K.S.Rangasamy College of Technology

(Autonomous)

CURRICULUM

of

B.E. Mechatronics Engineering

(For the Batch Admitted in 2026 - 2027)

R 2026

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

Passed in the BoS Meeting held on 17/12/2025
Approved in Academic Council Meeting held on 03/01/2026

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Board Of Studies/
Mechatronics Engineering

K.S.Rangasamy College of Technology
(Autonomous)

Department of Mechatronics Engineering

Proposed Credit Distribution for B.E. Mechatronics Engineering Program

S.No.	Category	Credits per Semester								Total Credits	%
		I	II	III	IV	V	VI	VII	VIII		
1	HS	3	3	-		-	-	-	-	**6**	**3.6**
2	BS	12	4	4	-	-	-	-	-	**20**	**12.0**
3	ES	4	13		-	-	-	-	-	**17**	**10.2**
4	PC	1	1	20	20	14	15	17	-	**88**	**53.0**
5	PE	-	-	-	-	6	6	6		**18**	**10.8**
6	OE		-	-	3	3	3	-	-	**9**	**5.4**
7	GE	2	1*	-	-	-	-	-	-	**02***	**-**
8	CG	CSD I	CSD II	CSD III	CSD IV	CSD V	CSD VI	-	8	**08+03***	**4.8**
9	MC	MC I	MC II	MC III	MC IV	MC V		-	-	**-**	**-**
10	AC	-	-	-	-	-	-	AC	-	**-**	**-**
Total		**20**	**21**	**24**	**23**	**23**	**24**	**23**	**8**	**166**	**100**

HS - HUMANITIES AND SOCIAL SCIENCES
BS - BASIC SCIENCE
ES - ENGINEERING SCIENCES
PC – PROFESSIONAL CORE
PE - PROFESSIONAL ELECTIVES
OE – OPEN ELECTIVES
GE - GENERAL ELECTIVES
CG - CAREER GUIDANCE COURSES
MC – MANDATORY COURSES
AC - AUDIT COURSES

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

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SEMESTER I

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1	26IP1C1I	Induction Programme	-	-	-	-	-	0
THEORY								
2	26EN1C1T	English Essentials - I	HS	4	2	0	2	3
3	26MA1C3T	Differential Calculus	BS	5	3	1	0	4
4	26PH1C1T	Engineering Physics	BS	3	3	0	0	3
5	26CH1C1T	Applied Chemistry	BS	3	3	0	0	3
6	26ME1C1T	Engineering Drawing	ES	5	1	2	0	3
7	26TA1YIT	Heritage of Tamils / தமிழர் மரபு	GE	1	1	0	0	1[&]
8	26EN1E*T	Foreign Language (Japanese / German)	GE	1	1	0	0	1[$]
9	26MY2Y1T	Universal Human Values	MC	3	3	0	0	3[#]
PRACTICALS								
10	26PH1C1L	Engineering Physics Laboratory	BS	2	0	0	2	1
11	26CH1C1L	Chemistry Laboratory	BS	2	0	0	2	1
12	26ME1C1L	Computer Aided Drafting Laboratory	ES	2	0	0	2	1
13	26MC1O1L	Design Thinking Laboratory	PC	2	0	0	2	1
14	26TP1G1P	Career Skill Development - I	CG	2	0	0	2	1*
			Total	**35**	**18**	**01**	**14**	**20**

[&]Heritage of Tamils - Additional Credit is offered and not accounted for CGPA
[$]Foreign Language - Additional Credit is offered and not accounted for CGPA
[#]Universal Human Values - Additional Credit is offered and not accounted for CGPA
*Career Skill Development - I - Additional Credit is offered not accounted for CGPA

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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	26MA2C3T	Integral Calculus	BS	5	3	1	0	4
3	26ME2C3T	Engineering Mechanics	ES	5	3	1	0	4
4	26EE2C1T	Basic Electrical and Electronics Engineering	ES	3	3	0	0	3
5	26CS2C1T	C Programming	ES	3	3	0	0	3
6	26MY2Y1T	Environmental Science and Sustainability	MY	2	2	0	0	0
7	26TA2Y1T	Tamils and Technology / தமிழரும் தொழில்நுட்பமும்[&]	GE	1	1	0	0	1[&]
PRACTICALS								
8	26EE2C1L	Maker Space	ES	3	0	0	3	1.5
9	26CS2C1L	C Programming Laboratory	ES	3	0	0	3	1.5
10	26MC2O2L	Innovation for Engineering and Technology	PC	2	0	0	2	1
11	26TP2G1P	Career Skill Development - II	CG	2	0	0	2	1*
			Total	**33**	**14**	**02**	**12**	**21**

[&]Tamils and Technology - Additional Credit is offered and not accounted for CGPA
*Career Skill Development - II - Additional Credit is offered and not accounted for CGPA

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SEMESTER III

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1	26MA3C1T	Mathematical Statistics and Numerical Methods	BS	5	3	1	0	4
2	26MC3O1T	Analog Devices and Digital Circuits	PC	3	3	0	0	3
3	26MC3O2T	Manufacturing Processes	PC	3	3	0	0	3
4	26MC3O3T	Fluid Mechanics and Thermal Sciences	PC	5	3	1	0	4
5	26MC3O4T	Hydraulic and Pneumatic Control	PC	3	3	0	0	3
6	26MY3Y1T	Life Skill for Engineers	MC	1	1	0	0	1#
THEORY CUM PRACTICAL								
8	26MC3O5I	Microprocessors and Microcontrollers	PC	5	3	0	2	4
PRACTICALS								
9	26MC3O1L	Analog Devices and Digital Circuits Laboratory	PC	3	0	0	3	1.5
10	26MC3O2L	Manufacturing Processes Laboratory	PC	3	0	0	3	1.5
11	26TP3G1P	Career Skill Development - III	CG	2	0	0	2	1*
12	26TP3G2P	Internship	CG	-	-	-	-	1*/2*/3*
			Total	**33**	**19**	**02**	**10**	**24**

#Life Skill for Engineers - Additional Credit is offered and not accounted for CGPA
*Career Skill Development - III - Additional Credit is offered and not accounted for CGPA
*Internship - Additional credit is offered based on the duration of the internship and is not included in the CGPA

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SEMESTER IV

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1	26MC4O1T	Industrial Drives and Control	PC	3	3	0	0	3
2	26MC4O2T	Mechanics of Solids	PC	5	3	1	0	4
3	26MC4O3T	Industrial Robotics	PC	3	3	0	0	3
4	26MC4O4T	Python Programming for Mechatronics	PC	3	3	0	0	3
5	26MC4N1T	Open Elective - I	OE	3	3	0	0	3
6	26MY3Y1T	Disaster Management	MC	2	2	0	0	0
THEORY CUM PRACTICAL								
7	26MC4O5I	Sensors and Instrumentation	PC	5	3	0	2	4
PRACTICALS								
8	26MC4O1L	Industrial Drives and Control Laboratory	PC	3	0	0	3	1.5
9	26MC4O2L	Python Programming for Mechatronics Laboratory	PC	3	0	0	3	1.5
10	26TP4G1P	Career Skill Development - IV	CG	2	0	0	2	1*
			Total	**32**	**20**	**01**	**10**	**23**

*Career Skill Development - IV - Additional Credit is offered and not accounted for CGPA

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SEMESTER V

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1	26MC5O1T	System Design and Control	PC	5	3	1	0	4
2	26MC5O2T	Theory of Machines	PC	5	3	1	0	4
3	26MC5E1T	Professional Elective - I	PE	3	3	0	0	3
4	26MC5E2T	Professional Elective - II	PE	3	3	0	0	3
5	26MC5N1T	Open Elective - II	OE	3	3	0	0	3
6	26MY5Y1T	Start-ups and Entrepreneurship	MC	2	2	0	0	2[$]
THEORY CUM PRACTICAL								
7	26MC5O2I	Embedded System	PC	4	2	0	2	3
PRACTICALS								
8	26MC5O1L	Hydraulic and Pneumatic Control Laboratory	PC	3	0	0	3	1.5
9	26MC5O2L	Theory of Machines Laboratory	PC	3	0	0	3	1.5
10	26TP5G1P	Career Skill Development - V	CG	2	0	0	2	1*
11	26TP5G2P	Internship	CG	-	-	-	-	1*/2*/ 3*
			Total	**33**	**19**	**02**	**10**	**23**

[$]Startups and Entrepreneurship - Additional Credit is offered not accounted for CGPA
*Career Skill Development - V - Additional Credit is offered not accounted for CGPA
*Internship - Additional credit is offered based on the duration of the internship and is not included in the CGPA

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SEMESTER VI

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1	26MC6O1T	Industrial Automation Controllers	PC	5	3	1	0	4
2	26MC6O2T	Machine Design	PC	5	3	1	0	4
3	26MC6E1T	Professional Elective - III	PE	3	3	0	0	3
4	26MC6E2T	Professional Elective - IV	PE	3	3	0	0	3
5	26MC6N1T	Open Elective - III	OE	3	3	0	0	3
THEORY CUM PRACTICAL								
6	26MC6O3I	Computer Aided Design and Manufacturing	PC	5	3	0	2	4
PRACTICALS								
7	26MC6O1L	Industrial Automation Laboratory	PC	3	0	0	3	1.5
8	26MC6O2L	Computer Aided Design Laboratory	PC	3	0	0	3	1.5
9	26TP6G1P	Career Skill Development - VI	CG	2	0	0	2	1*
			Total	**32**	**18**	**02**	**10**	**24**

*Career Skill Development - VI - Additional Credit is offered not accounted for CGPA

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SEMESTER VII

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1	26MC7O1T	Mechatronics System Design	PC	5	3	1	0	4
2	26MC7O2T	Drone Technology	PC	3	3	0	0	3
3	26MC7O3T	Artificial Intelligence & Machine Learning	PC	3	3	0	0	3
4	26MC7E1T	Professional Elective - V	PE	3	3	0	0	3
5	26MC7E2T	Professional Elective - VI	PE	3	3	0	0	3
6	26AC7Y1T	Research Skill Development	AC	1	1	0	0	0
7	26GE7C1T	NCC#\NSS\NSO\YRC\RRC\Yoga\Fine Arts	-	4	2	0	2	3#
THEORY CUM PRACTICAL								
8	26MC7O4I	Industrial Internet of Things	PC	5	3	0	2	4
PRACTICALS								
9	26MC7O1L	Drone Technology Laboratory	PC	3	0	0	3	1.5
10	26MC7O2L	Artificial Intelligence & Machine Learning Laboratory	PC	3	0	0	3	1.5
11	26TP7G2P	Internship	CG	-	-	-	-	1*/2*/ 3*
			Total	**29**	**19**	**1**	**10**	**23**

#NCC - Course can be waived with 3 credits in VII semester or offered as extra credits
#NSS/NSO/YRC/RRC/Fine Arts 3 credits are not accounted for CGPA
*Internship - Additional credit is offered based on the duration of the internship and is not included in the CGPA

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SEMESTER VIII

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
PRACTICALS								
1	26MC8O1P	Project Work	CG	16	0	0	16	8
			Total	**16**	**0**	**0**	**16**	**8**

Semester	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Credit	20	21	24	23	23	24	23	8
TOTAL NUMBER OF CREDITS TO BE EARNED FOR AWARD OF THE DEGREE = 166								

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PROFESSIONAL ELECTIVES

Professional Electives	Vertical 1	Vertical 2	Vertical 3	Vertical 4	Vertical 5
	Robotics and Automation	**Electric Vehicles**	**Drones and Autonomous Systems**	**Manufacturing and Additive Technologies**	**Mechanical Design and Analysis**
I	Robot Kinematics and Dynamics	Electric Drives and Traction Systems	Design of UAV Systems	Material Science and Metrology	Design for Manufacturing and Assembly
II	Robot Operating System	Electric and Hybrid Vehicle Technologies	Flight Control Systems	Automotive Electronics	Finite Element Method
III	Mobile Robotics	Battery Management Systems	Autonomous Navigation and Path Planning	Rapid Prototyping and Additive Manufacturing	Reliability Engineering
IV	Supervisory Control and Data Acquisition (SCADA)	Thermal Management in Electric Vehicles	Aerial Imaging and Data Processing	Industrial Safety and Control Systems	Six Sigma and Lean Manufacturing
V	Robot Manipulators and Grippers	Smart Grid and EV Integration	Legal and Ethical Aspects of Drone Operation	Smart Manufacturing Systems	Cyber-Physical Systems and Digital Twins
VI	Robotics Safety and Standards	Sustainable and Green Transportation Systems	Advanced Autonomous Systems	Green Energy Technologies and Management	Material Handling Systems

OPEN ELECTIVE COURSES (OE)

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1	26MC4N1T	Introduction to Mechatronics Engineering	OE	3	3	0	0	3
2	26MC4N2T	Robotics and Automation	OE	3	3	0	0	3
3	26MC5N1T	Automation in Renewable Energy Systems	OE	3	3	0	0	3
4	26MC5N2T	Applied Ergonomics	OE	3	3	0	0	3
5	26MC6N1T	Industrial Safety Engineering	OE	3	3	0	0	3
6	26MC6N2T	Industrial Safety and Occupational Health	OE	3	3	0	0	3

Note:

HS - Humanities and Social Sciences Courses; BS - Basic Science Courses; ES - Engineering Science Courses; PC - Professional Core Courses; PE - Professional Elective Courses; GE - General Elective Courses; OE - Open Elective Courses; CGC - Career Guidance Courses; MC - Mandatory Courses; AC - Audit Courses

L: Lecture

T: Tutorial

P: Practical

C: Credit

1 Hour Lecture = 1 Credit

1 Tutorial = 1 Credit

2 Hours Practical = 1 Credit

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HONOUR DEGREE

ROBOTICS AND AUTOMATION

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1	26MC0101H	Kinematics and Dynamics for Mobile Robots	HD	3	3	0	0	3
2	26MC0102H	Automation in Renewable Energy Systems	HD	3	3	0	0	3
3	26MC0201H	Autonomous Aerial Robotics	HD	3	3	0	0	3
4	26MC0202H	Robot Ethics and Safety Systems	HD	3	3	0	0	3
5	26MC0301H	Robotics for Surgical and Biomedical Applications	HD	3	3	0	0	3
6	26MC0302H	Sustainable and Green Automation Technologies	HD	3	3	0	0	3
			Total	**18**	**18**	**0**	**0**	**18**

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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	Total
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)	**[30]**

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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. 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**

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2026								
26MA1C3T - Differential Calculus								
Common to Mech, MCT, Civil, Text & RA								
Semester	**Hours / Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
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 – Orthogonal transformation of a symmetric matrix to diagonal form **Hands-on:** Evaluating Eigenvalues and Eigenvectors of a Matrix	**[9]**
Differential Calculus Curvature – Radius of curvature (Cartesian and Polar coordinates) – Centre of curvature – Circle of curvature **Hands-on:** Evaluating Radius of curvature and circle of curvature	**[9]**
Functions of Several Variables Partial differentiation – Homogeneous functions and Euler's theorem – Jacobians – Taylor's series for functions of two variables – Maxima and minima of functions of two variables – Constrained maxima and minima (Lagrange's method of undetermined multipliers) **Hands-on:** Evaluating Maxima and Minima of function of two variables	**[9]**
Differential Equations Linear differential equations of second and higher order with constant coefficients – R.H.S is of the form $e^{\alpha x}$, $sinax$, $cosax$, x^n, $n > 0$ – Simultaneous first-order linear equations with constant coefficients – Method of variation of parameters **Hands-on: S**olving Second order ordinary differential equations	**[9]**
Integration Definite and Indefinite integrals – Techniques of Integration – Integration by substitution – Integration by parts – Bernoulli's formula – Integration of rational (algebraic) functions by partial fraction method **Hands-on:** Evaluating Definite and Indefinite integrals	**[9]**
Total Hours: 45 + 15 (Tutorial + Hands-on)	**60**

Text Book(s):

1.	Grewal B.S, "Higher Engineering Mathematics", 45th Edition, Khanna Publishers, New Delhi, 2024
2.	Kreyszig Erwin, "Advanced Engineering Mathematics", 10th Edition, John Wiley & Sons, New Delhi, 2023

Reference(s):

1.	Glyn James, Phil Dyke, "Modern Engineering Mathematics", 6th Edition, Pearson Education, 2020
2.	Dass H.K, "Advanced Engineering Mathematics", 22nd Edition, Sultan Chand & Sons, New Delhi, 2019
3.	Veerarajan T, "Engineering Mathematics", for Semesters I and II, 1st Edition, Tata McGraw Hill Publishing Company, New Delhi, 2019.
4.	Bali N P and Manish Goyal," A text book of Engineering Mathematics",9th Edition, Laxmi Publications, 2017

***SDG: 4 – Quality Education**

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2026								
Engineering Physics (MECH, MCT, RA, CIVIL & TXT)								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I/II	3	0	0	45	3	40	60	100

***Laser Physics:** Properties of laser- Absorption and emission of radiation- Spontaneous and stimulated emission-Einstein's coefficients - Basic components of laser - Types of lasers -Gas lasers (CO_2), solid-state lasers (Nd: YAG), Semiconductor laser (Homojunction and Hetero junction) Applications of laser – Holography - Difference between hologram and photograph - Recording of hologram and reconstruction of image.	[9]
***Ultrasonics and Acoustics:** Introduction - Properties of ultrasonics – Production - Magnetostriction and piezoelectric generator – Ultrasonic detection - Acoustical grating - Applications of ultrasonic waves- Detection of flaws in metals – Cleaning and clearing – SONAR - Acoustics of buildings – Reverberation - Weber Fechner law - Absorption coefficient and its determination - Factors affecting architectural acoustics of a building and remedies	[9]
***Heat and Heat transfer Mechanisms:** Temperature, Heat, and Internal Energy - thermal expansion of solids and liquids - Modes of heat transfer - Heat conduction through a compound media (series and parallel) - Determination of thermal conductivity of bad conductor – Convection - application in science and domestic - Solving problems - Stefan-Boltzmann law of radiation - Experimental Determination of Stefan's constant.	[9]
***Mechanics and Properties of matter:** **Mechanics:** One and two dimensional kinematics: Reference frames and displacement - Average and instantaneous velocity - Motion at constant acceleration - Freely falling objects - Projectile motion - Solving problems. **Properties of matter**: Elastic behavior of material - Types of elastic moduli - Non-uniform bending – Uniform bending - Application - Torsional pendulum - Couple per unit twist of a wire - Time period - Application - Determination of rigidity modulus.	[9]
****Advanced Materials and Nanotechnology:** Advanced Materials - Metallic glasses – preparation, properties and applications - Shape memory alloys (SMA) – Characteristics - Properties of NiTi alloy - Applications – Nanomaterials – Properties - Top-down process - Ball Milling method – Bottom-up process - Vapor phase deposition - Carbon nano tube (CNT) – Properties - Preparation by electric arc method, Applications of carbon nanotube in engineering and 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.	Douglas C. Giancoli "Physics Principles with Applications" 7th Edition, Pearson Education Limited, 2021
3.	D. Halliday, R. Resnick and J. Walker "Fundamentals of Physics" 12th Edition, John Wiley & Sons, Inc., New York, 2022
Reference(s):	
1.	H. K. Malik, A. K. Singh "Engineering Physics" McGraw Hill Education Private Limited, New Delhi, 2018.
2.	D. R. Joshi "Engineering Physics" McGraw Hill Education Private Limited, New Delhi. 2010
3.	B.B.Laud "Lasers and Non-Linear Optics "New Age International Publications, New Delhi,2015

*** SDG 9: Industry, Innovation, and Infrastructure**
**** SDG 7: Affordable and Clean Energy**

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Mechatronics Engineering

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2026								
B.E – Mechanical, RA & Mechatronics								
Applied Chemistry								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
1/ 2	3	0	0	45	3	40	60	100

Unit I Advances in Water Technology* Water- Quality Parameters-Physical, Chemical and Biological-hardness of water and its types-Impacts of hard water in Industries (Scale, Sludge and Corrosion)-Determination of Hardness by EDTA method- Internal treatment (carbonate, phosphate and Calgon conditioning) External treatment methods: Zeolite process- Ion exchange process in industries- Reverse osmosis for domestic, food and beverage industries- Municipal water treatment.	[9]
Unit II Corrosion and its control ** Corrosion-Chemical corrosion – Pilling – Bedworth rule – Electrochemical corrosion —- Factors influencing corrosion – Different forms of Corrosion-Galvanic, Differential aeration,Pitting, Waterline, Pipe line and Stress corrosion-Corrosion control – Sacrificial anode and Impressed current methods – Corrosion inhibitors – Protective coatings – Paints – Constituents and Functions – Metallic coatings – Electroplating (Au) and Electroless (Ni) plating.	[9]
Unit III Chemical Sensors** Sensors – Chemical Sensors – Classification, Principles, Characteristics and working–- Types: Potentiometric Sensors -Amperometric Sensors -Conductometric sensors– Electrochemical Biosensors -Working and Types: Enzyme Sensors – Bio Affinity Sensors - DNA Sensors-Optical biosensor. Nano Technology in Chemical Sensors- Application of chemical sensors in industries.	[9]
Unit IV Energy Storage and Conversion *** Cells and Batteries- Introduction and Types: Lead-Acid Battery-Ni-Cd Battery-Zinc-Air battery-Advanced batteries: Working principle and applications of Lithium-Ion Battery, Sodium-Ion Batteries, and Magnesium ion battery. Fuel Cells: Hydrogen Oxygen Fuel Cell - Microbial Fuel Cell - Organic Solar Cell: Working Principle and Applications.	[9]
Unit V Sustainable Fuels and Environmental Impact *** **Fuels:** Introduction- -Analysis of coal (proximate and ultimate)-E-Diesel-Methanol to Gasoline(MTG) process-E-Gasoline-Bio-diesel-Cellulosic ethanol and Bio mass conversion- -Knocking: Octane number and Cetane number-Calorific value - higher and lower calorific values-Ignition temperature- spontaneous ignition temperature-Viscosity-Explosive range- Flue gas analysis – CO, CO2, NOx, HC and smoke emissions-Carbon foot print.	[9]
Total Hours:	**45**

Text Book(s):

1.	Jain. P.C. and Monica Jain, “Engineering Chemistry”, Dhanpatrai publishing co. New Delhi, 16th Edition, 2015.

Reference(s):

1.	Palanna, O G., “Engineering Chemistry” Tata McGraw-Hill Pub.Co.Ltd, New Delhi, 2017.
2.	Roussak, O V. and Gesser, H D. “Applied Chemistry-A Text Book for Engineers.
3.	Shikha Agarwal, “Engineering Chemistry-Fundamentals and Applications”, Cambridge University Press, Delhi, 2nd Edition, 2019.

*SDG 6: Clean Water and Sanitation
**SDG 9: Industry, Innovation, and Infrastructure
***SDG 12: Responsible Consumption and Production

Passed in the BoS Meeting held on 17/12/2025
Approved in Academic Council Meeting held on 03/01/2026

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2026										
26ME1C1T - Engineering Drawing										
Common to MECH, MCT, CIVIL & TXT Branches										
Semester	**Hours/Semester**						**Credit**	**Maximum Marks**		
	CI		**LI**	**TW**	**SL**	**TH**				
	L	**T**	**P**				C	CA	ES	Total
I	1	2	0				3	40	60	100

Introduction to Engineering Drawing and Plane Curves* Use of drawing instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning – Drawing sheet layouts - Title block – Line types – Construction of ellipse, parabola and hyperbola (Eccentricity method) - Construction of rectangular hyperbola - Construction of cycloids, epicycloids and hypocycloids	[3+12]
Orthographic Projection* Introduction to orthographic projections – Planes of projection – Projection of points and lines inclined to both planes – Projection of planes (Inclined to one plane and parallel to other – Inclined to both planes) - Conversions of pictorial views to orthographic views	[3+12]
Projection of Solids* Projections of simple solids: prism, pyramid, cylinder and cone (Axis of solid inclined to both HP and VP).	[3+12]
Sections of solids and Development of surfaces* Sections of solids :Prism, Cylinder, Pyramid, Cone – Auxiliary Views - Draw the sectional views of geometrical solids, objects from industry - Development of surfaces of Right solids – Prism, Pyramid, Cylinder and Cone	[3+12]
Isometric Projection* Principles of isometric projection – Isometric scale – Isometric projections of simple solids: Prism, pyramid, cylinder and cone - Isometric projections of frustum and truncated solids - Combination of two solid objects in simple vertical positions.	[3+12]
Total Hours:	**75**

Weightage: Continuous Assessment: **40%,** End Semester Examinations: **60%.**

Continuous Assessment Methodology: Assignments (20%), Solution to application-oriented problems using software (20%), Solving of GATE questions (20%), Continuous Assessment Test (40%).

Text Book(s):

1.	Bhatt N.D., —Engineering Drawing‖, Charotar Publishing House Pvt. Ltd., 54th Edition, Gujarat, 2023.
2.	Dhawan R.K., “A Text Book of Engineering Drawing” 3rd Revised Edition, S. Chand Publishing, New Delhi, 2023.

Reference(s):

1.	Natarajan K.V., “A Text Book of Engineering Graphics”, Dhanalakshmi Publishers, Chennai, 2021.
2.	Venugopal K., “Engineering Graphics”, New Age International (P) Limited, 2024.

SDG No(s): 9 - Industry Innovation and Infrastructure

Passed in the BoS Meeting held on 17/12/2025
Approved in Academic Council Meeting held on 03/01/2026

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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 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 the BoS Meeting held on 17/12/2025
Approved in Academic Council Meeting held on 03/01/2026

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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, ஒயிலாட்டம், 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, கையெழுத்துப்படிகள் - தமிழ்ப் புத்தகங்களின் அச்சு 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.	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 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.

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2026								
B.E - Mechatronics Engineering								
26MY1Y2T - Universal Human Values								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
III	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", 2nd 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", 2nd 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

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K.S.Rangasamy College of Technology – Autonomous R2022								
ENGINEERING PHYSICS LABORATORY (MECH, MCT, RA, CIVIL & TXT)								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I/II	0	0	2	45	1	60	40	100

List of Experiments:

1. Determination of the wave length of the laser using grating
2. Determination of the particle size of the given powder using laser source
3. Determination of the acceptance angle and numerical aperture of the given optical fiber
4. Determination of Young's modulus of a given material using uniform bending
5. Determination of Young's modulus of a given material using non uniform bending
6. Determination of Stefan's Constant
7. Determination of rigidity modulus of a wire by using Torsional pendulum
8. Determination of dielectric properties of solids (Teflon, Glass, Bakelite)
9. Determination of dielectric properties of liquids (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. Mr. S. Vanchinathan - vanchinathan@ksrct.ac.in

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K.S.Rangasamy College of Technology – Autonomous R2026										
B.E/B.TECH MECH, MCT, CIVIL, TEXT& RA										
26CH1C1L / 26CH2C4L - Chemistry Laboratory										
Semester	**Hours/Semester**						**Credit**	**Maximum Marks**		
	CI		**LI**	**TW**	**SL#**	**TH**				
	L	**T**	**P**				C	CA	ES	Total
I/II	0	0	2				1	60	40	100

List of Experiments:

1. Estimation of total hardness of given water sample by EDTA method.
2. Determination different types of alkalinity present in given borewell water.
3. Determination of water quality parameters of the given water sample.
4. Estimation of amount of acid in the given solution by conductivity meter.
5. Estimation of barium chloride by precipitation titration.
6. Estimation of iron using standard dichromate solution by EMF measurement.
7. Determination of percentage corrosion using potassium dichromate with a potentiometric sensor.
8. Determination of amount of acid in the given sample by using pH sensor.
9. Determine the pH of the given buffer solutions.
10. Estimation of iron present in the given sample by colorimeter.

[60]

Lab Manual

1.	"Chemistry Laboratory manual" Volume 1 & 2, KSRCT.

SDG 4 (Quality Education)
SDG 6 (Clean Water and Sanitation)
SDG 14 (Life Below Water)

Course Designer(s)

3. Dr.T.A.Sukantha – sukantha@ksrct.ac.in
4. D.Kirthiga- kirthiga@ksrct.ac.in
5. Dr.K.Tamilarasu – tamilarasu@ksrct.ac.in
6. Dr.M.Tamilvanan-tamilvanan@ksrct.ac.in
7. Dr.B.Srividhya-srividhya@ksrct.ac.in

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K.S.Rangasamy College of Technology – Autonomous R2026										
Common to MECH, MCT, CIVIL & TXT Branches										
26ME1C2L – Computer Aided Drafting Laboratory										
Semester	**Hours/Semester**						**Credit**	**Maximum Marks**		
	CI		**LI**	**TW**	**SL#**	**TH**				
	L	**T**	**P**				C	CA	ES	Total
I	0	0	2			30	1	60	40	100

Introduction to Drafting Software

- Introduction to Computer Aided Drafting (CAD)
- Features and applications of drafting software in Mechanical Engineering
- Installation and setup of drafting software
- Creation of new files and workspace setup
- Introduction to toolbars and interface components
- Draw toolbar: line, circle, arc, polygon, rectangle, spline, etc.
- Modify toolbar: move, copy, rotate, trim, extend, mirror, scale, offset, fillet, chamfer
- Properties toolbar: layers, colors, line types, object properties
- Dimensioning toolbar: linear, angular, radial, aligned, ordinate dimensions

2D Drafting and Dimensioning

- Preparation of basic 2D engineering drawings
- Drawing of geometric figures and machine components
- Use of layers, hatching, and annotations
- Application of dimensions and tolerances in 2D drawings
- Editing and modification of 2D drawings
- Printing and plotting of 2D drawings

3D Modeling and Dimensioning

- Introduction to 3D drafting and modeling concepts
- Creation of 3D wireframe, surface, and solid models
- 3D drawing tools: extrusion, revolve, sweep, loft, and boolean operations
- Visualization and viewing techniques in 3D environment
- Dimensioning and annotation of 3D models
- Conversion of 2D drawings into 3D models

References

1.	Bhatt N.D., “Engineering Drawing”, Charotar Publishing House Pvt. Ltd., 54th Edition, Anand, Gujarat, 2023.
2	D.M.Kulkarni,A.P.RAstogi, A.K.Sarkar, ”Engineering Graphics with Auto CAD”, PHI Private Limited, New Delhi, 2009

SDG No(s): 9 - Industry Innovation and Infrastructure

Course Designer.

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Passed in the BoS Meeting held on 17/12/2025
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K.S.Rangasamy College of Technology – Autonomous R 2022								
Department of Mechatronics Engineering								
26MC1O1L Design Thinking Laboratory								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I	0	0	2	30	1	60	40	100

Introduction to Design Thinking Concept and significance of Design Thinking. Design Thinking process stages: Empathize, Define, Ideate, Prototype, and Test. Applications of Design Thinking in engineering and societal problem-solving.	[6]
Problem Identification and User Analysis Understanding real-world engineering and societal problems. User need analysis techniques. 5 Whys method. AEIOU framework (Activities, Environment, Interaction, Objects, Users).	[6]
User-Centered Design Tools Persona's development. Empathy mapping. User stories creation. Problem framing and context interpretation.	[6]
Ideation and Solution Development Creative thinking techniques. Brainstorming and idea generation methods. Idea evaluation techniques. MVP (Minimum Viable Product) visualization.	[6]
Validation and Testing User validation methods: interviews and surveys. Kano model for prioritization. Desirability testing. Feedback analysis and refinement.	[6]
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
4.	Jeff Gothelf and Josh Seiden, "Lean UX: Designing Great Products with Agile Teams", 2nd Edition, O'Reilly Media, 2016.
5	Bella Martin and Bruce Hanington, "Universal Methods of Design", 1st Edition, Rockport Publishers, 2012.

SDG 9 – Industry Innovation and Infrastructure

Course Designer(s)

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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	Total
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, 6th edition, 2016
3.	Dinesh Khattar, 'Quantitative Aptitude For Competitive Examinations', Pearson Education 2020
4.	Anne Thomson, *'Critical Reasoning: A Practical Introduction'* Lexicon Books, 3rd edition, 2022. Warszaw

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.E. / B.Tech. (Common to all Branches)

26 EN 2C1I - English Essentials – II

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
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.	**[30]**

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4. Visual Interpretation 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**

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2026								
26MA2C3T - Integral Calculus								
Common to Mech, MCT, Civil, Text & RA								
Semester	**Hours / Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I	3	1	0	60	4	40	60	100

Multiple Integrals Double integration – Cartesian and polar coordinates – Change of order of integration – Area as double integral – Triple integration in Cartesian coordinates – Change of variables - Cartesian to polar coordinates and Cartesian to Cylindrical coordinates **Hands-on:** Evaluating double, triple integrals, area as double and volume as triple integrals	**[9]**
Three Dimensional Analytical Geometry Direction cosines – Direction ratios – Angle between two lines – Equation of plane – Equation of straight line – Coplanar lines – Points of intersection – Shortest distance between skew lines **Hands-on:** Evaluating Angle between two lines, equations of plane and straight line	**[9]**
Vector Calculus 1. Gradient of a scalar point function – Unit normal vector - Directional derivative – Angle of intersection of two surfaces – Divergence and Curl (excluding vector identities) – Solenoidal and Irrotational vector fields – Scalar potential function 2. **Hands-on:** Evaluating Gradient, divergence and curl	**[9]**
Analytic Functions Analytic function – Necessary and Sufficient conditions (excluding proofs) – Harmonic function – Properties of an analytic function – Construction of an analytic function – Cauchy's Integral theorem – Cauchy's integral formula (excluding proofs) **Hands-on:** Construction of an Analytic function and evaluate integrals	**[9]**
Laplace Transform Sufficient Conditions for existence – Transform of elementary functions – Transform of derivatives – Integrals of transforms – Initial and final value theorem – Transform of periodic functions **Hands-on:** Evaluating Laplace, Derivatives and Integrals of transforms	**[9]**
Total Hours: 45 + 15 (Tutorial + Hands-on)	**60**

Text Book(s):	
1.	Grewal B.S, "Higher Engineering Mathematics", 45th Edition, Khanna Publishers, New Delhi, 2024
2.	Kreyszig Erwin, "Advanced Engineering Mathematics", 10th Edition, John Wiley & Sons, New Delhi, 2023
Reference(s):	
1.	Glyn James, Phil Dyke, "Modern Engineering Mathematics", 6th Edition, Pearson Education, 2020
2.	Dass H.K, "Advanced Engineering Mathematics", 22nd Edition, Sultan Chand & Sons, New Delhi, 2019
3.	Veerarajan T, "Engineering Mathematics", for Semesters I and II, 1st Edition, Tata McGraw Hill Publishing Company, New Delhi, 2019
4.	Bali N P and Manish Goyal," A text book of Engineering Mathematics",9th Edition, Laxmi Publications, 2017

***SDG: 4 – Quality Education**

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K.S.Rangasamy College of Technology – Autonomous R2026

B.E – Mechatronics Engineering

26ME2C3T - Engineering Mechanics

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	3	1	0	60	4	40	60	100

Basics and Statics of Particles* Introduction - Units and Dimensions - Laws of Mechanics – Principle of transmissibility - Lame's theorem, Parallelogram and Triangular law of forces. **Vector Operations*** Vectors – Vectorial representation of forces- Coplanar forces – Resolution and Composition of forces – Equilibrium of a particle – Forces in space - Equilibrium of a particle in space - Equivalent systems of forces.	**[9]**
Equilibrium of Rigid Bodies and Trusses* Free body diagram – Types of supports and their reactions – Moments and Couples – Moment of a force about a point and about an axis – Vectorial representation of Moments and Couples –Varignon's theorem - Equilibrium of rigid bodies in two dimensions.	**[9]**
Properties of Surfaces and Solids* Determination of Areas and Volumes - Centroid, Moment of Inertia of plane area (Rectangle, Circle, Triangle Using Integration Method; T Section, I Section, Angle Section, Hollow Section Using Standard Formula) - Parallel axis theorem and Perpendicular axis theorem- Polar Moment of Inertia - Mass Moment of Inertia of thin rectangular section.	**[9]**
Friction* Frictional force – Laws of Coloumb Friction – Simple contact friction – Ladder friction - Rolling resistance – Ratio of tension in belt. **Dynamics of Particles*** Displacement, Velocity, Acceleration and their relationship – Relative motion - Projectile motion in horizontal plane – Newton's law – Work energy equation – Impulse and Momentum.	**[9]**
Elements of Rigid Body Dynamics* Translation and Rotation of rigid bodies: Velocity and Acceleration – General plane motion: crank and connecting rod mechanism.	**[9]**
Total Hours: 45 + 15(Tutorial)	**60**

Text Book(s):

1. Rajasekaran, S., Sankarasubramanian, G., Fundamentals of Engineering Mechanics, Vikas Publishing House Pvt. Ltd., 3rd Edition, 2023.
2. Beer, F.P and Johnson Jr. E.R, "Vector Mechanics for Engineers", Statics and Dynamics, McGraw-Hill International, 11th Edition, 2016.

Reference(s):

1. Jayakumar, V. and Kumar, M, "Engineering Mechanics", PHI Learning Private Ltd, New Delhi, 2024
2. Hibbeller, R.C., "Engineering Mechanics", Vol. 1 Statics, Vol. 2 Dynamics, Pearson Education Asia Pvt. Ltd.,14th Edition, 2023.
3. Bansal R.K," Engineering Mechanics" Laxmi Publications (P) Ltd, 2021.
4. Irving H. Shames, Engineering Mechanics: Statics and Dynamics", Pearson Education Asia Pvt. Ltd, 4thEdition, 2013.
5. James M. Gere and Timoshenko, "Mechanics of Materials", CBS Publisher, New Delhi, 6th Edition, 2016

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K.S.Rangasamy College of Technology – Autonomous R 2022								
26EE2C1T- Basic Electrical and Electronics Engineering								
Common to CSE, IT, AIDS, AIML, MECH, MCT, BT, FT and CIVIL Branches								
Semester	Hours/Week			Total hrs	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
I	3	0	0	3	3	40	60	100

Electrical Circuits DC Circuits: Circuit Components: Resistor, Inductor, Capacitor – Ohm's Law - Kirchhoff's Laws– Simple problems. Introduction to AC Circuits and Parameters: Waveforms, Average value and RMS Value of Sinusoidal Waveform real power, reactive power and apparent power, power factor – Steady state analysis of RLC series circuits- Simple problems. Introduction to three phase AC circuits	[9]
Electrical Machines* Construction and Working principle - Separately and Self excited DC Generators, EMF equation, Types and Applications. Working Principle of DC motors, Torque Equation, Types and Applications. Construction, Working principle and Applications of Transformer, Three phases Alternator, Synchronous motor and Three Phase Induction Motor.	[9]
Electrical Installations* Domestic wiring, types of wires and cables, earthing, protective devices- switch fuse unit- Miniature Circuit Breaker-Moulded Case Circuit Breaker- Earth Leakage Circuit Breaker, Batteries and types, UPS, Safety precautions and First Aid.	[9]
Analog Electronics Introduction to Semiconductor Materials– PN Junction Diodes, Zener Diode –Characteristics and Applications – Bipolar Junction Transistor - Biasing and Configuration (NPN) - **Regulated Power Supply Unit, Switched Mode Power Supply***.	[9]
Measurements and Instrumentation Functional Elements of an Instrument, Standards and Calibration, Operating Principle, Types -Moving Coil and Moving Iron meters, Operating Principles and Types of Wattmeter, Energy Meter, Instrument Transformers-**CT and PT, DSO-** Block Diagram**- Data Acquisition*.**	[9]
Total Hours	**45**

Text Book(s):	
1.	Kothari DP and I.J Nagrath, "Basic Electrical and Electronics Engineering", Second Edition, McGraw Hill Education, 2020.
2	A.K. Sawhney, Puneet Sawhney 'A Course in Electrical & Electronic Measurements & Instrumentation', Dhanpat Rai and Co, 2015.
Reference(s):	
1.	Kothari DP and I.J Nagrath, "Basic Electrical Engineering", Fourth Edition, McGraw Hill Education, 2019.
2.	Albert Malvino, David Bates, 'Electronic Principles, McGraw Hill Education; 7th edition, 2017.
3.	Mahmood Nahvi and Joseph A. Edminister, "Electric Circuits", Schaum' Outline Series, McGraw Hill, 2002.
4.	H.S. Kalsi, 'Electronic Instrumentation', Tata McGraw-Hill, New Delhi, 2010.

***SDG 9 – Industry Innovation and Infrastructure**

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2026

26CS1C1T / 26CS2C1T – C Programming

Common to all Branches

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
I / II	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

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K. S. Rangasamy College of Technology – Autonomous R2026								
26CH1Y1T/26CH2Y1T -Environmental Science and Sustainability								
Common to all Branches								
Semester	Hours / Week			Total hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
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 14th Edition Cengage Publications, Delhi, 2013
2. Gilbert M.Masters and Wendell P. Ela,"Environmental Engineering And Science", PHI Learning PrivateLimited, 3rd Edition, 2015
3. Erach Bharucha. Textbook of Environmental Studies for Undergraduate Courses, Universities Press, 2000

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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.	பொருநை - 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.

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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 பானைத் தொழில்நுட்பம்: சங்ககாலத்தில் நெசவுத் தொழில் - பானைத் 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 வழிபாட்டுத்தலங்கல் - 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 – சோழர்காலக்குமுழித்தூம்பின் 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.	பொருநை - 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.)

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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.

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K.S.Rangasamy College of Technology – Autonomous R2026								
(Common to All branches)								
26EE1C1L / 26EE2C1L – Makerspace								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I / II	0	0	2	30	1	60	40	100

List of Experiments:

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 home 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**

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K.S.Rangasamy College of Technology – Autonomous R2026								
26CS1C1L / 26CS2C1L **– C Programming Laboratory**								
Common to all branches								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I / II	0	0	3	45	1.5	60	40	100

List of Experiments*:

1. Implementation of basic computational problems using mathematical formulas
2. Implementation of decision making problems using selection statements
3. Implementation of problems using looping and iterative statements
4. Implementation of one-dimensional, two-dimensional and multi-dimensional array manipulations
5. Implementation of String operations
6. Design and implementation of modular programs using functions and recursive functions
7. Implementation of pointer concepts and dynamic memory allocation
8. Implementation of Structures and Union
9. Implementation of Bit Fields, Typedef, Enumeration, and Preprocessor directives
10. Implementation of File handling operations
11. Mini Project for problem solving using C Programming concepts

*SDG 4 – Quality Education

Course Designer(s)

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

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K.S.Rangasamy College of Technology – Autonomous R 2022								
B.E – Mechatronics Engineering								
26MC2O2L Innovation for Engineering and Technology								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
II	0	0	2	30	1	60	40	100

Innovation and Design Thinking Concept of innovation and entrepreneurship – Importance of innovation in engineering and society – Overview of Design Thinking – Stages of Design Thinking: Empathize, Define, Ideate, Prototype, Test – Case studies of successful innovations.	[6]
Problem Identification and User Analysis Identification of societal, technological, and market problems – Stakeholder mapping – User persona development – Customer discovery methods: interviews and surveys – Problem framing techniques: 5 Whys method, Need statement.	[6]
Idea Generation and Concept Development Brainstorming and ideation techniques – Creative thinking tools: SCAMPER, Mind Mapping – Concept selection and evaluation methods – Value proposition design.	[6]
Prototyping and Business Model Development Types of prototypes: low-fidelity and high-fidelity – Rapid prototyping tools and techniques – Introduction to Business Model Canvas – Cost analysis and feasibility study.	[6]
Validation, Communication, and Pitching Testing and validation of prototypes – Iterative design and feedback incorporation – Preparation of technical reports and documentation – Pitching innovation ideas – Teamwork and collaboration.	[6]
Total Hours:	30

Reference(s):

1.	Design Thinking: A Guide to Creative Problem Solving for Everyone – Andrew Pressman, 2018
2.	Innovation and Design Thinking: A Strategic Guide – Jyoti Ainapur & Ashwin Kumar, 2025.

SDG 9 – Industry Innovation and Infrastructure

Course Designer(s)

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2. Mr.S.Jayamani- jayamani@ksrct.ac.in

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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, 6th edition, 2016
3.	Dinesh Khattar, 'Quantitative Aptitude For Competitive Examinations', Pearson Education (2020)
4.	Anne Thomson, *'Critical Reasoning: A Practical Introduction'* Lexicon Books, 3rd edition, 2022. Warszaw

Course Designer

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