharmony	1
1.8	Current Scenario and Role of Education	1
1.9	Outcome of Human Education and Method to fulfill the basic human aspirations	1
2.0	Harmony In The Human Being	
2.1	Understanding Human being - As Co-Existence of the self and the Body - The Needs of the Self and the Body	1
2.2	Understanding Human being - As Co-Existence of the self and the Body - The Activities and Response of the Self and the Body	2
2.3	The body as an instrument of the self	1
2.4	Understanding harmony in the self	1
2.5	Harmony of the self with the body	2
2.6	Programme to ensure self-regulation and health	1
2.7	My Participation (Value) regarding Self and my Body - Correct Appraisal of our Physical needs	1
3.0	Harmony in the Family and Society	
3.1	Harmony in the Family - Understanding Values in Human Relationships	1
3.2	Family as the basic Unit of Human Interaction	1
3.3	Values in human Relationships	1
3.4	Trust - the foundation value in relationship	1
3.5	Respect as the right evaluation, the Basis for Respect, Assumed Bases for Respect today	1
3.6	Harmony from Family to World Family: Undivided Society	1
3.7	Extending Relationship from family to society , Identification of the Comprehensive Human Goal	1
3.8	Programs needed to achieve the Comprehensive Human Goal: The Five Dimensions of Human Endeavour	1
3.9	Harmony from Family Order to World Family Order – Universal Human Order	1
4.0	Harmony in the Nature / Existence	
4.1	The Four Orders in Nature	1
4.2	Participation of Human Being in Entire Nature	1
4.3	Natural Characteristics - Tendency of Human Living with Animal Consciousness / The Holistic Perception of Harmony in Existence	1
4.4	Present day Problems	1
4.5	Recyclability and self-regulation in Nature	1
4.6	Relationship of Mutual Fulfillment	1
4.7	An Introduction to space, Co-existence of Units in Space	1
4.8	Harmony in Existence – Understanding Existence as Co- Existence	1
4.9	Natural Characteristic of Human Living with Human Consciousness	1
5.0	Implications of the Holistic Understanding	
5.1	Natural Acceptance of human values	1

Passed in BoS Meeting held on
Approved in Academic Council Meeting held on

5.2	Definitiveness of Ethical Human Conduct - Development of Human Consciousness	1
5.3	Identification of Comprehensive Human Goal	1
5.4	Basis for Humanistic Education and Humanistic Constitution	1
5.5	Ensuring Competence in professional Ethics	1
5.6	Issues in Professional Ethics-The Current Scenario	1
5.7	Holistic Technologies and Production Systems and management models - Typical Case Studies	2
5.8	Strategies for transition towards value based life and profession	1

Course Designer(s)

1. Dr.G.Vennila - vennila@ksrct.ac.in
2. Dr.K.Raja - rajak@ksrct.ac.in

26TA1YIT	Heritage of Tamils (Common to all Branches)
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Category	L	T	P	Credit
GE	1	0	0	1

Objectives:

- To learn the extensive literature of classical Tamil.
- To review the fine arts heritage of Tamil culture.
- To realize the contribution of Tamils in Indian freedom struggle.

Prerequisite:

Nil

Course Outcomes:

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

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

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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
3- Strong; 2-Medium; 1-Low												

Syllabus

K. S. Rangasamy College of Technology – Autonomous R2026								
26TA1YIT- Heritage of Tamils								
Semester	Hours/Week			Total hrs	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	1	0	0	15	1	100	-	100
Language and Literature 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								3
Heritage - Rock Art Paintings to Modern Art – Sculpture 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.								3
Folk and Martial Arts Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leatherpuppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.								3
Thinai Concept of Tamils 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.								3
Contribution of Tamils to Indian National Movement and Indian Culture 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.								3
Total Hours								15
Text Book(s):								
1.	தமிழக வரலாறு - மக்களும் பண்பாடும் கே. கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).							
2.	கணினித்தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).							
3.	கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரீகம் (தொல்லியல் துறை வெளியீடு).							
4.	பொருநை - ஆற்றங்கரை நாகரீகம் (தொல்லியல் துறை வெளியீடு).							
5.	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print).							
6.	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies).							
7.	Historical Heritage of the Tamils (Dr.S.V.Subaramanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).							
8.	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)							
9.	Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services							
10.	Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author).							
11.	Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu).							
12.	Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.							

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26TA1YIT	தமிழர் மரபு (அனைத்து துறைகளுக்கும் பொதுவானது)
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Category	L	T	P	Credit
GE	1	0	0	1

பாடத்தின் நோக்கங்கள்:

- தமிழ் மொழியின் இலக்கணச் செறிவைக் கற்றுணர்தல்.
- தமிழர் பண்பாட்டின் நுண்கலைகள் பற்றிய ஒரு மீள்பார்வை.
- இந்திய சுதந்திரப் போராட்டத்தில் தமிழர்களின் பங்களிப்பை உணருதல்.

முன்கூட்டிய துறைசார் அறிவு:

தேவை இல்லை

பாடம் கற்றதின் விளைவுகள்:

பாடத்தை வெற்றிகரமாக கற்று முடித்த பின்பு, மாணவர்களால் முடியும் விளைவுகள்

CO1	தமிழ் மொழியின் செந்தண்மை மற்றும் இலக்கியம் குறித்த தெரிதல்.	புரிதல்
CO2	தமிழர்களின் சிற்பக்கலை, ஓவியக்கலை மற்றும் இசைக்கருவிகள் குறித்த தெளிவு.	புரிதல்
CO3	தமிழர்களின் நாட்டுப்புறக்கலைகள் மற்றும் வீரவிளையாட்டுகள் குறித்த தெளிவு.	புரிதல்
CO4	தமிழர்களின் திணைக் கோட்பாடுகள், சங்ககால வணிகம் மற்றும் சோழர்களின் வெற்றிகள் குறித்த தகவல்கள்.	புரிதல்
CO5	இந்திய தேசிய இயக்கம், சுயமரியாதையை இயக்கம் மற்றும் சித்த மருத்துவம் பற்றிய புரிதல்.	புரிதல்

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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

3- Strong; 2-Medium; 1-Low

Syllabus

K. S. Rangasamy College of Technology – Autonomous R2026								
26TA1YIT – தமிழர் மரபு								
Semester	Hours/Week			Total hrs	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	1	0	0	15	1	100	-	100
மொழி மற்றும் இலக்கியம்: இந்திய மொழிக் குடும்பங்கள் - திராவிட மொழிகள் - தமிழ் ஒரு செம்மொழி - தமிழ் செவ்விலக்கியங்கள் - சங்க இலக்கியத்தின் சமயச் சார்பற்ற தன்மை - சங்க இலக்கியத்தில் பகிர்தல் அறம் - திருக்குறளில் மேலாண்மைக் கருத்துக்கள் - தமிழ்க் காப்பியங்கள் - தமிழகத்தில் சமண பௌத்த சமயங்களின் தாக்கம் - பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள் - சிற்றிலக்கியங்கள் - தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி - தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.								3
மரபு - பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை-சிற்பக் கலை: நடுகல் முதல் நவீன சிற்பங்கள் வரை - ஐம்பொன் சிலைகள் - பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள், பொம்மைகள் - தேர் செய்யும் கலை - சுடுமண் சிற்பங்கள் - நாட்டுப்புறத் தெய்வங்கள் - குமரிமுனையில் திருவள்ளுவர் சிலை - இசைக் கருவிகள் - மிருதங்கம், பறை, வீணை, யாழ், நாதஸ்வரம் - தமிழர்களின் சமூக பொருளாதார வாழ்வில் கோவில்களின் பங்கு.								3
நாட்டுப்புறக் கலைகள் மற்றும் வீர விளையாட்டுகள்: தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஓயிலாட்டம், தோல்பாவைக் கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுகள்.								3
தமிழர்களின் திணைக் கோட்பாடுகள்: தமிழகத்தின் தாவரங்களும், விலங்குகளும் - தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள் - தமிழர்கள் போற்றிய அறக்கோட்பாடு - சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும், கல்வியும் - சங்ககால நகரங்களும் துறை முகங்களும் - சங்க காலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி - கடல்கடந்த நாடுகளில் சோழர்களின் வெற்றி.								3
இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு: இந்திய விடுதலைப்போரில் தமிழர்களின் பங்கு - இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் - சுயமரியாதை இயக்கம் - இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு - கல்வெட்டுகள், கையெழுத்துப்படிக்கள் - தமிழ்ப் புத்தகங்களின் அச்ச வரலாறு.								3
Total Hours								15
Text Book(s):								
1.	தமிழக வரலாறு - மக்களும் பண்பாடும் கே. கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).							
2.	கணினித்தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).							
3.	கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரீகம் (தொல்லியல் துறை வெளியீடு).							
4.	பொருறை - ஆற்றங்கரை நாகரீகம் (தொல்லியல் துறை வெளியீடு).							
5.	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print).							
6.	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.							
7.	Historical Heritage of the Tamils (Dr.S.V.Subaramanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).							
8.	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)							
9.	Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)							
10.	Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author).							
11.	Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu).							
12.	Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.							

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26CS1C1L	C Programming Laboratory	Category	L	T	P	Credit
		ES	0	0	3	1.5

Objectives

- To enable the students to apply the concepts of C to solve simple problems
- To use selection and iterative statements in C programs
- To apply the knowledge of library functions in C programming
- To implement the concepts of arrays, functions, structures and pointers in C
- To implement the file handling operations through C

Pre-requisites

NIL

Course Outcomes

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

CO1	Implement computational problems using selection and iterative statements.	Apply
CO2	Demonstrate C program to manage collection of related data.	Apply
CO3	Design and Implement different ways of passing arguments to functions, Recursion and implement pointers concepts.	Apply
CO4	Develop a C program to manage collection of different data using structures, Union, user-defined data types and preprocessor directives.	Apply
CO5	Demonstrate C program to store and retrieve data using file concepts.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO2	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO3	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO4	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO5	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	-	-	-	-
Understand	-	12	-	-
Apply	50	13	100	100
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

K.S.Rangasamy College of Technology – Autonomous R2026								
26CS1C1L – C Programming Laboratory								
Common to all branches								
Semester	Hours/Week			Total Hrs	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	0	0	3	45	1.5	60	40	100
List of Experiments*:								
<ol style="list-style-type: none"> 1. Implementation of simple real-life problems using algorithm, flowchart, and basic C programs. 2. Programs using input/output, operators, and identification of syntax and logical errors. 3. Implementation of problems using if, if-else, nested conditions, and switch statements. 4. Programs using loops (for, while, do-while) including pattern generation and series computation. 5. Implementation of searching (linear/binary) and basic sorting techniques. 6. Matrix operations and real-world applications (e.g., marks processing). 7. Programs for string operations using and without library functions. 8. Implementation of modular programs using functions and recursive techniques. 9. Programs using pointers, pointer arithmetic, and dynamic memory allocation. 10. Implementation of structures and file operations for simple record management systems. 								

*SDG 4 – Quality Education

Course Designer(s)

1. Dr.P.Kaladevi - kaladevi@ksrct.ac.in

26PH1C3L	Semiconductor Physics Laboratory	Category	L	T	P	Credit
		BS	0	0	2	1

Objectives

- To infer the practical knowledge by applying the experimental methods to correlate with the Physics theory.
- To demonstrate an ability to make physical measurements and understand the limits of precision in measurements
- To analyze the behavior and characteristics of various materials for its optimum utilization
- Test the knowledge of theoretical concepts and develop the experimental skills of the learners.
- To facilitate data interpretation and expose the learners to various industrial and environmental applications

Pre-requisites

- Nil

Course Outcomes

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

CO1	Recognize semiconductor transport properties to determine charge carrier type, Hall coefficient, and carrier density for electronic device applications.	Apply
CO2	Analyze photovoltaic characteristics to evaluate power output and efficiency for energy-efficient electronic and embedded systems.	Apply
CO3	Infer the optical diffraction properties to determine laser wavelength for applications in photonic systems and optical communication.	Apply
CO4	Grasp the energy band gap characteristics of semiconductors to understand PN junction behavior in electronic devices.	Apply
CO5	Realize quantum principles governing semiconductor devices to relate photon energy and electronic transitions in modern electronic technologies.	Analyze

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	2	2	2	-	-	2	-	-
CO2	3	-	-	-	-	-	-	2	2	2	-	-	-	-	-
CO3	3	-	-	-	-	-	-	2	2	2	-	-	-	-	-
CO4	3	-	-	-	-	-	-	2	2	2	-	-	2	-	-
CO5	3	-	-	-	-	-	-	2	2	2	-	-	-	-	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)	
	Lab	Activity			
Remember	10	-	10	-	10
Understand	30	30	30	-	30
Apply	40	40	40	-	40
Analyse	20	30	20	-	20
Evaluate	-	-	-	-	-
Create	-	-	-	-	-
Total	100	100	100	-	100

K.S.Rangasamy College of Technology – Autonomous R2022								
26PH1C3L - Semiconductor Physics Laboratory								
Semester	Hours/Week			Total Hrs	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	0	0	2	45	1	60	40	100
List of Experiments:								
<ol style="list-style-type: none"> 1. Determination of Hall coefficient of a given semiconductor and its charge carrier density 2. Determination of band gap of a semiconductor PN junction diode 3. V–I Characteristics and maximum power output of a solar cell 4. Determination of the wave length of the semiconductor diode laser using grating 5. Determination of the particle size of the given powder using semiconductor diode laser 6. Determination of the acceptance angle and numerical aperture of the given optical fiber 7. Experimental determination of Planck’s constant using semiconductor device 8. Analysis of Dielectric Characteristics of Solid Insulators (Teflon, Glass, Bakelite) 9. Evaluation of Dielectric Behavior of Liquid Medium (Carbon Tetrachloride) 10. Develop coding for any one of the above experiments / developing a project / a product 								
* SDG: 4- Quality Education								
Lab Manual								
1. “Engineering Physics Lab Manual”, Department of Physics, KSRCT.								

Course Designer(s) - Physics

1. Dr. V. Vasudevan - vasudevanv@ksrct.ac.in
2. Dr. P. Suthanthira Kumar - suthanthirakumar@ksrct.ac.in

26CH1C2L	Engineering Physics and Chemistry Laboratory (EEE,ECE & VLSI)	Category	L	T	P	Credit
		BS	0	0	2	1

Objectives

- To develop the skills to calculate the hardness values from titration results and interpret their significance.
- To introduce the chemistry behind in precipitation titration and its role in chloride estimation.
- To explain the oxidation-reduction reactions and their significance in analytical chemistry.
- To learn how to prepare and handle the metal specimen for corrosion testing.
- To explain the principles of conductivity measurement and its role in analytical.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Apply the knowledge of detecting metal ions in water sample	Apply
CO2	Determine the chloride ion and infer the quality of water	Understand
CO3	Apply the knowledge of detecting ferrous ion in a given solution	Apply
CO4	Use the concept of basic electrochemistry to estimate the rate of corrosion in Iron metal	Understand
CO5	Implement different types of elemental analyses through conductometric method	Apply

Mapping with Programme Outcomes															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	3	-	-	2	-	-	-	2	2	-
CO2	3	-	-	-	-	2	-	-	2	-	-	-	2	2	-
CO3	3	-	-	-	-	-	-	-	2	-	-	-	3	3	-
CO4	3	-	-	-	-	2	-	-	2	-	-	-	3	2	-
CO5	3	-	-	-	-	-	-	-	2	-	-	-	2	2	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	10	10	10	10
Understand	30	30	40	40
Apply	60	60	50	50
Total	100	100	100	100

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

K.S.Rangasamy College of Technology – Autonomous R2022								
26CH1C2L - Engineering Chemistry Laboratory (EEE,ECE,VLSI)								
Semester	Hours/Week			Total Hrs	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	0	0	2	30	1	60	40	100
List of Experiments:								
<ol style="list-style-type: none"> 1. Estimation of total hardness of given water sample by EDTA method. 2. Determination different types of alkalinity present in given borewell water. 3. Estimation of amount of acid in the given solution by conductivity meter. 4. Estimation of iron using standard dichromate solution by EMF measurement. 5. Determination of percentage corrosion using potassium dichromate with a potentiometric sensor. 6. Determination of amount of acid in the given sample by using pH sensor. 7. Determination of water quality parameters of the given water sample. 8. Estimation of iron present in the given sample by colorimeter. 9. Determine the pH of the given buffer solutions. 10. Estimation of barium chloride by precipitation titration. 								
Lab Manual								
1. "Chemistry Lab Manual Volume I & II", Department of Chemistry, KSRCT.								

* **SDG: 4- Quality Education**

Course Designer(s) - Chemistry

1. Dr.R.Palanivelu, Professor
2. Dr.M.Tamilvanan, Associate Professor

26EV101L	Device Characterisation Laboratory	Category	L	T	P	Credit
		PC	0	0	3	1.5

Objectives

- To enable learners to study the characteristics of semiconductor devices such as diodes, transistors, FETs, MOSFETs, photodiodes, and SCRs through experimental analysis.
- To develop the ability to construct and evaluate rectifier circuits including half-wave and full-wave rectifiers with and without filter components.
- To provide practical exposure to waveform shaping circuits such as clipping and clamping circuits using diodes.
- To analyze voltage regulation techniques using Zener diode circuits and interpret their performance under varying load conditions.
- To enhance skills in plotting device characteristics and interpreting results to understand the behavior and applications of semiconductor devices in electronic circuits.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Plot and interpret the V-I characteristics of semiconductor devices including Silicon, Germanium diodes, Zener diode, photodiode, and SCR.	Apply
CO2	Construct and evaluate rectifier circuits with and without filters, and determine their performance parameters such as ripple factor and output voltage.	Apply
CO3	Design and analyze clipping and clamping circuits to obtain desired output waveforms.	Apply
CO4	Plot and interpret the input and output characteristics of BJT, FET, and MOSFET devices and infer their operating regions.	Apply
CO5	Analyze the performance of semiconductor devices in practical circuits and relate experimental results with theoretical behavior.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	-	-	3	-	-	3	3	3	-	3	3	3	3
CO2	3	3	-	-	3	-	-	3	3	3	-	3	3	3	3
CO3	3	3	-	-	3	-	-	3	3	3	-	3	3	3	3
CO4	3	3	-	-	3	-	-	3	3	3	-	3	3	3	3
CO5	3	3	-	-	3	-	-	3	3	3	-	3	3	3	3

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	-	-	-	-
Understand	25	12	50	50
Apply	25	13	50	50
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

K.S.Rangasamy College of Technology - Autonomous R2022								
B.E - Electronics Engineering (VLSI Design & Technology)								
26EV101L - Device Characterisation Laboratory								
Semester	Hours/Week			Total Hrs	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	0	0	3	45	1.5	60	40	100
List of Experiments*:								
<ol style="list-style-type: none"> 1. Study and plot the V–I characteristics of Silicon (Si) and Germanium (Ge) diodes. 2. Study the characteristics of a Zener diode and analyze its performance as a voltage regulator. 3. Design and analyze clipping and clamping circuits using diodes. 4. Construct and analyze Half-Wave rectifier circuit with and without filter. 5. Construct and analyze Full-Wave rectifier circuit with and without filter. 6. Study and plot the input and output characteristics of a Bipolar Junction Transistor (BJT). 7. Study and plot the characteristics of a Field Effect Transistor (FET). 8. Study and plot the characteristics of a MOSFET. 9. Study and plot the V–I characteristics of a photodiode. 10. Verify the V–I characteristics of a Silicon Controlled Rectifier (SCR). 								
Activity: Miniproject								
Lab Manual								
1.	"Electronic Devices Laboratory", Department of Electronics Engineering (VLSI Design and Technology), KSRCT.							

*SDG 9 - Industry Innovation and Infrastructure

Course Designer(s)

1. Mr D.Poornakumar-poornakumard@ksrct.ac.in

26EV102L	Design Thinking Laboratory	Category	L	T	P	Credit
		PC	0	0	2	1

Objectives

- Understand design thinking principles and apply them to engineering innovation and problem-solving.
- Identify real-world engineering problems using brainstorming and mind mapping and explore problem spaces through secondary research techniques.
- Conduct primary research to gather user insights and ensure a user-centered design approach.
- Define and analyze problem areas to develop clear and structured problem statements.
- Generate innovative and feasible solutions for identified engineering problems.

Pre-requisites

-Nil-

Course Outcomes

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

CO1	Understand design thinking principles for engineering innovation.	understand
CO2	Identify real-world engineering problems using brainstorming, mind mapping, and explore problem spaces using secondary research methods	Apply
CO3	Conduct primary research to gather insights from diverse perspectives, ensuring a user-centered approach in problem-solving.	Apply
CO4	Analyze problem areas and formulate clear, actionable problem statements.	Analyse
CO5	Develop innovative and feasible ideas for defined engineering problems.	Create

Mapping with Programme Outcomes

COs	POs											PSOs		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
CO1	3	1	-	-	-	-	-	2	2	1	1			
CO2	3	3	1	1	2	3	-	2	2	1	-			
CO3	3	2	1	2	2	-	2	2	2	1	-			
CO4	3	3	2	2	-	-	-	2	2	1	-			
CO5	3	2	3	1	2	2	2	2	2	1	1			

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Review I (CO1)		Review II (CO2,CO3,CO4)				Review III (CO5)			Total (R1+R2+R3)	Internal
Study problem and corresponding solutions developed using design thinking principles.	Case study report	Selection of Problem	Secondary and Primary Research	Redefine the problem	Presentation	Ideas	Evaluate Ideas & User feedback	Presentation	Total	
15	5	5	30	5	10	10	10	10	100	60

Report and Presentation (CO1, CO2, CO3, CO4 & CO5)				External
Report	Presentation	Viva Voce	Total	
40	40	20	100	40

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

K.S.Rangasamy College of Technology – Autonomous R2026								
Electronics Engineering (VLSI Design and Technology)								
26EV102L - Design Thinking Laboratory								
Semester	Hours/Week			Total Hrs	Credit	Maximum Marks		
	L	T	P			C	CA	ES
	0	0	2	30	1	60	40	100
Design Thinking and Innovation Process Introduction to Design Thinking and Innovation - Design, Design Thinking, Innovation - Stages of Design Thinking Process – Case Study: Study the solution of solved problem.								[6]
Selection of Problem and Secondary research on Problem Space Understanding real-world engineering and societal problems, Identification and Selection of Problem to Solve, Tools - Brain-storming and Mind-mapping. Secondary Research: Information Gathering: from past and existing, Ask questions: Why, who, what, where, when, how, 5Ws and 1H Matrix Table.								[6]
Primary research on Problem Space User Participant Mapping, Primary research - AEIOU framework (Activities, Environment, Interaction, Objects, Users) - Observation, Conversations, Questionnaires, Documentation - Conducting Contextual Inquiry								[6]
Analysis of Problem Space Identify, Classify, Compare, Prioritize, and Cross-relate information – Personas and Observations, Inference, Opportunities, and Recommendations (OIOR) - Redefining the Problem Statement with primary and secondary objectives.								[4]
Ideation Generating Creative ideas - Idea Sketching, Brainstorming for Ideas, SCAMPER, Creativity and Lateral thinking- Develop concept maps and evaluate ideas based on defined objectives and user feedback.								[8]
Total Hours:								30
Reference								
1.	<ul style="list-style-type: none"> NPTEL: Design Thinking and Innovation by Prof. Ravi Poovaiah, IDC School of Design, IIT Bombay. https://onlinecourses.swayam2.ac.in/aic23_ge17/preview, https://dsource.in/dti NPTEL: Design, Technology and Innovation by Prof. B. K. Chakravarthy, IDC School of Design, IIT Bombay. https://onlinecourses.nptel.ac.in/noc20_de03/preview NPTEL: Innovation by Design by Prof. B. K. Chakravarthy, IDC School of Design, IIT Bombay, https://onlinecourses.swayam2.ac.in/aic19_de02/preview., www.dsource.in , The Resource for Design by e-Kalpa Design Team, IDC, IIT Bombay, DoD, IIT Guwahati & NID, Bengaluru. 							

Course Designer(s)

1. Dr.K.Raja – raja@ksrct.ac.in

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26 TP 1G1P	Career Skill Development I - Aptitude 1	Category	L	T	P	Credit
		CG	0	0	2	1

Objective

- To help learners improve their logical reasoning skills at different academic and professional contexts.
- To help learners relate basic quantitative problems and solve them.
- To help learners Infer critically the statements with optimal conclusions and assumptions.
- To Solve the quantitative problems pertaining to calculations of averages, ratio and proportions, and profit and loss effectively
- To compute quantitative problems related to time and work, speed and distance, and simple and compound interest

Prerequisite

- Basic knowledge of Arithmetic and Logical Reasoning

Course Outcomes

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

CO1	Deduce the topics in logical reasoning at the preliminary and intermediate level.	Analyze
CO2	Relate basic quantitative problems and solve them effectively at the preliminary level	Apply
CO3	Infer critically the statements with optimal conclusions and assumptions with the data and information given.	Analyze
CO4	Solve the quantitative problems pertaining to calculations of averages, ratio and proportions, and profit and loss effectively at the pre-intermediate level.	Apply
CO5	Compute quantitative problems related to time and work, speed and distance, and simple and compound interest at intermediate level.	Apply

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	3		3				2	3	3
CO2	3	3	3	3		2				2	3	3
CO3	2	2	2	2		3				2	3	3
CO4	3	3	3	3		2				2	3	3
CO5	3	3	3	3		2				2	3	3

3- Strong; 2-Medium; 1-Some

Assessment Pattern

Bloom's Category	Online Assessment Tests (Marks)		Group Discussion	Internal Marks
	1	2		
Apply	100	100	100	100
Over all Weightage	40	40	20	

K.S.Rangasamy College of Technology – Autonomous R2026								
Common to All Branches								
26 TP 1G1P - Career Skill Development I - Aptitude 1								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	0	0	2	25	1	100	-	100
Logical Reasoning Inductive Reasoning - Analogies - Alpha and numeric series - Number Series – odd man out - Coding and Decoding - Order and Ranking - Direction and distance								[5]
Quantitative Aptitude – Part 1 Number system - Squares & cubes - Divisibility - Unit digits - Remainder Theorem - HCF & LCM - Geometric and Arithmetic progression - Powers & Exponents								[5]
Verbal & Analytical Reasoning Blood Relations and Coded Relations - Seating Arrangements – Analytical Reasoning (PUZZELS) – Coded Inequality								[5]
Quantitative Aptitude – Part 2 Average - Ratio and proportion – Ages – Partnership– Percentage - Profit & loss – Discount - Mixture and Allegation								[5]
Quantitative Aptitude – Part 3 Time & Work - Pipes and cistern – Time, Speed & distance - Trains - Boats and Streams - Simple interest and Compound interest.								[5]
Total Hours								25
Reference(s):								
1.	Aggarwal, R.S. 'A Modern Approach to Verbal and Non-verbal Reasoning', Revised Edition 2008, Reprint 2009, S.Chand & Co Ltd., New Delhi.							
2.	Abhijit Guha, 'Quantitative Aptitude', McGraw Hill Education, 6 th edition, 2016							
3.	Dinesh Khattar, 'Quantitative Aptitude For Competitive Examinations', Pearson Education 2020							
4.	Anne Thomson, 'Critical Reasoning: A Practical Introduction' Lexicon Books, 3 rd edition, 2022. Warsaw							

Course Designer

R. Poovarasana - poovarasana@ksrct.ac.in
G. Damotharan - damotharan@ksrct.ac.in

26 EN 2C1I	English Essentials - II	Category	L	T	P	Credit
		HS	2	0	2	3

Objectives

- To read and comprehend different forms of official texts.
- To develop students' writing skills in professional context.
- To actively listen, read and understand written and oral communication in a professional context.
- To comprehend and analyse the visual content in authentic context.
- To write professional documents with clarity and precision

Pre-requisites

- Basic Knowledge in English Language

Course Outcomes

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

CO1	Use appropriate sentence structure and vocabulary to enhance both spoken and written communication in formal contexts.	Remember
CO2	Comprehend different forms of official documents	Understand
CO3	Organize professional documents coherently and cohesively in writing.	Understand
CO4	Interpret authentic verbal and graphic content in writing	Understand
CO5	Compare and Contrast verbal and audio-visual materials.	Understand

Mapping with Programme Outcomes

COs	POs											PSOs		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
CO1									3	3	3			
CO2									3	3	3			
CO3									3	3	3			
CO4									3	3	3			
CO5									3	3	3			

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)		End Sem Examination (Marks)	
	Test 1		Test 2		Theory	Lab	Theory	Lab
	Theory	Lab	Theory	Lab				
Remember	20	40	20	40	40	-	40	-
Understand	40	60	40	60	60	-	60	-
Total	60	100	60	100	100	-	100	-

Syllabus								
K.S.Rangasamy College of Technology – Autonomous R2022								
B.E. / B.Tech. (Common to all Branches)								
26 EN 1C1I – English Essentials – II*								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
II	2	0	2	60	3	50	50	100
Cause and Effect Listening – Radio / TV / Podcast Interview (survivors' tale) and framing a set of instructions / Do's and Don'ts Reading – Excerpts of Literature (short stories), Journal articles on issues like Global warming Writing –Instructions; Official letter / email (Request for internship / Industrial visit) Grammar – If clauses/conditional clauses, Imperatives Vocabulary – Cause and effect expressions, Idioms								[6]
Compare and Contrast Listening –Product reviews and gap fill exercises, Short Talks (like TED Talks) for specific information Reading – Graphical content (table / chart / graph) and making inferences Writing – Compare and Contrast Essay Grammar – Degrees of Comparison; Tenses Vocabulary – Order of Adjectives, Transition words								[6]
Problem and Solution Listening – Group discussion (case study) Reading – Visual content (Pictures on social issues / natural disasters) for comprehension; Editorial Writing – Picture description; Problem and Solution Essay Grammar – Modal verbs; Relative pronoun Vocabulary – Negative prefixes, Signal words for problem and solution.								[6]
Reporting Listening – Listening to news reading Reading – Newspaper report on survey findings Writing – Survey report, Making recommendations Grammar – Active and passive voice, Direct and Indirect speech Vocabulary –Reporting verbs, Numerical adjectives								[6]
Presentation Listening – Job interview, Telephone interview Reading – Job advertisement and company profile and making inferences Writing –Job application (cover letter and CV) Grammar –Prepositional phrases Vocabulary – Fixed expressions, Collocations.								[6]
Lab Activity - Speaking 1. Interview in Social Context a) Asking questions and answering b) Conducting an interview (of an achiever / survivor) c) Role play 2. Persuasive Skills a) Speaking about specifications of a product (Eg. Home appliances) b) Persuasive Talk c) Role play activity 3. Case Study a) Discussions on Case Study to find solutions for problems in professional contexts b) Analytical discussion on various aspects of a given problem. 4. Visual Interpretation								[30]

a) Describing visual content (Pictures/Table/Chart) using appropriate descriptive language and making appropriate inferences	
b) Giving recommendations.	
5. Presentation	
a) Making presentation with visual component (PPT slides) (job interview / project / innovative product presentation)	
Total Hours: (Lecture -30; Lab Activity- 30)	60
Text Book(s):	
1. "English for Engineers and Technologists" Volume I by Orient Blackswan, 2022	
2. "English for Science & Technology-II" by Cambridge University Press, 2023	
Reference(s):	
1. "Communicative English for Engineers and Professionals" by Bhatnagar Nitin, Pearson India, 2010.	
2. "Take-Off–Technical English for Engineering" by David Morgan, Garnet Education, 2008.	
3. "Advanced Communication Skills" by Mathew Richardson, Charlie Creative Lab, 2020.	
4. www.uefap.com	

- **SDG 4 -Quality Education**

Course Contents and Lecture Schedule		
S. No.	Topics	No. of Hours
1	Cause and Effect	
1.1	Cause and effect expressions	1
1.2	Imperatives and Idiom	1
1.3	If clauses/conditional clauses	1
1.4	Instructions	1
1.5	Official letter / email (Request for internship / Industrial visit)	1
1.6	Reading excerpts of Literature	1
2	Compare and Contrast	
2.1	Degrees of Comparison	1
2.2	Tenses	1
2.3	Order of Adjectives, Transition words	1
2.4	Compare and Contrast Essay	1
2.5	Graphical content (table / chart / graph) and making inferences	1
2.6	Product reviews and gap fill exercises	1
3	Problem and Solution	
3.1	Picture description	1
3.2	Modal verbs and Relative pronoun	1
3.3	Problem and Solution Essay	1
3.4	Negative prefixes	1
3.5	Signal words for problem and solution.	1
3.6	Visual content (Pictures on social issues / natural disasters) for comprehension	1
4	Reporting	
4.1	Active and passive voice	1
4.2	Numerical adjectives	1
4.3	Reporting verbs and Direct and Indirect speech	1
4.4	Survey report	1

4.5	Making recommendations	1
4.6	Listening to news reading	1
5	Presentation	
5.1	Prepositional phrases	1
5.2	Fixed expressions	1
5.3	Collocations.	1
5.4	Job application (cover letter and CV)	1
5.5	Job advertisement and company profile and making inferences	1
5.6	Job interview, Telephone interview	1
Lab Activity - Speaking		
1.	Asking questions and answering	2
2.	Role play	4
3.	Speaking about specifications of a product (Eg. Home appliances)	4
4.	Persuasive Talk	4
5.	Discussions on Case Study to find solutions for problems in professional contexts	2
6.	Describing visual content (Pictures/Table/Chart) using appropriate descriptive language and making appropriate inferences	4
7.	Giving recommendations	2
8.	Making presentation with visual component (PPT slides)	2
9.	Group Discussion	4
10.	Conducting an interview (of an achiever / survivor)	4

Course Designer(s)

1. Dr.A.Palaniappan – palaniappan@ksrct.ac.in

26 MA 0C07T	Multiple Integrals and Vector Calculus	Category	L	T	P	Credit
		BS	3	1	0	4

Objectives

- To acquire the knowledge about multiple integrals.
- To solve various types of partial differential equation.
- To understand and analyze functions of complex variables.
- To get exposed to the fundamentals in vector differentiation.
- To familiarize integrals of vector fields and understand the core theorems in vector calculus.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Interpret the concepts of double and triple integrals.	Apply
CO2	Compute partial differential equations using different methods	Apply
CO3	Construct the analytic functions and evaluate the complex integrals.	Apply
CO4	Interpret the concept of magnitude and direction in the form of vector functions.	Apply
CO5	Apply the concept of vector fields and line integrals through the Engineering problems.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	3	2			2									2		
CO2	3	2			2									2		
CO3	3	2			2									2		
CO4	3	2			2									2		
CO5	3	2			2									2		

3 - Strong; 2 - Medium; 1 – Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	10	10	10
Understand	10	10	10
Apply	40	40	80
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Syllabus								
K.S. Rangasamy College of Technology – Autonomous R 2026								
26 MA 0C07T - Multiple Integrals and Vector Calculus								
Common to ECE and VLSI(DT)								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
II	3	1	0	60	4	40	60	100
Multiple Integrals Double integration – Cartesian and polar co-ordinates – Change of order of integration – Area as double integral – Triple integration in Cartesian co-ordinates.								[9]
Partial Differential Equations Formation of Partial Differential Equations by Eliminating Arbitrary Constants and Arbitrary Functions – Non- Linear Partial Differential Equations of First Order – Lagrange’s Linear Equations – Homogeneous Linear Partial Differential Equations with Constant Coefficients.								[9]
Complex Variables Analytic function - Necessary and Sufficient conditions (excluding proofs) - Harmonic function – Orthogonal properties of analytic function - Construction of an analytic functions - Cauchy’s Integral theorem - Cauchy’s integral formula – Cauchy’s Residue Theorem.								[9]
Vector Differentiation Gradient of a Scalar field - Unit Normal Vector - Directional Derivative - Angle of intersection of two surfaces - Divergence and Curl - Solenoidal and Irrotational vector fields - Scalar potential .								[9]
Vector Integration Line Integral – Surface Integrals – Volume Integrals –Green’s Theorem – Gauss Divergence Theorem -Stokes’ Theorem								[9]
Total Hours: 45 + 15 (Tutorial)								60
Text Book(s):								
1.	Kreyszig Erwin, “Advanced Engineering Mathematics”, 10 th Edition, John Wiley and Sons (Asia) Limited, 2022.							
2.	Grewal B.S, “Higher Engineering Mathematics”, 44 th Edition, Khanna Publishers, Delhi, 2017.							
Reference(s):								
1.	Dass H.K, “Higher Engineering Mathematics”, 3 rd (Revised) Edition, S.Chand & Company Ltd, New Delhi, 2014.							
2.	Veerarajan T, “Engineering Mathematics”, for Semesters I & II, 1 st Edition, Tata McGraw Hill Publishing Co., New Delhi, 2019.							
3.	Kandasamy P, Thilagavathy K and Gunavathy K, “Engineering Mathematics – I and II”, S.Chand & Company Ltd, New Delhi, 2017.							

*SDG 4 – Quality Education

List of MATLAB Programmes:

1. Evaluating double integrals
2. Calculate homogeneous linear partial differential equations.
3. Evaluating the residues of the complex function
4. Evaluating gradient divergence and curl.
5. Evaluating the line integral

Course Contents and Lecture Schedule			
S. No.	Topics	No. of hours	Mode of Content Delivery
1.0	Multiple Integrals		
1.1	Double integration.	2	Lecture with Discussion
1.2	Cartesian and polar co-ordinates	2	Lecture with Discussion
1.3	Change of order of integration	2	Lecture with Discussion
1.4	Area as double integral	1	Lecture with Discussion
1.5	Triple integration in Cartesian co-ordinates.	2	Lecture with Discussion
1.9	Tutorial	2	
2.0	Partial Differential Equations		
2.1	Formation of Partial Differential Equations by Eliminating Arbitrary Constants	1	Lecture with Discussion
2.2	Formation of Partial Differential Equations by Eliminating Arbitrary Functions	2	Lecture with Discussion
2.3	Non- Linear Partial Differential Equations of First Order	1	Lecture with Discussion
2.4	Lagrange's Linear Equations	2	Lecture with Discussion
2.5	Homogeneous Linear Partial Differential Equations with Constant Coefficients.	1	Lecture with Discussion
2.6	Tutorial	2	Lecture with Discussion
3.0	Complex Variables		
3.1	Analytic function	1	Lecture with Discussion
3.2	Necessary and Sufficient conditions (excluding proofs)	1	Lecture with Discussion
3.3	Harmonic function	1	Lecture with Discussion
3.4	Orthogonal properties of analytic function	1	
3.5	Construction of an analytic functions	1	Lecture with Discussion
3.6	Cauchy's Integral theorem	2	Lecture with Discussion
3.7	Cauchy's integral formula (excluding proofs).	2	Lecture with Discussion
3.8	Tutorial	2	
4.0	Vector Differentiation		
4.1	Gradient of a scalar point function	1	Lecture with Discussion
4.2	Unit normal vector	1	Lecture with Discussion
4.3	Directional derivative	1	Lecture with Discussion
4.4	Angle of intersection of two surfaces	1	Lecture with Discussion
4.5	Divergence and curl (excluding vector identities)	1	Lecture with Discussion
4.6	Solenoidal and irrotational vector fields	2	Lecture with Discussion
4.7	Scalar potential function.	2	Lecture with Discussion
4.8	Tutorial	2	
5.0	Vector Integration		
5.1	Line Integral	1	Lecture with Discussion
5.2	Surface Integrals	1	Lecture with Discussion
5.3	Volume Integrals	2	Lecture with Discussion
5.4	Green's theorem in the plane	2	Lecture with Discussion
5.5	Gauss divergence theorem	2	Lecture with Discussion
5.6	Stokes' theorem (excluding proofs).	1	Lecture with Discussion
5.9	Tutorial	2	
	Total	60	

Course Designer(s)

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Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26CS2C3T	DATA STRUCTURES AND ALGORITHMS	Category	L	T	P	Credit
		ES	3	0	0	3

Objective

- To understand the concepts of algorithm analysis, time and space complexity of an algorithm
- To design and implement abstract datatypes such as Linked List, Stack, Queue
- To Learn and implement trees, Sorting and Searching algorithms
- To Learn and implement Hashing techniques and Priority Queue ADT
- To enable students to understand and apply graphs in problem-solving.

Prerequisite

Basic knowledge of mathematics and programming language in C

Course Outcomes

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

CO1	Analyze algorithms efficiencies using asymptotic notations and apply linear data structures to solve real time applications	Analyze
CO2	Design and utilize tree structures for efficient data organization and retrieval.	Apply
CO3	Compare and implement various sorting and searching techniques based on problem requirements.	Apply
CO4	Implement Priority Queue with its operations and Hashing Techniques	Apply
CO5	Apply graph algorithms to solve real-world problems.	Apply

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	2			2	2			2	3	3
CO2	3	3	2	3	2			2	3			2	3	3
CO3	3	3	2	2	2	2		2	3	2		2	3	3
CO4	3	3	2	3	2			3	2	2		2	3	3
CO5	3	3	2	3	2	2	2	3	3	2		2	3	3
3- Strong;2-Medium;1-Some														

Assessment Pattern

Cognitive Levels	Continuous Assessment Tests		End Semester Examination(Marks)
	1	2	
Remember	10	10	20
Understand	10	20	20
Apply	30	30	40
Analyse	10	-	20
Evaluate	-	-	-
Create	-	-	-

Passed in BoS Meeting held on 20/12/2025
Approved in Academic Council Meeting held on 03/01/2026

K.S. Rangasamy College of Technology–Autonomous R2026								
26CS2C3T – DATA STRUCTURES AND ALGORITHMS								
Common to B.E. ECE, EEE, EE (VLSI DT)								
Semester	Hours/Week			Total hrs	Credit	Maximum Marks		
	L	T	P			C	CA	ES
II	3	0	0	45	3	40	60	100
Algorithm Analysis and Linear Data Structures Algorithm Analysis – Mathematical Background, Model, What to Analyze, Running Time Calculations - Abstract data types – The List ADT – The Stack ADT – The Queue ADT.								[12]
Trees Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – B-Trees – B+ Trees.								[9]
Sorting and Searching Preliminaries – Insertion Sort – Shell Sort – Heap Sort – Merge Sort – Quick Sort – External Sorting – Searching: Sequential Search - Binary Search.								[7]
Hashing and Priority Queues (Heaps) Hashing – Hash Function – Separate Chaining – Open Addressing – Rehashing – Extendible Hashing – Priority Queues (Heaps) – Model – Simple Implementations – Binary Heap–Applications of Priority Queues.								[7]
Graphs Definitions – Topological Sort – Shortest-Path Algorithms: Unweighted Shortest Paths, Dijkstra’s Algorithm – Minimum Spanning Tree: Prim’s Algorithm, Kruskal’s Algorithm – Graph Traversals: Breadth-First Search, Depth-First Search, Biconnectivity.								[10]
Total Hours								45
Text Book(s):								
1.	M.A.Weiss, “Data Structures and Algorithm Analysis in C”, Second Edition, Pearson Education Asia, 2008.							
2.	Anany Levitin, “Introduction to the Design and Analysis of Algorithm”, 3 rd Edition, Tenth Impression, Pearson Education Asia, 2017							
Reference(s):								
1.	Rajesh K.Sukla, ”Data Structure using C & C++”, Wiley India, 2012.							
2.	A.Tannenbaum, “Data Structure using C”, Pearson Education, 2003.							
3.	Goodrich and Tamassia, “Data Structures and Algorithms in C++”, Second Edition, John Wiley and Sons, 2011							
4.	Reema Thareja, “Data Structures using C”, Second Edition, Oxford Higher Education, 2014.							

Course Contents and Lecture Schedule

Module No.	Topic	No. of Hours
1	Lists, Stacks and Queues	
1.1	Mathematical Background	1
1.2	Model, What to Analyze	1
1.3	Running Time Calculations	1
1.3	List ADT	3
1.4	Stack ADT	3
1.5	Queue ADT	3
2	Trees	
2.1	Preliminaries	1
2.2	Binary Trees	1
2.3	The Search Tree ADT	1
2.4	Binary Search Trees	1
2.5	AVL Trees	1
2.6	Tree Traversals	1
2.7	B-Trees	2
2.8	B+ Trees	1
3	Sorting and Searching	
3.1	Preliminaries, Insertion Sort	1
3.2	Shell Sort, Heap sort	1
3.3	Merge Sort	1
3.4	Quick sort	1
3.5	External Sorting	1
3.6	Sequential Search	1
3.7	Binary Search	1
4	Hashing and Priority Queues (Heaps)	
4.1	Hashing, Hash Function	1
4.2	Separate Chaining	1
4.3	Open Addressing	1
4.4	Rehashing, Extendible Hashing	1
4.5	Priority Queues (Heaps), Model	1
4.6	Simple Implementations, Binary Heap	1
4.7	Applications of Priority Queues	1
5	Graphs	
5.1	Graph Definitions	1
5.2	Topological Sort	1
5.3	Shortest-Path Algorithms - Unweighted Shortest Paths	1
5.4	Dijkstra's Algorithm	2
5.5	Minimum Spanning Tree: Prim's Algorithm	1
5.6	Kruskal's Algorithm	1
5.7	Graph Traversals: Breadth-First Search	1
5.8	Depth-First Search	1
5.9	Biconnectivity	1
	Total Hours	45

Course Designers

1. Ms.K.Poongodi - poongodik@ksrct.ac.in

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26EV201T	Basics of Electrical, Electronics and PCB design	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- Understand Fundamental Laws
- Analyze Transformer Basics
- Understand Base Conversions
- Understand PCB Fundamentals
- Create Schematic Diagrams.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Explain fundamental electrical laws (Ohm's Law, KVL, KCL) and apply them to analyze DC and AC circuits	Understand
CO2	Analyze the construction, operation, and equivalent circuits of single-phase transformers to determine their voltage regulation and efficiency.	Analyse
CO3	Identify various number system and perform base conversions to analyze error detection	Understand
CO4	Classify PCB types, substrate materials, and manufacturing processes, and interpret layout principles.	Analyse
CO5	Design schematic diagrams for electronic circuits using EDA tools and verify them through simulation	Design

Mapping with Programme Outcomes

COs	POs											PSOs		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
CO1	3	3	-	-	-	-	-	-	2	3	-	1	3	-
CO2	3	3	-	-	-	-	-	-	2	3	-	1	3	-
CO3	3	3	-	-	-	-	-	-	2	3	-	1	3	-
CO4	3	3	-	-	-	-	-	-	2	3	-	1	3	-
CO5	3	3	-	-	3	-	-	-	2	3	-	1	3	3

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	20	20	30
Understand	30	30	30
Apply	-	-	-
Analyse	10	10	20
Evaluate	-	-	-
Create	-	-	20
Total	60	60	100

Syllabus								
K.S.Rangasamy College of Technology – Autonomous R2026								
B.E - Electronics Engineering (VLSI Design and Technology)								
26EV201T –Basics of Electrical, Electronics and PCB design								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
II	3	0	0	45	3	40	60	100
Introduction to Electrical Circuits* Concept of Circuit and Network, Electrical Quantities, Lumped-Circuit Elements Analogy between Electrical and Other Non-electric Physical Systems, Effect of temperature on resistance								[9]
Electrical Machines (Elementary treatment only) * DC Generator: principle of operation, constructional features, emf equation. DC Motor: principle of operation, Back emf, torque equation. Single phase transformer: principle of operation, constructional features and emf equation.								[9]
Basic Digital Principles * Binary, Decimal, Octal, Hexadecimal number systems; base conversions; signed binary arithmetic (1's and 2's complement); codes (BCD, Gray, Excess-3, Hamming code). Basic gates (AND, OR, NOT), Universal gates (NAND, NOR), Ex-OR and Ex-NOR gates. Boolean laws, De-Morgan's theorem.								[9]
Introduction to PCB* Definition of PCB, PCB and PWB, History of PCB, Types-single and multilayer, Rigid and flexible, PCB materials. Trends in PCB design, Mechanical and Electrical properties.								[9]
Schematic & Layout Design* Schematic diagram, General, Mechanical, and Electrical design considerations, Placing and Mounting of components, Conductor spacing, routing guidelines, heat sinks and package density, Net list, creating components for a library, Tracks, Pads, Vias, power plane, grounding.								[9]
Total Hours: Lecture - 45								45
Text Book(s):								
1.	V. N. Mittal, "Basic Electrical Engineering", TMH Publication, New Delhi.							
2.	Printed Circuit Board – Design & Technology, Walter C. Bosshart, Tata McGraw Hill, 2008.							
Reference(s):								
1.	Basic Electrical and electronics Engineering-D P Kothari. I J Nagarath McGraw Hill Education.							
2.	<i>Digital Design</i> by M. Morris Mano							
3.	A.K. Sawhney, 'A Course in Electrical & Electronic Measurements & Instrumentation', Dhanpat Rai and Co, 2004.							
4.	Printed Circuits Handbook, Clyde F. Coombs, Jr, Happy T. Holden, Sixth Edition, Publisher: McGraw-Hill Education, 2016.							

*SDG 9 – Industry Innovation and Infrastructure

Course Contents and Lecture Schedule		
S. No.	Topics	No. of hours
1.0	Introduction to Electrical Circuits	
1.1	Concept of Circuit and Network	2
1.2	Electrical Quantities	2
1.3	Lumped-Circuit Elements	2
1.4	Analogy between Electrical and Other Non-electric Physical Systems	2
1.5	Effect of temperature on resistance	1
2.0	Electrical Machines (Elementary treatment only)	
2.1	DC Generator: principle of operation	1
2.2	constructional features	1
2.3	emf equation	1
2.4	DC Motor: principle of operation	1
2.5	Back emf	1
2.6	torque equation.	1
2.7	Single phase transformer: principle of operation,	1
2.8	constructional features and emf equation	2
3.0	Basic Digital Principles *	
3.1	Binary, Decimal, Octal, Hexadecimal number systems	1
3.2	base conversions	1
3.3	signed binary arithmetic (1's and 2's complement);	2
3.4	codes (BCD, Gray, Excess-3, Hamming code).	1
3.5	Basic gates (AND, OR, NOT),	1
3.6	Universal gates (NAND, NOR), Ex-OR and Ex-NOR gates.	1
3.7	Boolean laws, De-Morgan's theorem.	2
4.0	Introduction to PCB*	
4.1	Definition of PCB	1
4.2	PCB and PWB	1
4.3	History of PCB	1
4.4	Types-single and multilayer	1
4.5	Rigid and flexible	1
4.6	PCB materials	1
4.7	Trends in PCB design	2
4.8	Mechanical and Electrical properties	1
5.0	Schematic & Layout Design*	
5.1	Schematic diagram	1
5.2	General, Mechanical, and Electrical design considerations	1
5.3	Placing and Mounting of components	1
5.4	Conductor spacing	1
5.5	routing guidelines,	1
5.6	heat sinks and package density	1
5.7	Net list	1
5.8	creating components for a library,	1
5.9	Tracks, Pads, Vias, power plane, grounding	1

Course Designer(s)

1. S.Arulpriya - arulpriyas@ksrct.ac.in

26EV202T	Circuit Theory and Network analysis	Category	L	T	P	Credit
		PC	3	1	0	4

Objectives

- Calculate node voltages and mesh currents in complex DC networks using systematic circuit reduction techniques.
- Simplify complex linear networks by reducing them to their fundamental Thevenin or Norton equivalent forms.
- Compute the transient and steady-state responses of RLC circuits using Laplace Transform techniques.
- Compare different two-port parameter sets to evaluate the performance of interconnected networks.
- Formulate circuit equations for magnetically coupled coils by correctly interpreting dot convention polarities.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Solve multi-loop circuits by implementing source transformations and Star-Delta conversions.	Apply
CO2	Determine the optimal load impedance for a given circuit to achieve the highest possible power transfer efficiency.	Analyse
CO3	Solve for the time-domain behaviour of energy storage elements under varying switching conditions.	Apply
CO4	Deconstruct complex T and Pi networks to identify their individual transmission characteristics.	Analyse
CO5	Construct equivalent conductively coupled models for circuits containing mutual inductance.	Apply

Mapping with Programme Outcomes

COs	POs											PSOs		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
CO1	3	3	-	-	3	-	-		2	3	-	3	2	3
CO2	3	3	-	-	3	-	-		2	3	-	3	2	3
CO3	3	3	-	-	3	-	-		2	3	-	3	2	3
CO4	3	3	-	-	3	-	-		2	3	-	3	2	3
CO5	3	3	-	-	3	-	-		2	3	-	3	2	3

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	10	10	10
Understand	30	30	50
Apply	10	10	20
Analyse	10	10	20
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Syllabus								
K.S.Rangasamy College of Technology – Autonomous R2022								
B.E - Electronics Engineering (VLSI Design and Technology)								
26EV202T - Circuit Theory and Network analysis								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
II	3	1	0	60	4	40	60	100
Circuit Analysis* Independent and Dependent Sources, Nodal Analysis, Mesh Analysis, Super-node, Super-mesh techniques, Series-Parallel Combinations, Voltage and Current Division Rule, Source Transformations and Star-Delta Transformations.								[9]
Network Theorems* Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem, Reciprocity Theorem and Millman's Theorem.								[9]
Time-Domain and Frequency-Domain Analysis of RLC Circuits* Time Domain: Initial Conditions, RL, RC, RLC Circuit. Frequency Domain: Laplace Transforms, Properties, Inverse-Laplace Transforms, Frequency Domain Representation, RL, RC, RLC Circuits, Response of RL and RC Circuits to Various Functions.								[9]
Two-Port Networks* Z-Parameters, Y-Parameters, ABCD Parameters, h-Parameters, Relationship between Parameters, Interconnection of Two-Port Networks, T-Network, Pi-Network, Lattice Networks.								[9]
Magnetic Circuits* Self-Inductance, Mutual-Inductance, Coefficient of Coupling, Inductance in Series and Parallel, Dot Convention, Coupled Circuits, Conductively Coupled Equivalent Circuits.								[9]
Total Hours(Lecture - 45; Tutorial - 15)								60
Text Book(s):								
1.	Charles K. Alexander and Matthew N.O. Sadiku, "Fundamentals of Electric Circuits", McGraw Hill, 7th Edition, 2021.							
2.	William H. Hayt, Jack E. Kemmerly, and Jamie Phillips, "Engineering Circuit Analysis", McGraw Hill, 9th Edition, 2019.							
Reference(s):								
1.	M.E. Van Valkenburg, "Network Analysis", Pearson Education, 3rd Edition, 2019.							
2.	A. Chakrabarti, "Circuit Theory: Analysis and Synthesis", Dhanpat Rai & Co., 2020.							
3.	Mahmood Nahvi and Joseph Edminister, "Schaum's Outline of Electric Circuits", McGraw Hill, 7th Edition, 2018.							
4.	James W. Nilsson and Susan Riedel, "Electric Circuits", Pearson, 11th Edition, 2018.							

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Course Contents and Lecture Schedule		
S. No.	Topics	No. of hours
1.0	DC Circuit Analysis	
1.1	Independent and Dependent Sources: Voltage and Current Sources	1
1.2	Series and Parallel Combinations of Resistors, Inductors, and Capacitors	1
1.3	Voltage and Current Division Rules for Resistive Networks	1
1.4	Source Transformations: Practical Source Models and Conversions	1
1.5	Star to Delta and Delta to Star Transformations	1
1.6	Nodal Analysis: Application of KCL to Multi-node Circuits	1
1.7	Super-node Technique for Circuits with Internal Voltage Sources	1
1.8	Mesh Analysis: Application of KVL to Multi-loop Circuits	1
1.9	Super-mesh Technique for Circuits with Shared Current Sources	1
2.0	Network Theorems	
2.1	Superposition Theorem: Analysis with Multiple Independent Sources	1
2.2	Thevenin's Theorem: Determination of V_{th} and R_{th}	2
2.3	Norton's Theorem: Determination of I_N and R_N	1
2.4	Maximum Power Transfer Theorem: DC and Complex Load Conditions	2
2.5	Reciprocity Theorem: Principles and Limitations	1
2.6	Millman's Theorem: Parallel Source Reduction	1
2.7	Comparative Analysis of Theorems for Efficiency in Problem Solving	1
3.0	Time-Domain and Frequency-Domain Analysis	

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3.1	Initial Conditions in Circuit Elements (L and C behavior at $t=0$)	1
3.2	Time Domain Analysis: First Order RL and RC Circuits	2
3.3	Time Domain Analysis: Second Order RLC Circuits (Over/Under/Critically Damped)	2
3.4	Laplace Transforms: Properties and Inverse Transforms for Circuit Analysis	1
3.5	Frequency Domain Representation of R, L, and C Elements	1
3.6	Step and Impulse Response of RL and RC Circuits in s-domain	1
3.7	Transfer Functions and Poles/Zeros in Network Analysis	1
4.0	Two-Port Networks	
4.1	Introduction to Two-Port Networks and Port Variables	1
4.2	Open Circuit Impedance Parameters (Z-Parameters)	1
4.3	Short Circuit Admittance Parameters (Y-Parameters)	1
4.4	Transmission Parameters (ABCD) and Inverse ABCD Parameters	1
4.5	Hybrid Parameters (h-parameters) and Inverse Hybrid Parameters	1
4.6	Conversion Formulas Between Different Two-Port Parameters	1
4.7	Interconnection of Two-Port Networks (Series, Parallel, and Cascade)	1
4.8	Analysis of T-Network and Pi-Network Configurations	1
4.9	Lattice Networks and Balanced/Unbalanced Configurations	1
5.0	Magnetic Circuits	
5.1	Basic Concepts: Magnetic Flux, Reluctance, and Permeability	1
5.2	Self-Inductance and Mutual-Inductance: Definitions and Physical Meaning	1
5.3	Coefficient of Coupling (k) and Energy Stored in Coupled Coils	1
5.4	Analysis of Inductors in Series and Parallel with Mutual Coupling	1
5.5	Dot Convention: Determining Polarity of Induced Voltages	2
5.6	Modeling Coupled Circuits: T-equivalent and Pi-equivalent Circuits	1
5.7	Conductively Coupled Equivalent Circuits for Mesh Analysis	1
5.8	Ideal Transformer as a Coupled Circuit Element	1

Course Designer(s)

1. S.Pradeep - pradeeps@ksrct.ac.in

26MY2Y1T	Environmental Science and Sustainability	Category	L	T	P	Credit
		PC	2	0	0	0

Objectives

- To introduce the concept and pillars of sustainable development and the importance of the SDGs
- To familiarize students with the causes and mitigation strategies of environmental pollution
- To enable understanding of sustainable waste and water management practices
- To promote awareness on renewable energy adoption and climate-resilient agriculture
- To explore the use of digital tools in natural resource monitoring and environmental conservation

Pre-requisites

- Nil

Course Outcomes

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

CO1	Clarify the principles of sustainable development and critically analyze the 17 SDGs	Remember
CO2	Describe the sources and effects of air pollution and summarize key mitigation strategies using AI/IoT	Apply
CO3	Enlighten the classification of waste and outline basic techniques for waste and wastewater management	Understand
CO4	Discuss sustainable practices in agriculture, irrigation, and renewable energy systems	Analyse
CO5	Utilize tools such as GIS, remote sensing, and ENVIS for environmental planning and management	Understand

Mapping with Programme Outcomes

COs	POs											PSOs		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
CO1	2	2	-	1	-	3	3	2	1	1	-	-	-	-
CO2	3	3	2	2	3	3	2	-	1	1	-	-	-	-
CO3	3	3	2	2	2	3	3	-	1	1	-	-	-	-
CO4	2	2	2	1	2	3	3	-	1	1	-	-	-	-
CO5	3	3	2	3	3	2	2	-	1	2	1	-	-	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (30 Marks)		Quiz (20 marks)		Seminar presentation (50 marks)
	Case Study	Activity Report			
Remember	10	10	5	5	10
Understand	30	20	10	10	15
Apply	-	30	-	5	15
Analyse	20	-	5	-	10
Evaluate	-	-	-	-	-
Create	-	-	-	-	-
Total	60	60	20	20	50

K. S. Rangasamy College of Technology – Autonomous R2026								
26MY2Y1T Environmental Science and Sustainability								
Common to all Branches								
Semester	Hours / Week			Total hours	Credit	Maximum Marks		
	L	T	P			C	CA	ES
I	2	0	0	20	0	100	-	100
UNIT I: Introduction to Sustainable Development								
Definition and Principles of Sustainable Development. Pillars: Economic, Social, Environmental Sustainability, Agenda 2030: 17 Sustainable Development Goals (SDGs). Interconnectedness of SDGs: Examples from Tamil Nadu (Ex: Smart Cities Mission, Water Resource Projects) SDG Indicators and Targets. Challenges in Achieving SDGs: National and Regional (Example: urbanization in TN, climate vulnerability). Role of Stakeholders: Government, Industry, Academia, Citizens.								
[4]								
UNIT II: Air Pollution and Mitigation Strategies								
Sources and Impacts: Urban & Industrial Air Pollution. Greenhouse Effect, Global Warming, Climate Change. Ozone Layer Depletion and Acid Rain. Mitigation Strategies: Carbon Capture and Utilization (CCU) in industries, Renewable Hydrogen and Biochar, Green Infrastructure: Urban afforestation, green walls, AI & IoT-based air quality monitoring.								
[4]								
UNIT III: Sustainable Waste and Water Management								
Classification of Solid and Liquid Wastes- Waste Management: 5R Approach - Waste Management Process: Collection, Segregation, Treatment, Disposal - Municipal Waste (MSWM) - E-waste. Water Pollution and Wastewater Treatment: Nanotechnology, Bioremediation, Coagulation, Photocatalysis, Floating Wetlands (Example: Chennai Eco-restoration Projects), IoT-Enabled Pollution Monitoring, Industrial Discharge Regulation								
[4]								
UNIT IV: Sustainable Practices in Agriculture and Energy								
Renewable Energy: Solar (Example: TN Solar Mission), Wind, Hydro, Bioenergy. Sustainable and Climate-Resilient Agriculture - Green Auditing and Farm Practices, Smart Irrigation Systems: Soil Moisture Sensors, Evapotranspiration Systems, Drip Irrigation with Automation, AI/IoT in Precision Farming, Water Conservation: Rainwater Harvesting, Watershed Protection (Case: TN Water Resource Conservation Programs).								
[4]								
Unit V: Technology in Natural Resource Management								
Role of Data and Digital Tools in Sustainability, IS, GPS, Remote Sensing: Applications in Land Use, Forests, Water Resources, Digital Image Processing in Forecasting Disasters, Environmental Information Systems: ENVIS, EIA Tools, MoEFCC Portals, Use of Web Technologies and Mobile Apps for Citizen Participation (e.g., TN Smart Cities dashboard)								
[4]								
Total Hours								
20								
Text Book(s):								
1.	Anubha Kaushik , C P Kaushik. Perspectives In Environmental Studies, New Age International publishers; Sixth edition (1 January 2018).							
Reference(s):								
1.	G.Tyler Miller Environmental Science 14 th Edition Cengage Publications, Delhi, 2013							
2.	Gilbert M.Masters and Wendell P.Ela,"Environmental Engineering and Science",PHI Learning PrivateLimited, 3 rd Edition, 2015							
3.	Erach Bharucha. Textbook of Environmental Studies for Undergraduate Courses, Universities Press, 2000							

Course Contents and Lecture Schedule		
S. No.	Topics	No. of hours
1.0	Introduction to Sustainable Development	
1.1	Definition, principles, and pillars of sustainable development	1
1.2	Agenda 2030 and 17 SDGs	1
1.3	Interconnectedness of SDGs with Tamil Nadu examples	1
1.4	Challenges in achieving SDGs and role of stakeholders	1
2.0	Air Pollution and Mitigation Strategies	
2.1	Sources and impacts of air pollution	1
2.2	Greenhouse effect, global warming, climate change, ozone depletion, acid rain	1
2.3	Carbon capture, renewable hydrogen, biochar, green infrastructure	1

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2.4	AI & IoT-based air quality monitoring	1
3.0	Sustainable Waste and Water Management	
3.1	Classification of wastes and 5R approach	1
3.2	Waste management process, MSWM, and E-waste	1
3.3	Water pollution and wastewater treatment methods	1
3.4	Floating wetlands, IoT monitoring, industrial discharge regulation	1
4.0	Sustainable Practices in Agriculture and Energy	
4.1	Renewable energy: Solar, wind, hydro, bioenergy	1
4.2	Climate-resilient agriculture and green auditing	1
4.3	Smart irrigation systems and automation	1
4.4	AI/IoT in precision farming and water conservation	1
5.0	Technology in Natural Resource Management	
5.1	Role of data and digital tools in sustainability	1
5.2	GIS, GPS, and Remote Sensing applications	1
5.3	Digital image processing in disaster forecasting	1
5.4	ENVIS, EIA tools, MoEFCC portals, mobile apps	1

26TA2Y1T	Tamils and Technology (Common to all Branches)
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Category	L	T	P	Credit
GE	1	0	0	1

Objectives:

- To learn weaving, ceramic and construction technology of Tamils.
- To understand the agriculture, irrigation and manufacturing technology of Tamils.
- To realize the development of scientific Tamil and Tamil computing.

Prerequisite:

Nil

Course Outcomes:

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

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

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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

3- Strong; 2-Medium; 1-Low

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

K. S. Rangasamy College of Technology – Autonomous R2026								
26TA2Y1T- Tamils and Technology (Common to all Branches)								
Semester	Hours/Week			Total hrs	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
III	1	0	0	15	1	100	-	100
WEAVING AND CERAMIC TECHNOLOGY								
Weaving Industry during Sangam Age – Ceramic Technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries..							3	
DESIGN AND CONSTRUCTION TECHNOLOGY								
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)- ThirumalaiNayakarMahal – Chetti Nadu Houses , Indo – Saracenic architecture at Madras during British Period.							3	
MANUFACTURING TECHNOLOGY								
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.							3	
AGRICULTURE AND IRRIGATION TECHNOLOGY								
Dam,Tank,Ponds, Sluice,Significance of Kumizhi Thoompu of Chola Period,Animal Husbandry – Wells designed for cattle use – Agriculture and Agro Processing – Knowledge of Sea- Fisheries – Pearl – Conche diving -Ancient Knowledge of Ocean – Knowledge Specific Society.							3	
SCIENTIFIC TAMIL & TAMIL COMPUTING								
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.							3	
Total Hours							15	
Text Book(s):								
1.	தமிழகவரலாறு- மக்களும் பண்பாடும் கே. கே .பிள்ளை(வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).							
2.	கணினித்தமிழ் – முனைவர் இல. சுந்தரம். (விகடன்பிரசுரம்).							
3.	கீழடி – வைகை நதிக்கரையில் சங்க கால நகர நாகரீகம்							
4.	பொருறை - ஆற்றங்கரை நாகரீகம் (தொல்லியல்துறைவெளியீடு).							
5.	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print).							
6.	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.							
7.	Historical Heritage of the Tamils (Dr.S.V.Subaramanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).							
8.	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)							
9.	Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)							
10.	Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author).							
11.	Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu).							
12.	Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.							

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

26TA2Y1T	தமிழரும் தொழில் நுட்பமும் (அனைத்து துறைகளுக்கும் பொதுவானது)
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Category	L	T	P	Credit
GE	1	0	0	1

பாடத்தின் நோக்கங்கள்:

- தமிழர்களின் சங்க கால நெசவு, பனை வனைதல் மற்றும் கட்டிட தொழில் நுட்பம் குறித்து அறிதல்.
- தமிழர்களின் சங்க கால வேளாண்மை, நீர்ப்பாசனம் மற்றும் உற்பத்தி முறைகள் குறித்த கற்றல்.
- நவீன அறிவியல் தமிழ் மற்றும் கணித்தமிழ் குறித்த புரிதல்.

முன் கூட்டிய துறைசார் அறிவு:

தேவை இல்லை

பாடம் கற்றதின் விளைவுகள்:

பாடத்தை வெற்றிகரமாக கற்று முடித்த பின்பு, மாணவர்களால் முடியும் விளைவுகள்

CO1	சங்க காலத்தமிழர்களின் நெசவு மற்றும் பானை வனைதல் தொழில் நுட்பம் குறித்த கற்றுணர்தல்	புரிதல்
CO2	சங்ககாலத்தமிழர்களின் கட்டிட தொழில் நுட்பம் கட்டுமானப் பொருட்கள் மற்றும் அவற்றை விளக்கும் தளங்கள் குறித்த அறிவு.	புரிதல்
CO3	சங்க காலத்தமிழர்களின் உலோகத் தொழில், நாணயங்கள் மற்றும் மணிகள் சார்ந்த தொல்லியல் சான்றுகள் பற்றிய அறிவு.	புரிதல்
CO4	சங்க காலத்தமிழர்களின் வேளாண்மை, நீர்ப்பாசனமுறைகள் மற்றும் முத்துகுளித்தல் குறித்ததெளிவு.	புரிதல்
CO5	நவீன அறிவியல் தமிழ் மற்றும் கணித்தமிழ் குறித்த புரிந்து கொள்ளலும் மற்றும் பயன்படுத்துதலும்.	பகுப் பாய்வு

MappingwithProgrammeOutcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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

3- Strong;2-Medium; 1-Low

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

K. S. Rangasamy College of Technology – Autonomous (R2026)								
26TA2Y1T-தமிழரும் தொழில்நுட்பமும்								
Semester	Hours/Week			Total hrs	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
III	1	0	0	15	1	100	-	100
நெசவு மற்றும் பாணைத் தொழில்நுட்பம்: சங்ககாலத்தில் நெசவுத் தொழில் - பாணைத் தொழில்நுட்பம்-கருப்பு சிவப்பு பாண்டங்கள் - பாண்டங்களில் கீறல் குறியீடுகள்.								3
வடிவமைப்பு மற்றும் கட்டிடத் தொழில் நுட்பம்: சங்ககாலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப்பொருட்களில் வடிவமைப்பு -சங்க காலத்தில் கட்டுமானப் பொருட்களும் நடுகல்லும் - சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் -மாமல்லபுரச் சிற்பங்களும், கோவில்களும் - சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத்தலங்கள் - நாயக்கர் காலக்கோயில்கள்-மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலைநாயக்கர்மஹால் - செட்டிநாட்டுவீடுகள் - பிரிட்டிஷ்காலத்தில்சென்னையில்இந்தோ -சாரோசெனிக்கட்டிடக்கலை.								3
உற்பத்தித்தொழில்நுட்பம்: கப்பல் கட்டும் கலை - உலோகவியல் -இரும்புத்தொழிற்சாலை -இரும்பை உருக்குதல் எஃகு - வரலாற்றுச்சான்றுகளாக செம்பு மற்றும் தங்கநாணயங்கள்- நாணயங்கள் அச்சடித்தல்- மணி உருவாக்கும் தொழிற்சாலைகள் - கல்மணிகள் கண்ணாடி மணிகள் - சுடு மண்மணிகள் - சங்குமணிகள் - எலும்புத்துண்டுகள் - தொல்லியல் சான்றுகள் - சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.								3
வேளாண்மை மற்றும் நீர் பாசனத்தொழில் நுட்பம்: அணை, ஏரி, குளங்கள், மதகு - சோழர்காலக்குழுமித்தாம்பின் முக்கியத்துவம்-கால்நடை பராமரிப்பு - கால்நடைகளுக்கான வடிவமைக்கப்பட்ட கிணறுகள்- வேளாண்மை மற்றும் வேளாண்மை சார்ந்த செயல்பாடுகள் - கடல்சார் அறிவு -மீன் வளம் - முத்து மற்றும் முத்துக்குளித்தல் - பெருங்கடல் குறித்த பண்டைய அறிவு - அறிவுசார்சமூகம்.								3
அறிவியல் தமிழ் மற்றும் கணித்தமிழ் அறிவியல் தமிழின் வளர்ச்சி - கணித்தமிழ் வளர்ச்சி - தமிழ் நூல்களை மின்பதிப்பு செய்தல் - தமிழ் மென் பொருட்கள் உருவாக்கம் - தமிழ் இணையக்கல்விக் கழகம் - தமிழ் மின்நூலகம் - இணையத்தில் தமிழ் அகராதிகள் - சொற்குவைத் திட்டம்.								3
Total Hours								15
Text Book(s):								
1.	தமிழகவரலாறு- மக்களும்பண்பாடும்கே. கே .பிள்ளை (வெளியீடு: தமிழ்நாடுபாடநூல்மற்றும்கல்வியியல்பணிகள்கழகம்).							
2.	கணினித்தமிழ் - முனைவர்இல. சுந்தரம். (விகடன்பிரசுரம்).							
3.	கீழடி - வைகைநதிக்கரையில்சங்ககாலநகரநாகரீகம் (தொல்லியல்துறைவெளியீடு).							
4.	பொருறை - ஆற்றங்கரைநாகரீகம் (தொல்லியல்துறைவெளியீடு).							
5.	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print).							
6.	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies).							
7.	Historical Heritage of the Tamils (Dr.S.V.Subaramanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).							
8.	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)							
9.	Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)							
10.	Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author).							
11.	Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu).							
12.	Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.							

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

K.S.Rangasamy College of Technology – Autonomous R2026								
(Common to All branches)								
26EE2C1L – Makerspace								
Semester	Hours/Week			Total Hrs	Credit C	Maximum Marks		
	L	T	P			CA	ES	Total
II	0	0	2	30	1	60	40	100
<p>List of Experiments:</p> <ol style="list-style-type: none"> 1. Cutting and Engraving wood in different shapes 2. Fabrication of simple components / parts using 3D Printers 3. Cutting and Engraving acrylic sheets in different shapes 4. Fabrication of shapes in sheet metal 5. Joining of similar metal pieces using welding 6. Wiring circuits for 2BHK residential concealed conduit wiring 7. PCB layout design of a given circuit. 8. Soldering and testing of given electronic circuit. 9. Integration of Sensors and actuators with a microcontroller. 10. Study experiment: Plumbing, Dis-assembly and assembly of some appliances: Air – Conditioners and Refrigerators. 								
Lab Manual								
1.	Stephen Christena, Learn to Weld: Beginning MIG Welding and Metal Fabrication Basics, Crestline Books, 2014. H. Lipson, Fabricated - The New World of 3D Printing, Wiley, 1st edition, 2013. Code of Practice for Electrical Wiring Installations (IS 732:2019)							
*SDG 9 – Industry Innovation and Infrastructure								

26EV201L	Circuit Theory and Network Analysis Laboratory	Category	L	T	P	Credit
		PC	0	0	3	1.5

Objectives

- To introduce the fundamental principles of circuit analysis techniques, specifically mesh and nodal analysis, for both AC and DC networks.
- To impart practical skills in measuring and calculating electrical parameters such as current, voltage, and various power components in electrical systems.
- To provide a comprehensive understanding of core network theorems (Thevenin's, Norton's, Superposition, and Reciprocity) and their application in simplifying complex circuits.
- To familiarize students with modern simulation tools like MATLAB for validating theoretical network theorems and analyzing circuit behavior.
- To explore the dynamic behavior and transient responses of first-order (RL, RC) and second-order (RLC) circuits under switched conditions.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Measure and analyze the current, voltage, and power distribution across specific branches and nodes of an electrical circuit using laboratory instruments or simulation tools.	Apply
CO2	Apply mesh analysis and nodal analysis techniques to theoretically calculate and experimentally verify unknown voltages and currents in a network.	Apply
CO3	Calculate, measure, and differentiate between active, reactive, and apparent power in single-phase alternating current circuits.	Apply
CO4	Formulate equivalent circuits and validate core network theorems—	Apply
CO5	Investigate and plot the transient and steady-state responses of first-order (RL, RC) and second-order (RLC) circuits to analyze time constants and damping behavior.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	-	-	3	3	3	3	3	-	2	3	-	3
CO2	3	2	2	-	-	3	3	3	3	3	-	2	3	-	3
CO3	3	2	3	-	-	-	-	3	3	3	-	2	3	-	3
CO4	3	2	3	-	-	3	3	3	3	3	-	2	3	-	3
CO5	3	2	3	-	-	3	3	3	3	3	-	2	3	-	3

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	-	-	-	-
Understand	25	12	50	50
Apply	25	13	50	50
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

Passed in BoS Meeting held on 20/12/2025

Approved in Academic Council Meeting held on 03/01/2026

K.S.Rangasamy College of Technology - Autonomous R2022								
B.E - Electronics Engineering (VLSI Design & Technology)								
26EV201L - Circuit Theory and Network Analysis Laboratory								
Semester	Hours/Week			Total Hrs	Credit	Maximum Marks		
	L	T	P			C	CA	ES
II	0	0	3	45	1.5	60	40	100
List of Experiments:								
<ol style="list-style-type: none"> 1. Measurements of Current and Power of a Specific Branch in a Circuit 2. Measurements of Voltage and Power of a Specific Node in a Circuit 3. Measurement of voltage using mesh analysis 4. Measurement of current using nodal analysis 5. Calculation of various power in an AC circuit 6. Verification of Thevenien Theorem 7. Verification of Notrons Theorem 8. Verification of Superposition Theorem 9. Verification of Reciprocity Theorem 10. Check the Transient Response of RL 11. Circuits Check the Transient Response of RLC Circuits 								
Lab Manual								
1.	"Circuit Theory and Network Analysis Laboratory Manual", Department of Electronics Engineering (VLSI Design and Technology), KSRCT.							

*SDG 9 - Industry Innovation and Infrastructure

Course Designer(s)

Dr.S.Pradeep – pradeeps@ksrct.ac.in

26CS2C2L	Data Structures and Algorithms Laboratory	Category	L	T	P	Credit
		ES	0	0	3	1.5

Objective

- To implement fundamental data structures such as lists, stacks, queues, and trees.
- To apply stack concepts in solving problems like expression evaluation and parenthesis checking.
- To develop programs for various sorting and searching techniques.
- To understand and implement hashing methods for efficient data handling.
- To design and implement graph algorithms such as shortest path and minimum spanning tree.

Prerequisite

Programming knowledge in C language

Course Outcomes

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

CO1	Demonstrate the implementation of Linear Data structures and its applications	Apply
CO2	Investigate Balanced Parenthesis and Postfix expressions with the help of Stack ADT	Apply
CO3	Implement Search Tree ADT	Apply
CO4	Implement sorting, searching and hashing techniques	Apply
CO5	Design and execute graph algorithms such as shortest path and minimum spanning tree	Apply

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2						2			2	3	3
CO2	3	3	2	3					3			2	3	3
CO3	3	3	2	2	2	2			3	2		2	3	3
CO4	3	3	2	3	2			3	2	2		2	3	3
CO5	3	3	2		2	2	2	3	3	2		2	3	3
3- Strong; 2-Medium; 1-Low														

K.S.Rangasamy College of Technology – Autonomous R2026								
26CS2C2L – Data Structures and Algorithms Laboratory								
Common to B.E. ECE, EEE, EE (VLSI DT)								
Semester	Hours/Week			Total	Credit	Maximum Marks		
	L	T	P	Hrs	C	CA	ES	Total
II	0	0	3	45	1.5	60	40	100
List of Experiments:								
<ol style="list-style-type: none"> 1. Implementation of List Abstract Data Type (ADT)* 2. Implementation of Stack ADT* 3. Implementation of Queue ADT* 4. Implementation of stack applications: * <ol style="list-style-type: none"> (a) Program for 'Balanced Parenthesis' (b) Program for 'Evaluating Postfix Expressions' 5. Implementation Search Tree ADT* 6. Implementation of Sorting Algorithms * 7. Develop a program for various Searching Techniques * 8. Implementation of Hashing Techniques * 9. Implementation of Shortest Path Algorithm* 10. Implementation of Minimum Spanning Tree Algorithm* 								

*SDG 4 – Quality Education

Course Designer(s)

1. Dr. K.Poongodi - poongodik@ksrct.ac.in

26EV202L	Innovation for Engineering and Technology Laboratory	Category	L	T	P	Credit
		PC	0	0	2	1
Objectives						
<ul style="list-style-type: none"> Understand engineering and technology concepts for the design and development of prototypes. Design and analyze soft digital prototypes for product validation. Develop prototype by integrating engineering principles and technology. Conduct testing to verify objectives, gather user feedback, and apply iterative design improvements. Document, publish, and present engineering solutions in a professional format. 						
Pre-requisites						
<ul style="list-style-type: none"> Design Thinking Laboratory 						
Course Outcomes						
On the successful completion of the course, students will be able to						
CO1	Understand engineering and technology concepts for prototype development.					Understand
CO2	Design and analyze soft digital product/product systems to validate functionality using engineering tools.					Apply
CO3	Develop prototype using appropriate materials, methods, and tools to achieve functional realization.					Create
CO4	Analyze testing results and user feedback to refine solutions through iterative design processes.					Analyse
CO5	Prepare professional documentation and deliver effective project reports and presentations.					Apply

Mapping with Programme Outcomes

COs	POs											PSOs		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
CO1	3	2	-	-	3	-	-	-	-	-	1			
CO2	3	2	2	-	3	-	-	2	2	1	1			
CO3	3	2	2	-	3	2	-	2	2	1	1			
CO4	3	2	2	2	-	2	1	2	2	1	-			
CO5	3	-	-	-	1	-	1	2	2	1	-			

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Review I (CO1, CO2)			Review II (CO3,CO4)				Review III (CO5)	(R1+R2+R3)	Internal Marks
Knowledge of engineering and technology	Soft digital Product with specification	Presentation	prototype	Analyze testing results and user feedback	Final solution	Demonstration & Presentation	Publish the idea	Total	
5	20	5	30	15	5	10	10	100	60

Report and Presentation (CO1, CO2, CO3,CO4 & CO5)					External Marks
Report	Presentation	Demonstration of prototype	Viva Voce	Total	
30	20	30	20	100	40

Passed in BoS Meeting held on 20/12/2025
Approved in Academic Council Meeting held on 03/01/2026

K.S.Rangasamy College of Technology – Autonomous R 2026								
Electronics Engineering (VLSI Design and Technology)								
26EV202L - Innovation for Engineering and Technology Laboratory								
Semester	Hours/Week			Total Hrs	Credit C	Maximum Marks		
	L	T	P			CA	ES	Total
II	0	0	2	30	1	60	40	100
Engineering and Technology Understanding the role of engineering principles and technology in product development- identification and selection of appropriate engineering and technological methods and tools for product/prototype development.								[4]
Soft Digital Product Idea into product engineering specifications- functional requirements -system elements. Apply engineering tools (software) - design and model the product/product system as per specifications - analyze functionality for idea validation.								[8]
Prototype Digital designs into scaled/simplified physical prototype - selection of materials, components, manufacturing methods - cost considerations.								[8]
Testing, Validation and Iteration Testing of prototypes - collect user feedback- observation – conversations - Think-aloud protocol. Analyze test results and user feedback against defined objectives - identify improvements- iteratively - refine the product/product system.								[6]
Publish the solution Publish the ideas: Hackathon, project exhibition, Idea pitching, journal publication, paper presentation & Intellectual Property Rights–Prepare project report and present the final solution.								[4]
Total Hours:								30
Reference(s):								
1.	NPTEL: Design Thinking and Innovation by Prof. Ravi Poovaiah, IDC School of Design, IIT Bombay. https://onlinecourses.swayam2.ac.in/aic23_ge17/preview , https://dsource.in/dti .							
2.	NPTEL: Innovation by Design by Prof. B. K. Chakravarthy, IDC School of Design, IIT Bombay, https://onlinecourses.swayam2.ac.in/aic19_de02/preview .							
3..	www.dsource.in , The Resource for Design by e-Kalpa Design Team, IDC, IIT Bombay, DoD, IIT Guwahati & NID, Bengaluru							

Course Designer(s)

1. Dr.K.Raja – raja@ksrct.ac.in

26 TP 2G1P	Career Skill Development II - Aptitude 2	Category	L	T	P	Credit
		CG	0	0	2	1

Objective

- To help learners improve their logical reasoning skills at different academic and professional contexts.
- To help learners relate basic quantitative problems and solve them.
- To help learners Infer critically the statements with optimal conclusions and assumptions.
- To Solve the quantitative problems pertaining to calculations of averages, ratio and proportions, and profit and loss effectively
- To compute quantitative problems related to time and work, speed and distance, and simple and compound interest

Prerequisite

- Basic knowledge of Arithmetic and Logical Reasoning

Course Outcomes

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

CO1	Deduce the topics in logical reasoning at the preliminary and intermediate level.	Analyze
CO2	Relate basic quantitative problems and solve them effectively at the preliminary level	Apply
CO3	Infer critically the statements with optimal conclusions and assumptions with the data and information given.	Analyze
CO4	Solve the quantitative problems pertaining to calculations of averages, ratio and proportions, and profit and loss effectively at the pre-intermediate level.	Apply
CO5	Compute quantitative problems related to time and work, speed and distance, and simple and compound interest at intermediate level.	Apply

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	3		3				2	3	3
CO2	3	3	3	3		2				2	3	3
CO3	2	2	2	2		3				2	3	3
CO4	3	3	3	3		2				2	3	3
CO5	3	3	3	3		2				2	3	3

3- Strong; 2-Medium; 1-Some

Assessment Pattern

Bloom's Category	Online Assessment Tests (Marks)		Group Discussion	Internal Marks
	1	2		
Apply	100	100	100	100
Over all Weightage	40	40	20	

K.S.Rangasamy College of Technology – Autonomous R2026								
Common to All Branches								
26 TP 2G1P - Career Skill Development II - Aptitude 2								
Semester	Hours/Week			Total Hrs	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	0	0	2	25	0	100	00	100
Critical Reasoning Deductive Reasoning - Syllogism - Statements and Conclusions, Cause and Effect, Statements and Assumptions - Identifying Strong Arguments and Weak Arguments – Cause and Action - Data sufficiency								[5]
Quantitative Aptitude - Part – 4 Permutation and Combination - Probability - Quadratic equation - Geometry Elementary statistics – Clock – Calendar – Logarithmic								[5]
Non-Verbal Reasoning Translation, rotation, scaling, mirroring, assembling, and grouping, paper folding and cutting, and patterns in 2 and 3 dimensions. Series Completion of Figures – Mirror images and Water Images								[5]
Quantitative Aptitude - Part – 5 Mensuration of Area, Volume and Surface area in 2D and 3D Shapes – 2D Shapes – Square, Rectangle, Triangle, Circle, etc. - 3D Shapes – Cube, Cuboid, Sphere, Cone, etc.								[5]
Data Interpretation and Analysis Data Interpretation Based on Tabulation, Pie chart, Bar graph, And Line graph – 2 and 3 dimensional plots, maps, and tables - Data sufficiency								[5]
Total Hours								25
Reference(s):								
1.	Aggarwal, R.S. 'A Modern Approach to Verbal and Non-verbal Reasoning', Revised Edition 2008, Reprint 2009, S.Chand & Co Ltd., New Delhi.							
2.	Abhijit Guha, 'Quantitative Aptitude', McGraw Hill Education, 6 th edition, 2016							
3.	Dinesh Khattar, 'Quantitative Aptitude For Competitive Examinations', Pearson Education (2020)							
4.	Anne Thomson, 'Critical Reasoning: A Practical Introduction' Lexicon Books, 3 rd edition, 2022. Warsaw							

Course Designer

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