KIT - Kalaignarkarunanidhi Institute of Technology

An Autonomous Institution

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Accredited by NAAC with 'A' GRADE & NBA (AERO, CSE, ECE, EEE, MECH & MBA)

An ISO 9001 : 2015 Certified Institution, Coimbatore - 641 402.

Regulations, Curriculum & Syllabus – 2025

(For Students admitted from the Academic Year 2025-26 and onwards)

BACHELOR OF TECHNOLOGY DEGREE IN COMPUTER SCIENCE AND BUSINESS SYSTEMS

Department of Computer Science and Business Systems

KIT - Kalaignarkarunanidhi Institute of Technology

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Department of Computer Science and Business Systems

Conceptual Frame work

(For Students admitted from the Academic Year 2025-26 and onwards)

Semester	Level of Course	Hours / Week	No of Courses	Range of Credits / Courses	Total Credits
PART - I					
A - Foundation Courses					
I to VII	Humanities and Social Sciences (HS)	1-5	7	1-4	14
I to IV	Basic Sciences (BS)	4-5	7	4	26
I to II	Engineering Sciences (ES)	3-5	7	2-4	14
B - Professional Core Courses					
III to VII	Professional Core (PC)	3 – 4	24	2 - 4	71
C - Elective Courses					
V to VIII	Professional Elective (PE)	3	6	3	18
V to VIII	Open Elective (OE)	3	4	3	12
D - Project Work					
VI, VII & VIII	Project Work (PW)	4 -16	3	2 - 8	12
E - Mandatory Courses Prescribed by AICTE/UGC (Not to be Included for CGPA)					
V & VI	**Mandatory Course (MC)**	3	2	NC	NC
	Total Credit				**167**
PART - II					
F- Career Enhancement Courses (CEC)					
II	Soft Skills	2	1	-	NC
IV	Professional Certificate course	-	1	1	1
V	Summer Internship	-	1	1	1
	Total Credit				**02**
Total Credit to be Earned					**169**

Curriculum and Scheme of Assessment

(For Students admitted from the Academic Year 2025-26 and onwards)

Semester I												
Course Code	Course Name	Category	Teaching and Learning Scheme					Credit	Assessment		
			CI		LI	TW + SL	Total no. of Hours per semester		CIA	ESE	Total
			L	T	P	SL					
B25MCT101	Induction Programme	MC	-	-	-	-		NC	-	-	-
B25ENI101	Communicative English	HS	60	0	30	30	120	4	50	50	100
B25MAT101	Matrices and Differential Calculus	BS	60	15	0	45	120	4	40	60	100
B25CBI101	Fundamentals of Computer Programming	PC	60	0	30	30	120	4	50	50	100
B25CBT102	Introduction to Business Systems	PC	45	0	0	45	90	3	40	60	100
B25EET101	Basic Electrical, Electronics and Instrumentation Engineering	PC	45	0	0	45	90	3	40	60	100
B25HST101	Heritage of Tamil	HS	15	0	0	15	30	1	100	-	100
B25CEP101	Design Thinking	ES	0	0	15	15	30	1	100	-	100
B25MCT102	Universal Human Values#	MC	0	0	15	15	30	1	100	-	100
TOTAL								20			

Semester II											
Course Code	Course Name	Category	Teaching and Learning Scheme					Credit	Assessment		
			CI		LI	TW + SL	Total no. of Hours per semester		CIA	ESE	Total
			L	T	P	SL					
B25HST20X	Language Studies	HS	30	0	0	30	60	2	50	50	100
B25MAT201	Integral Calculus and Complex Analysis	BS	60	15	0	45	120	4	40	60	100
B25PCI101	Physical Sciences	BS	60	0	30	30	120	4	50	50	100
B25CBI201	Programming for Data Structures	PC	60	0	30	30	120	4	50	50	100
B25ADI201	Python Programming	PC	60	0	30	30	120	4	50	50	100
B25MET101	Engineering Graphics	ES	60	15	0	45	120	4	40	60	100
B25HST201	Tamils and Technology	HS	15	0	0	15	30	1	100	-	100
B25MEP101	Engineering Practices Lab	ES	0	0	15	15	30	1	100	-	100
B25MCT201	Holistic insight into UN SDGs #	MC	0	0	15	15	30	1	100	-	100
B25MCT202	Professional Development Course I #	MC	0	0	15	15	30	1	100	-	100
TOTAL								24			

UHV, SDG, PDC I - The Grades earned by the students will be recorded in the marksheet, however the same shall not be considered for the computation of CGPA.

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SEMESTER I

B.E / B.Tech	B25ENI101 – COMMUNICATIVE ENGLISH (Common to ALL)	L	T	P	TW +SL / SL	Total Hours	C
		60	0	30	30	120	4

Course Objectives	
1.	To enhance listening and reading ability of learners to comprehend various forms of speech or conversations.
2.	To help learners" develop vocabulary through reading skills.
3.	To make use of grammatical knowledge to enhance writing skills.
4.	To foster learners" ability to write convincing job applications and effective reports.
5.	To develop learners language proficiency through LSRW skills.

SYLLABUS:

UNIT - I		12
Vocabulary Development: Understanding contextual meaning, Synonyms Language Development: Parts of Speech Reading: Reading to find information - Effectively scanning text for key facts Listening: Listening to speeches/talks and making a critical review on them Writing: Creative Writing - Writing brief paragraphs - Note making - Summarizing- Paraphrasing Speaking: Enhancing Pronunciation Skills, Self- Introduction, Introducing a friend		

UNIT - II		12
Vocabulary Development: Phrasal verbs, one word substitutes, Transitional devices Language Development: Regular & Irregular verbs, Tenses Reading: Reading for basic comprehension - cloze passages - Skimming for main ideas - Scanning for specifics Listening: Listen to lectures & advertisements about products Writing: Interpretations & Transcoding (Pie Chart, Bar Diagram, Flow chart, Tables), Writing Advertisement & Writing captions Speaking: Participating in formal & informal conversations, narrating events & experiences		

UNIT - III		12
Vocabulary Development: Types of phrases, clauses and sentences - Sentence patterns Language Development: Phrases describing certainty/uncertainty; adjectives with prefixes- Connectives - Comparative forms Reading: Techniques of correct understanding of a text- Vocabulary in context - Noun and pronoun usage Listening: Listening commentaries and announcements Writing: Writing essays – types of essays Speaking: Short speech (Just A Minute) - Extempore and persuasive speech		

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UNIT - IV		12
Vocabulary Development: Word puzzles, Numerical adjectives Language Development: Question tag and conditional sentences Reading**:** Extensive reading and Intensive reading - Unfamiliar words in a passage and guess the meaning from the context Listening: Listening to TED Talks, Educational videos and completing exercises based on them Writing: Email writing, Email etiquettes, Job application and Resume preparation Speaking: speaking about online communication & Types - Advantages and disadvantages of online communication - Acceptable online roles and behaviours		

UNIT - V		12
Vocabulary Development: Collocations, verbal analogies Language Development: Voices, Direct and Indirect questions, Spelling and Punctuation, Modal verbs Reading: Reading and understanding technical articles, Short comprehension passages Listening: Listening to interviews, Mock Interviews Writing: Report Writing - Proposal writing Speaking: Picture description, discussing and making plans - talking about tasks & its progress		

List of Experiments:

Expt. No.	Description of the Experiments
1.	Self-Introduction
2.	Reading comprehension
3.	Extempore
4.	Listening Comprehension
5.	Proposal writing
	Total Hours: (60+30+30) = 120

List of Equipment's:

Requirements for a Batch of 60 Students		
Sl. No.	**Description of the Equipment**	**Quantity required (Nos.)**
1.	Oral talk software	60 Nos
2.	System	60 Nos
3.	Headphone	60 Nos

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Text Books	
1.	Board of Editors. Fluency in English A Course book for Engineering and Technology. Orient Blackswan, Hyderabad: 2016
2.	Sudharshana.N.P and Saveetha. C. English for Technical Communication. Cambridge University Press: New Delhi, 2016.

Reference Books	
1.	Dutt P.Kiranmai and Rajeevan Geeta, "Basic Communication Skills", Foundation Books, 2013.
2.	Kumar, Suresh. E. "Engineering English" Orient Blackswan: Hyderabad, 2015
3.	Booth-L. Diana, Project Work, Oxford University Press, Oxford: 2014.
4.	Davis, Jason and Rhonda LIss. Effective Academic Writing (Level 3) Oxford University Press: Oxford, 2006
5.	Grammar F. Margot and Colin S. Ward Reading and Writing (Level 3) Oxford University Press: Oxford, 2011

Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	https://onlinecourses.swayam2.ac.in/ntr25_ed62/preview
2.	https://onlinecourses.swayam2.ac.in/cec25_hs31/preview?
3.	https://www.coursera.org/specializations/business-english
4.	https://www.coursera.org/specializations/leadership-communication-engineers

Course Outcomes: Students will be able to	
CO1	Develop listening skills to respond appropriately in general and academic purposes. (K3)
CO2	Develop strategies and skills to enhance their ability to read and comprehend. (K3)
CO3	Apply vocabulary skills to improve their language skills. (K3)
CO4	Build the writing skills with specific reference to technical writing. (K3)
CO5	Demonstrate language proficiency through LSRW skills. (K2)

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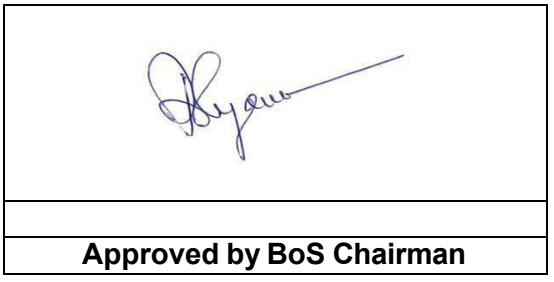
For Credit: 4 (Integrated Course)

<table>
<tr><td colspan="8">Evaluation Pattern:</td></tr>
<tr><td colspan="6">Continuous Internal Assessment</td><td colspan="2">End Semester Examinations</td></tr>
<tr><td colspan="2">CIA I (Theory)
(100 Marks)</td><td colspan="2">CIA II (Theory)
(100 Marks)</td><td colspan="2">CIA III (Practical)
(100 Marks)</td><td rowspan="2">Theory End Semester Examinations (Examinations will be conducted for 100 Marks)</td><td rowspan="2">Practical End Semester Examinations (Examinations will be conducted for 100 Marks)</td></tr>
<tr><td>* Individual Assignment / Case Study/ Seminar/ Mini project/ MCQ</td><td>Written Test</td><td>* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ</td><td>Written Test</td><td>* Evaluation of Laboratory experiment, results & Record</td><td>Test (Model)</td></tr>
<tr><td>40 Marks</td><td>60 Marks</td><td>40 Marks</td><td>60 Marks</td><td>75 Marks</td><td>25 Marks</td><td></td><td></td></tr>
<tr><td colspan="4">25 Marks</td><td colspan="2">25 Marks</td><td>35 Marks</td><td>15 Marks</td></tr>
<tr><td colspan="6">50 Marks</td><td colspan="2">50 Marks</td></tr>
<tr><td colspan="8">Total: 100 Marks</td></tr>
</table>

* Role Play/Group Discussion /Debates/Oral Presentations/Poster Presentations/Technical Presentations can also be provided course coordinator can choose any one/two components based on the nature of the course.



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B.E / B.Tech	M25MAT101 - MATRICES AND DIFFERENTIAL CALCULUS	L	T	P	TW+SL / SL	Total Hours	C
		60	15	0	45	120	4

Course Objectives	
1.	To develop the use of matrices that is needed by engineers for practical applications.
2.	To understand the concept of functions of several variables.
3.	To recognize and classify ordinary differential equations.
4.	To apply the concept of ordinary differential equations in engineering disciplines.
5.	To learn the applications of Laplace transforms in engineering.

SYLLABUS:

UNIT - I	MATRICES	15
Eigen values and Eigenvectors of a real matrix – Characteristic equation – Properties of Eigen values and Eigenvectors – Quadratic form: Nature, Reduction to canonical form by orthogonal transformation.		

UNIT - II	FUNCTIONS OF SEVERAL VARIABLES	15
Partial differentiation –Total derivative– Taylor„s series expansion for functions of two variables – Maxima and minima of functions of two variables – Lagrange„s method of undetermined multipliers.		

UNIT - III	ORDINARY DIFFERENTIAL EQUATIONS	15
Higher order linear ordinary differential equations with constant coefficients - Method of variation of parameters - Simultaneous differential equations		

UNIT - IV	APPLICATIONS OF ORDINARY DIFFERENTIAL EQUATIONS	15
Solution of specified differential equations connected with electric circuits - Law of Natural growth and decay - Simple harmonic motion (Differential equations and associated conditions need to be given).		

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UNIT - V	LAPLACE TRANSFORM	15
Existence conditions - Properties (excluding proofs) - Transform of standard functions - Transforms of derivatives and integrals - Inverse Laplace transform - Applications to solution of linear second order ordinary differential equations with constant coefficients.		
		Total Hours: 120

Text Books	
1.	Grewal B.S.,"Higher Engineering Mathematics", Khanna Publishers, New Delhi, 43rd Edition, 2015.
2.	Bali N., Goyal M. and Watkins C., "Advanced Engineering Mathematics", Firewall Media –An imprint of Lakshmi Publications Pvt., Ltd., New Delhi, 7th Edition, 2015.
3.	Kreyszig Erwin, "Advanced Engineering Mathematics ", John Wiley and Sons, 10th Edition, New Delhi, 2015.
4.	George B. Thomas , Joel Hass , Christopher Heil , Maurice D. Weir, "Thomas' Calculus", Pearson,14th Edition, 2018.

Reference Books	
1.	Jain R.K. and Iyengar S.R.K., "Advanced Engineering Mathematics", Narosa Publications, New Delhi, 5th Edition, 2019.
2.	Srimantha Pal and Bhunia, S.C, "Engineering Mathematics" Oxford University Press, 2015.
3.	Ramana B V., "Higher Engineering Mathematics", Tata Mc Graw Hill Publishing Company, New Delhi, 2017.
4.	Veerarajan T., "Engineering Mathematics for Semester I and II", Tata Mc Graw Hill Publishing Company, New Delhi, 2019.
5.	Gean Duffy., "Advanced Engineering Mathematics with MATLAB", A CRC Press Company, Boca Raton London, New York Washington, D.C, 2nd edition 2009. (Free e-book downloaded from www.EasyEngineering.net.pdf).

Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	https://onlinecourses.nptel.ac.in/noc22_ma49/previewSS
2.	https://onlinecourses.nptel.ac.in/noc25_ma45/preview

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Course Outcomes: Students will be able to	
CO1	Make use of Eigen values and Eigen vectors to reduce the quadratic form into canonical form and to find the powers of a square matrix.
CO2	Construct maxima and minima problems.
CO3	Solve differential equations which existing in different engineering disciplines.
CO4	Develop the applications of differential equations in various engineering field.
CO5	Apply Laplace transform and inverse transform to solve differential equations with constant coefficients.

Theory Course

Evaluation Pattern:						
Continuous Internal Assessment						**End Semester Examinations**
CIA I (Theory) (100 Marks)		CIA II (Theory) (100 Marks)		CIA III (Theory) (100 Marks)		Theory End Semester Examinations (Examinations will be conducted for 100 Marks)
* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ	Written Test	* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ	Written Test	* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ	Written Test	
40 Marks	60 Marks	40 Marks	60 Marks	40 Marks	60 Marks	
40 Marks						60 Marks
Total: 100 Marks						

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B.E / B.Tech	B25CBI101 – Fundamentals of Computer Programming	L	T	P	C
		3	0	2	4

Course Objectives	
1.	To make the students understand the fundamentals of problem solving using Algorithm, Pseudo code and Flowchart
2.	To learn the basic programming constructs
3.	To develop an application using arrays and functions.
4.	To introduce the concepts of strings and pointers.
5.	To Impart knowledge on the concepts of Structures, Unions and Files

UNIT - I	PROBLEM SOLVING AND BASICS OF C PROGRAMMING	9

Introduction to computer system - Block diagram - Algorithmic problem-solving concepts: pseudo code, Algorithms and Flow chart for problem solving Syntax and Constructs of specific language (ANSI C)-Types Variable names - Data Types and sizes-Constants-Declarations-Basic Input/output statements.

UNIT - II	OPERATOR PRECEDENCE AND CONTROL FLOW STATEMENTS	9

Operators- Expressions- Operators Precedence, Associativity Statements and Blocks -Decision making statement Switch statements Looping Statements Preprocessor directives - Compilation process.

UNIT - III	ARRAYS AND FUNCTIONS	9

Introduction to Arrays One dimensional and Two-dimensional arrays: Declaration Initialization-Accessing elements - Operations: Insertion, Deletion, Linear Search, Binary Search-Matrix Operations (Addition and Subtraction) - Basics of Functions Parameter passing and returning types-Block structure-recursion-Storage classes

UNIT - IV	STRING AND POINTERS	9

Defining a string -NULL character - Initialization of Strings - Reading and Writing Strings: Processing Strings -Searching and Sorting of Strings - Introduction to pointers - Pointers and Arrays - Pointers and Function arguments - Passing Pointer to functions - Command line arguments

UNIT - V	STRUCTURES, UNIONS AND FILES	9

Tres-Array of Structures-Structures and functions-Passing an entire structure - Unions- Files - file access including FILE structure, fopen, fread, fwrite, stdin, stdout and stderr, File Types-Processing a data fie-Unformatted data files - Concept of binary files - Accessing a file randomly using fseek

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Expt. No.	Description of the Experiments
1	Write a program to read an integer and display its square and cube.
2	Write a program to read the radius of a circle and calculate its area and circumference.
3	Write a program to read two integers and swap their values using a third variable.
4	Write a program to read three integers and find the maximum and minimum of them.
5	Write a program to check whether a given number is even or odd.
6	Write a program to find the sum of all natural numbers from 1 to n.
7	Write a program to print a pattern of asterisks in a right triangle shape.
8	Write a program to read an array of integer to find the sum and average of its elements.
9	Write a program to read a matrix and display its transpose.
10	Write a program to implement linear search in an array of integers.
11	Create a program to store and manage student records using structures. Each structure should contain the student's name, ID number, and grade point average. Implement functions to add, delete, and modify student records, as well as a search function that allows the user to search for a specific student by name or ID number.
12	Develop a program that uses structures to manage a library of books. Each structure should contain the book's title, author, publication date, and ISBN number. Implement functions to add, delete, and modify book records, as well as a search function that allows the user to search for a specific book by title, author, or ISBN.
13	Implement a program to manage a car dealership using structures. Each structure should contain the car's make, model, year, price, and availability status. Implement functions to add, delete, and modify car records, as well as a search function that allows the user to search for a specific car by make, model, year, or price range. You can also add features such as sorting by price, filtering by availability, and generating sales reports.
14	Create a program to represent complex numbers using unions. A complex number consists of a real part and an imaginary part. Use a union to represent the complex number, with one member for the real part and one member for the imaginary part. Implement functions to add, subtract, multiply, and divide complex numbers, and to print the result in the form a + bi.
15	Implement a program that creates and manipulates a 2D matrix. Use a 2D array to represen the matrix, and implement functions to add, subtract, multiply, and divide matrices, as wel as to find the transpose and determinant of a matrix. You can also add features such as input validation and error handling.
16	Implement a program that reads data from a text file, performs some operation on the data, and then writes the result to another text file. For example write a program that reads a list of numbers from a file, sorts them in ascending order, and then writes the sorted list to another file.
	Total Instructional hours : (45+30) = 75

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Course Outcomes : Students will be able to	
CO1	Develop an algorithmic solution for simple computational problems
CO2	Develop a Simple applications using basic constructs
CO3	Experiment with different arrays and functions
CO4	Experiment with the usage of string and pointers
CO5	Organize the data by using structures, unions and files

Requirements for a Batch of 30 Students		
Sl. No.	**Description of the Equipment**	**Quantityrequired (Nos.)**
1.	HP Make, Core i5, 11th Generation, 16GB RAM PCs, Operating systems: Windows* 10 or later, macOS, and Linux. Turbo C/C++ 4.5	30

Text Books	
1.	Reema Thareja. "Programining in C, Second Edition. Oxford University Press, 2016
2.	Anita Goel and Ajay Mizal. "Computer Fundamentals and Programming in C". Doring Kindersley (Indal Pvt Ltd. Pearson Education in South Asia, 2016

Reference Books	
1.	Byron S Gottfried, “Programming with C”, Schaum’s Outlines, McGraw Hill Education; Forth edition (2018)
2.	Prado Dey, Manas Ghosh, "Fundamentals of Computing and Programming in C”, Fast Edtion. Oxford University Press, 2009
3.	Dromey RG, “How to Solve it by Computer", Pearson Education, Fourth Reprint, 2007
4.	Kemighan, BW and Ritchie, DM, "The C Programeming language", Second Edition, Pearson Education, 2006.

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B.E/B.Tech	B25CBT102 – Introduction to Business Systems	L	T	P	C
		3	0	0	3

Course Objectives	
1.	To introduce the fundamental concepts of business, its nature, scope, essential features
2.	To provide knowledge about various forms of business ownership and organizational structures
3.	To develop an understanding of office management principles
4.	To explore the core business functions and processes
5.	To explain the role of information systems in business decision-making

UNIT-I	9
Business -Meaning and Definition of Business - Essentials - Scope of Business – Business Organization - Meaning – Definition - Characteristics - Objectives of Business Organization - Evolution of Business Organization - Modern Business Models - Business & Profession – Entrepreneurship – Skills required for an entrepreneur.	

UNIT-II	9
Business Organisation -Forms of Business Organization - Sole Proprietorship – Partnership - Joint Stock Companies - Co-operatives -Limited Liability Partnership - Choice of Form of Organization- Government - Forms of Public Enterprises - International Business - Multinational Corporations.	

UNIT-III	9
Office management - Location and Design - Types of offices: Traditional vs. Smart/Virtual offices - Office hierarchy and structure - communication systems - Work study - work measurement – method study – Records and Filing Systems – Office automation tools	

UNIT-IV	9
Business Functions and Processes -Key Business Functions: Marketing, Finance, Human Resources, Operations, Logistics and supply chain - Basic Business Processes: Procurement, Order Fulfillment, Customer Service - - Business Workflow and Interfunctional Relationships.	

UNIT-V	9
Information Systems in Business - Role of IT in Business - Types of Information Systems - Introduction to Enterprise Resource Planning - ERP modules - Importance of Data and Information in Business - Real-time cases on Business Information Systems.	

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Course Outcomes :Students will be able to	
CO1	Understand the fundamental concepts, scope, and evolution and business organizations. (K2)
CO2	Compare various forms of business organization, ownership and global business operations. (K2)
CO3	Demonstrate knowledge of effective office management practices, including office layout, records management, filing systems, and communication methods. (K2)
CO4	Summarize the key business functions and processes, their interrelationships, and their role in creating value across the business. (K2)
CO5	Explain the role of information systems in business, including the use and importance of ERP and different types of business information systems. (K2)

TextBooks	
1.	Robbins, S. P., DeCenzo, D. A., Bhattacharya, S., & Agarwal, M. N. (2011). Essentials of Management. New Delhi: Pearson.
2.	Gupta, C. B. (2023). Business Organisation and Management (18th revised ed.). New Delhi: Sultan Chand & Sons.
3.	Jawadekar, W. S. (2004). Management Information Systems (3rd ed.). New Delhi: Tata McGraw Hill.

ReferenceBooks	
1.	Laudon, K. C., & Laudon, J. P. (2018). Management Information Systems: Managing the Digital Firm (15th ed.). Pearson Education.
2.	De, R. (2018). Managing Information Systems in Business, Government and Society (2nd ed.). Wiley India.
3.	Chopra, R. K., & Gauri, P. (2022). Office Management (17th ed.). Himalaya Publishing House.
4.	Kar, B., & Sahoo, S. C. (2022). Office Management (ed.). Himalaya Publishing House.
5.	Chopra, R. K. (2017). Administrative Office Management (8th ed.). Himalaya Publishing House.

B.E / B.Tech	B25EET101– BASIC ELECTRICAL,ELECTRONICS AND INSTRUMENTATION ENGINEERING (Common to AI&DS,CSE,CSE(AI&ML), CSE(CS) and CSBS)	L	T	P	TW +SL / SL	Total Hours	C
		45	0	0	45	90	3

Course Objectives	
1.	To explore the principles of electric circuits.
2.	To understand single-phase and three-phase circuits and electrical wiring.
3.	To study the construction and working principles of electrical machines.
4.	To describe the construction and operation of various electronic devices.
5.	To understand the principles and functions of various measuring instruments and transducers.

SYLLABUS:

UNIT - I	ELECTRICAL CIRCUITS	9

Basic circuit components -Ohms Law - Kirchoff„s Law – Instantaneous Power – Inductors- Capacitors – Independent and Dependent Sources-Steady state solution of DC circuits - Nodal analysis, Mesh analysis-Theorem"s : Thevinin„s Theorem, Norton„s Theorem, Maximum Power transfer theorem, Superposition Theorem.

UNIT - II	AC CIRCUITS	9

Introduction to AC circuits – Waveforms and RMS value – Power and power factor-Single phase and three-Phase balanced circuits – Three phase loads- House wiring, industrial wiring and materials of wiring.

UNIT - III	ELECTRICAL MACHINES	9

Construction and working - DC machines, Transformers (single and three phase), Alternator, three phase and single phase induction motors. **(Qualitative)**

UNIT - IV	SEMICONDUCTOR DEVICES AND CIRCUITS	9

Types of Materials – Silicon & Germanium- N type and P type materials – PN Junction - Forward and Reverse Bias –Zener Diode- Bipolar Junction Transistor - Transistor Biasing - Characteristics – Field Effect Transistors – Introduction to operational Amplifier – Characteristics - Inverting Amplifier – Non Inverting Amplifier. **(Qualitative)**

UNIT - V	MEASUREMENTS AND INSTRUMENTATION	9

Classification of instruments - Operating Principles of Moving Coil and Moving Iron Instruments (Ammeters and Voltmeters), Dynamometer type Watt meters and Energy meters – Three phase power measurements – Transducers –Classification - LVDT, RTD and Thermistor. **(Qualitative)**

Total Hours: (45+45)=90

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Text Books	
1.	D.P. Kothari & I.J. Nagrath, "Basic Electrical and Electronics Engineering", McGraw Hill Education, 4th Edition, 2023.
2.	V.K. Mehta & Rohit Mehta, "Principles of Electrical Engineering and Electronics", S. Chand, 12th Edition, 2023.
3.	R. Muthusubramanian, S. Salivahanan & K.A. Muraleedharan, "Basic Electrical, Electronics and Computer Engineering", Tata McGraw Hill, 3rd Edition, 2021.
4.	B.L. Theraja & A.K. Theraja, "A Textbook of Electrical Technology – Volume I: Basic Electrical Engineering and Volume II: AC and DC Machines", S. Chand Publishing, 2024.

Reference Books	
1.	Sawhney, A.K., "A Course in Electrical & Electronic Measurements & Instrumentation", 19th Edition, Dhanpat Rai & Co., 2022.
2.	M.S. Sukhija & T.K. Nagsarkar, "Basic Electrical and Electronics Engineering", Oxford University Press, 3rd Edition, 2022.
3.	Vincent Del Toro, "Electrical Engineering Fundamentals", Pearson Education, 2nd Edition, New Delhi, 2015.
4.	Boylestad & Nashelsky, "Electronic Devices and Circuit Theory", Pearson Education, 11th Edition, 2023.

Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	https://archive.nptel.ac.in/courses/117/106/117106108/
2.	https://archive.nptel.ac.in/courses/108/105/108105155/
3.	https://archive.nptel.ac.in/courses/108/108/108108112/

Course Outcomes: Students will be able to	
CO1	Apply fundamental laws and theorems to explore the behavior of electrical circuits.
CO2	Utilize AC circuit concepts to test performance and describe the basic construction of wiring and materials
CO3	Outline the construction and operation of DC machines, transformers, induction motors and alternator.
CO4	Interpret the operation and characteristics of basic semiconductor devices and op-amp.
CO5	Explain the construction and working of common measuring instruments and transducers.

BoS Chairman

B.E / B.Tech	B23HST101 - HERITAGE OF TAMILS (Common to all Branches)	L	T	P	C
		1	0	0	1

UNIT I LANGUAGE AND LITERATURE	3

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

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

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

UNIT III FOLK AND MARTIAL ARTS	3

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

UNIT IV THINAI CONCEPT OF TAMILS	3

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

Approved by BoS Chairman

UNIT V CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE	3
Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.	
	Total Instructional hours : 15

TEXT-CUM-REFERENCE BOOKS

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

Approved by BoS Chairman

B.E / B.Tech	B25MCT102 - UNIVERSAL HUMAN VALUES (Common to ALL)	L	T	P	TW +SL / SL	Total Hours	C
		15	0	0	15	30	0

Course Objectives	
1.	To help students understand the need, basic guidelines, process of value education, self-exploration about themselves.
2.	To facilitate the students to understand harmony at all the levels of human living in the family.
3.	To facilitate the students to understand harmony at all the levels of human living in the Society.
4.	To facilitate the students in applying the understanding of harmony in Universal Human order and Ethical Conduct.
5.	To facilitate the students in applying the understanding of harmony in existence in their profession and lead an ethical life.

SYLLABUS:

UNIT - I	Introduction to Value Education and Harmony in the Human Being	6
Value Education- Definition, Concept and Need- Basic Guidelines and Process of Value Education- Happiness and Prosperity- The Body as an Instrument of the Self- Understanding Harmony in the Self.		

UNIT - II	Harmony in the Family	6
Family as a basic unit of Human Interaction and Values in Relationships- the Basics for Respect, Affection, Guidance, Reverence, Glory - Gratitude and Love.		

UNIT - III	Harmony in the Society	6
. Understanding Harmony in the Society- Visualizing a universal harmonious order in society- Undivided Society- Universal Order.		

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UNIT - IV	Social Ethics	6
The Basics and defects for Ethical Human Conduct- Human Rights violation and Social Disparities- Universal Human Order and Ethical Conduct.		

UNIT - V	Professional Ethics	6
Value based Life and Profession- Professional Ethics and Right Understanding- Issues in Professional Ethics – the Current Scenario.		

Text Books	
1.	A.N Tripathy, New Age International Publishers, 2003.
2.	Bajpai. B. L ,New Royal Book Co, Lucknow, Reprinted, 2004.
3.	Bertrand Russell Human Society in Ethics & Politics George Allen & Unwin Ltd., London 1954.

Reference Books	
1.	Gaur. R.R. , Sangal. R, Bagaria. G.P, A Foundation Course in Value Education, Excel Books, 2009.
2.	Gaur. R.R. , Sangal. R , Bagaria. G.P, Teachers Manual Excel Books, 2009.
3.	Sharma I.C. Ethical Philosophy of India Nagin & co Julundhar, Johnsen Publishing, New York, 1965.
4.	Mortimer. J. Adler, – Whatman has made of man, Dyer Press,2007
5.	William Lilly Introduction to Ethic Allied Publisher, Allied Publishers Pvt. Ltd.,2018.

Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	https://www.youtube.com/c/UniversalHumanValues
2.	Universal Human Values and Professional Ethics - YouTube Playlist
3.	Universal Human Values - YouTube
4.	AICTE Universal Human Values (UHV) Webinar - YouTube
5.	Universal Human Values and Ethics - YouTube Playlist

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Course Outcomes: Students will be able to		
CO1	Understand the Fundamentals of Value Education	(K2)
CO2	Apply Harmony in the Human Self and Body	(K3)
CO3	Infer the Role of Family and Society in Human Values	(K2)
CO4	Build Awareness of Social Ethics and Conduct	(K3)
CO5	Apply Ethical Values in Personal and Professional Life	(K3)

Theory Course

<table>
<tr><th colspan="5">Evaluation Pattern:</th></tr>
<tr><th colspan="4">Continuous Internal Assessment</th><th>End Semester Examinations</th></tr>
<tr><td colspan="2">CIA I (Theory)
(100 Marks)</td><td colspan="2">CIA II (Theory)
(100 Marks)</td><td rowspan="2">Theory End Semester Examinations
(Examinations will be conducted for 100 Marks)</td></tr>
<tr><td>* Alternate Assessment Tool (AAT)</td><td>Written Test</td><td>* Alternate Assessment Tool (AAT)</td><td>Written Test</td></tr>
<tr><td>40 Marks</td><td>60 Marks</td><td>40 Marks</td><td>60 Marks</td><td></td></tr>
<tr><td colspan="4">40 Marks</td><td>60 Marks</td></tr>
<tr><td colspan="5">Total: 100 Marks</td></tr>
</table>

***** AAT - Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ/ Role Play/ Group Discussion/ Debates/ Oral Presentations/ Poster Presentations/ Technical Presentations can also be provided course coordinator can choose any one/two components based on the nature of the course.

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SEMESTER II

B.E / B.Tech	B25MAT201- INTEGRAL CALCULUS AND COMPLEX ANALYSIS (Common to all Branches)	L	T	P	TW +SL / SL	Total Hours	C
		60	15	0	45	120	4

Course Objectives	
1.	To recognize various techniques of integration.
2.	To apply integration techniques in evaluating area and volume of solids.
3.	To develop the use of Vector calculus in two and three dimensional spaces.
4.	To demonstrate understanding of the basic concepts of complex differentiation.
5.	To understand Cauchy theorem and Cauchy integral formulae and apply these to evaluate complex contour integrals.

SYLLABUS:

UNIT - I	INTEGRAL CALCULUS	15

Riemann sum – Definite and Indefinite integrals - Substitution rule (Exponential, logarithmic Trigonometric functions) – Integration by parts –Bernoulli‟ s formula- Integration of Rational functions by Partial fraction.

UNIT - II	MULTIPLE INTEGRALS	15

Double integrals: – Double integrals in Cartesian coordinates - Double integrals in Polar coordinates – Area enclosed by plane curves – Area in polar co-ordinates - Triple integrals: Evaluation of triple integrals - Volume as triple integral (Simple problems).

UNIT - III	VECTOR CALCULUS	15

Gradient and directional derivative - Divergence and curl - Solenoidal and Irrotational vector fields - Green‟s theorem in a plane, Gauss divergence theorem and Stoke‟s theorem (excluding proofs) – Verification of theorem and applications (for cubes and rectangular parallellopipeds).

UNIT – IV	COMPLEX DIFFERENTIATION	15

Analytic functions - Cauchy-Riemann equations (excluding proof) – Properties of analytic function – Harmonic conjugate- Construction of analytic function by Milne Thomson method – Bilinear

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UNIT - V	COMPLEX INTEGRATION	15
Cauchy,,s integral theorem – Cauchy,,s integral formula – residues - Cauchy,,s Residue theorem – Evaluation of real integrals – Use of circular contour and semicircular contour (excluding poles on real axis).		
		Total Hours: 120

Text Books	
1.	Grewal B.S.,"Higher Engineering Mathematics", Khanna Publishers, New Delhi, 43rd Edition, 2014.
2.	Kreyszig Erwin, "Advanced Engineering Mathematics ", John Wiley and Sons, 10th Edition, New Delhi, 2015.
3.	George B. Thomas , Joel Hass , Christopher Heil , Maurice D. Weir, "Thomas' Calculus", Pearson, 14th Edition, 2018.

Reference Books	
1.	Bali N., Goyal M. and Watkins C., "Advanced Engineering Mathematics", Firewall Media - An imprint of Lakshmi Publications Pvt., Ltd., New Delhi, 7th Edition, 2015.
2.	Jain R.K. and Iyengar S.R.K., "Advanced Engineering Mathematics", Narosa Publications, New Delhi, 5th Edition 2019.
3.	O,,Neil, P.V.,"Advanced Engineering Mathematics", Cengage Learning India Pvt. Ltd, New Delhi, 7th Edition 2017.
4.	Sastry, S.S, "Engineering Mathematics", Vol. I & II, PHI Learning Pvt. Ltd, 4th Edition, New Delhi, 2014.
5.	Wylie, R.C. and Barrett, L.C., "Advanced Engineering Mathematics", (Tata McGraw Hill Education Pvt. Ltd), 6th Edition, New Delhi, 2012.
6.	Gean Duffy., "Advanced Engineering Mathematics with MATLAB", A CRC Press Company, Boca Raton London, New York Washington, D.C, 2nd edition 2009. (Free e- book downloaded from www.EasyEngineering.net.pdf)

Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	https://onlinecourses.nptel.ac.in/noc25_ma19/preview
2.	https://onlinecourses.nptel.ac.in/noc22_ma75/preview
3.	https://onlinecourses.nptel.ac.in/noc21_ma16/preview

Approved by BoS Chairman

Course Outcomes: Students will be able to	
CO1	Develop Fundamental Theorem of Calculus, techniques of Integration such as substitution, partial fractions and integration by parts.
CO2	Make use of integration to compute area and volume.
CO3	Apply the line, surface and volume integrals for verification of Green,,s, Gauss and Stokes theorems.
CO4	Develop an understanding of the standard techniques of complex variable theory in particular analytic function
CO5	Identify contour integrations with the help of residue theorem.

Theory Course

Evaluation Pattern:						
Continuous Internal Assessment						**End Semester Examinations**
CIA I (Theory) (100 Marks)		CIA II (Theory) (100 Marks)		CIA III (Theory) (100 Marks)		Theory End Semester Examinations (Examinations will be conducted for 100 Marks)
* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ	Written Test	* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ	Written Test	* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ	Written Test	
40 Marks	60 Marks	40 Marks	60 Marks	40 Marks	60 Marks	
40 Marks						60 Marks
Total: 100 Marks						

* Role Play/Group Discussion /Debates/Oral Presentations/Poster Presentations/Technical Presentations can also be provided course coordinator can choose any one/two components based on the nature of the course.

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B.E/B.Tech	B25PCI101 – Physical Sciences (Commonto ALL)	L	T	P	TW+SL / SL	Total Hours	C
		60	0	30	30	120	4

Course Objectives	
1.	To gain knowledge on the basics of properties of matter, its applications and inculcate practical skills in the determination of elastic property of the materials.
2.	To acquire knowledge & experimental skills on the concepts of photonics and their applications in fiber optics.
3.	To have adequate knowledge on the properties ofmodern engineering materialssuch asmetallic glasses, shape memory alloys, nano materials and enhance the practical skills in determination of electrical properties of the materials.
4.	To make the students conversant with boiler feed water requirements, related problems, water treatment and inculcate practical skills in the water quality analysis.
5.	To make the students conversant with basics of electrochemical reactions.

SYLLABUS:

UNIT - I	PROPERTIES OF MATTER	15

Elasticity: Modulus, types of moduli of elasticity, stress-strain diagram and its uses-factors affecting elastic modulus and twisting couple, torsion pendulum; theory and experiment.

Bending of beams: Bending moment - uniform and non- uniform bending; theory and experiment- I-shaped girders and its applications.

Determination of rigidity modulus – Torsion pendulum

Determination of Young's modulus by uniform bending method.

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UNIT - II	PHOTONICS AND FIBER OPTICS	15

Lasers: Properties of laser-spontaneous and stimulated emission-amplification of light by population inversion- Einstein's A and B coefficients - derivation – types of laser; Nd- YAG laser, industrial and medical applications.

Fiber Optics: Principle, numerical aperture and acceptance angle - types of optical fibers-fiber optic communication system-block diagram.

Determination of wavelength of the Laser using grating

Determination of Numerical aperture and acceptance angle of an optical fiber.

UNIT-III	ADVANCED ENGINEERING MATERIALS	15

Metallic glasses: Preparation,properties and applications.

Shape memory alloys (SMA): Characteristics, and properties of Ni-Ti alloy, application, advantages and disadvantages.

Nanomaterials: Properties - synthesis of Nano materials - top down approach - ball milling, bottom up approach- chemical vapour deposition – Sol Gel method - applications.

Determination of specific resistance of the wire using Carey Foster's Bridge.

UNIT - IV	WATER TECHNOLOGY	15

Hardness of water: Types, expression of hardness and their units, hardness problems, boiler troubles & its associated problems and terminologies.

Treatment of Boiler feed water: Internal treatment:carbonate, phosphate, colloidal, and calgon conditioning &External treatment: Ion exchange and Zeolite process.

Water treatment: Municipal water supply**-** Desalination of brackish water: Reverse osmosis.

Determination of total, temporary & permanent hardness of water by EDTA method.

Determination of Alkalinity in a water sample.

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UNIT - V	ELECTROCHEMISTRY AND ENERGY DEVICES	15

Electrochemistry: Redox reaction - electrode potential – oxidation potential - reduction potential - Nernst equation (derivationonly)–single electrode potential - measurement and applications- electrochemical series - significance.

Batteries: Types of batteries – alkaline battery, lead acid battery, lithium-ion battery H_2 - O_2 fuel cell.

Photo voltaic cell: Solar cells - principle, construction, working and applications.

Estimation of Fe(II) ions using potentiometer

Conductometric titration of mixture of acids vs strong base.

List of Experiments:

Expt. No.	DescriptionoftheExperiments
1.	Determinationofrigiditymodulus–Torsionpendulum.
2.	DeterminationofYoung'smodulusbyuniformbendingmethod.
3.	Determination of wavelength of the Laser using grating
4.	Determination of Numerical apertureand acceptance angle of an optical fiber.
5.	DeterminationofspecificresistanceofthewireusingCareyFoster'sBridge.
6.	Preparation of nanoparticles (ZnO) by Sol-Gel method.
7.	Determination of total, temporary & permanent hardness of water by EDTA method.
8.	Determination of Alkalinity in a water sample.
9.	Estimation of Fe(II) ions using potentiometer
10.	Conductometric titration of mixture of acids vs strong base.
Total Hours:(60+30+30)= 120	

Approved by BoS Chairman

List of Equipment's:

Requirementsfor60Students		
Sl.No.	**DescriptionoftheEquipment**	**Quantityrequired (Nos.)**
1.	Travelling Microscope,Knife edge, Slotted weights	11
2.	Diode Laser (2mS power), He–Ne Laser source(2mW), Optical Fibre Kit	09
3.	Carey Foster Bridge	06
4.	Torsional Pendulum	06
5.	Potentiometer	10
6.	Conductivity meter	10
7.	Electronic balance	01
8.	Magnetic stirrer with hot plate	02

TextBooks	
1.	Bhattacharya,D.K.&Poonam,T,"EngineeringPhysics",OxfordUniversityPress,2015.
2.	Gaur, R.K. &Gupta, S.L."Engineering Physics", Dhanpat RaiPublishers,2012.
3.	Raghavan, V. —Materials Science and Engineering: A First course‖. PHI Learning, 2015.
4.	Dara, S S and Umare, S S, "A Textbook of Engineering Chemistry", Chand S & Company Ltd., New Delhi, 2015.
5.	Jain, P C and Monika Jain, "Engineering Chemistry" Dhanpat Rai Publishing Company Pvt. Ltd., New Delhi, 2015
6.	Vogel's Textbook of Quantitative Chemical Analysis, 8th edition, 2014.

ReferenceBooks	
1.	Halliday,D.,Resnick,R.&Walker,J."PrinciplesofPhysics"",Wiley,2015.
2.	S.MMurugavel, G. Senthilkumar – materias Science- VRB Publications,2018.
3.	Senthil Kumar, G. Physics Laboratory I & II, VRB publishers Pvt. Ltd., Chennai (2016).
4.	Friedrich Emich, "Engineering Chemistry", Scientific International Pvt. Ltd., New Delhi, 2014.
5.	PrasantaRath, "Engineering Chemistry", Cengage Learning India Pvt. Ltd., Delhi, 2015.
6.	Shikha Agarwal, "Engineering Chemistry - Fundamentals and Applications", Cambridge University Press, Delhi, 2015.

Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	https://onlinecourses.nptel.ac.in/noc21_ce45/preview
2.	https://archive.nptel.ac.in/courses/115/102/115102124/
3.	https://onlinecourses.nptel.ac.in/noc20_ph07/preview
4.	https://nptel.ac.in/courses/118104008
5.	https://www.youtube.com/watch?v=Sa0WfA9UGG0
6.	https://www.youtube.com/watch?v=aUKBO06_ymw
7	https://youtu.be/X9l9y8bcECg?si=rXdPqukkB2j4gfkN

Approved by BoS Chairman

CourseOutcomes:Studentswillbeableto	
CO1	Categorize the basics of properties of matter and its applications, classify the elastic properties of materials by using uniform, non-uniform bending method and torsional pendulum apparatus. (K4)
CO2	Explain the basics of Laser, Fiber Optics and their applications, determination of Wavelength of laser and acceptance angle, numerical aperture of optical fiber. (K5)
CO3	Justify the concepts of electrical, magnetic properties of Modern engineering materials, determination of Specific resistance of the material. (K5)
CO4	Determine the hardness of water and its suitability for domestic and industrial utilization. (K5)
CO5	Interpret the principles of electrochemical reactions, energy devices and its engineeringapplications. (K5)

Approved by BoS Chairman

For Credit: 4 (Integrated Course)

<table>
<tr><td colspan="8">Evaluation Pattern:</td></tr>
<tr><td colspan="6">Continuous Internal Assessment</td><td colspan="2">End Semester Examinations</td></tr>
<tr><td colspan="2">CIA I (Theory)
(100 Marks)</td><td colspan="2">CIA II (Theory)
(100 Marks)</td><td colspan="2">(Practical)
(100 Marks)</td><td rowspan="2">Theory End Semester Examinations (Examinations will be conducted for 100 Marks)</td><td rowspan="2">Practical End Semester Examinations (Examinations will be conducted for 100 Marks)</td></tr>
<tr><td>* Alternate Assessment Tool (AAT)</td><td>Written Test</td><td>* Alternate Assessment Tool (AAT)</td><td>Written Test</td><td>* Evaluation of Laboratory experiment, results & Record</td><td>Test (Model)</td></tr>
<tr><td>40 Marks</td><td>60Marks</td><td>40 Marks</td><td>60 Marks</td><td>75 Marks</td><td>25 Marks</td><td>35 Marks</td><td>15Marks</td></tr>
<tr><td colspan="4">25 Marks</td><td colspan="2">25 Marks</td><td colspan="2">50 Marks</td></tr>
<tr><td colspan="6">50 Marks</td><td colspan="2">50 Marks</td></tr>
<tr><td colspan="8">Total: 100 Marks</td></tr>
</table>

***** AAT -Individual Assignment/ Case Study/ Seminar/ Mini project/MCQ/ Role Play/Group Discussion/Debates/Oral Presentations/Poster Presentations/Technical Presentations can also be provided course coordinator can choose any one/two components based on the nature of the course.

Approved by BoS Chairman

B.E / B.Tech	B25CBI201 - PROGRAMMING FOR DATA STRUCTURES	L	T	P	C
		3	0	2	4

Course Objectives	
1.	To understand the concepts of ADTs.
2.	To design and implement stacks, queues and linked lists.
3.	To understand the complex data structures such as trees.
4.	To understand various hashing Techniques.
5.	To understand sorting and searching algorithms.

UNIT - I	ARRAYS AND LISTS	9

Abstract Data Types (ADTs), List ADT, array-based implementation – linked list implementation – singly linked lists- circularly linked lists - doubly-linked lists – applications of lists –Polynomial Manipulation – All operations (Insertion, Deletion, Merge, Traversal).

UNIT - II	STACKS AND QUEUES	9

Stack ADT - Operations - Applications: Evaluating arithmetic expressions, Conversion of Infix to postfix expression - Queue ADT - Types of Queue: Simple Queue, Circular Queue, Priority Queue, deQueue - Operations on each types of Queues (Insertion, Deletion, and Traversal) - applications of queues.

UNIT - III	TREES	9

Basic Tree Terminologies-Tree Traversals-Different types of Trees: Binary Tree, Expression tree, Threaded Binary Tree, Binary Search Tree: Basics – Insertion and Deletion, AVL Tree - Tree operations on each of the trees (Insertion, Deletion, and Searching) and their algorithms

UNIT - IV	HASHING TECHNIQUES	9

Hashing-Address calculation techniques-Common hashing functions- Collision resolution - Separate Chaining – Open Addressing: Linear probing, Quadratic, Double hashing – Rehashing – Extendible Hashing.

UNIT - V	SEARCHING, SORTING	9

Searching: Linear Search - Binary Search. Sorting: Bubble sort - Selection sort - Insertion sort - Quick Sort-Merge Sort -Heap Sort- shell sort-radix sort- comparison of sorting and searching methods.

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Expt. No.	Description of the Experiments
1	Implementation of Singly, Doubly and Circular Linked list.
2	Array implementation of Stack and Queue ADTs.
3	Linked list implementation of Stack and Queue ADTs.
4	Applications of Stack and Queue ADTs.
5	Implementation of Tree traversal algorithms.
6	Implementation of Binary Search Trees.
7	Implementation of AVL Trees.
8	Hashing – collision resolution techniques.
9	Implementation of searching algorithms.
10	Implementation of sorting algorithms.

Course Outcomes : Students will be able to	
CO1	Build programs to implement linear data structures such as list
CO2	Apply the linear data structures such as stacks and queues to problem solutions
CO3	Apply the concept of tree data structure in real world scenarios
CO4	Analyze the various hashing algorithms
CO5	Analyze the various searching and sorting techniques

Requirements for a Batch of 30 Students		
Sl. No.	**Description of the Equipment**	**Quantityrequired (Nos.)**
1.	HP Make, Core i5, 11th Generation, 16GB RAM PCs, Operating systems: Windows* 10 or later, macOS, and Linux. Turbo C/C++ 4.5	30

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Text Books	
1.	Mark Allen Weiss, “Data Structures and Algorithm Analysis in C”, 2nd Edition, Pearson Education, 2010

Reference Books	
1.	Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed, “Fundamentals of Data Structures in C”, Second
2.	Reema Thareja, “Data Structures Using C”, Second Edition, Oxford University Press, 2011.
3.	M. Tenenbaum and Augestien, “Data Structures using C”, Third Edition, Pearson Education 2007.
4.	J. P. Tremblay and P. G. Sorenson, "An Introduction to Data Structures with applications", Second Edition,
5.	Aho, Hopcroft and Ullman, “Data Structures and Algorithms”, Pearson Education,1983

EXCELLENCE BEYOND EXPECTATION KIT COIMBATORE

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B.E / B.Tech	B23ADI201 – PYHTON PROGRAMMING (Common to AI&DS, CSE, CSE(AI&ML)) (Lab Integrated)	L	T	P	C
		2	0	4	4

Course Objectives	
1.	To create simple python and object oriented programs using data types and control statements
2.	To develop a python programs using Strings and functions
3.	To use Python data structures such as lists, tuples, and Dictionaries
4.	To define python modules and packages
5.	To develop an applications using Numerical Python

UNIT - I	OVERVIEW OF OOPS CONCEPTS AND PYTHON BASICS	6

Object oriented programming overview - Python programming: Introduction – data types- Operators – Values and types – Variables – expressions – Statements – Functions - conditionals and Recursion – Iteration.

UNIT - II	STRINGS & FUNCTIONS	6

Accessing characters and substrings in strings - Data Encryption - Strings and Number System – String methods. Functions: Defining a function, calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables.

UNIT - III	LISTS, TUPLES & DICTIONARIES	6

Lists: Introduction, Accessing list, Operations, Working with lists, Function and Methods Tuple: Introduction, Accessing tuples, Operations, Working, Functions and Methods. Dictionaries:

UNIT - IV	MODULES & PACKAGES	6

Modules: Importing module, Math module, Random module. Python packages: Simple programs using the built-in functions of packages packages matplotlib, Numpy, pandas.

UNIT - V	DATA MANIPULATION WITH PYTHON	6

Jupyter and Colab Notebook System- Python Demonstration: Reading and Writing CSV files- Advanced Python Lambda and List Comprehensions- Numerical Python Library (NumPy) - NumPy array creation- reading arrays from disk- I/O with NumPy.

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List of Experiments:

Expt. No.	Description of the Experiments
1.	Write a program to demonstrate different basic data types in python.
2.	Create a menu driven program for reading the input from console and to perform different arithmetic operations on numbers in python..
3.	Write a Programs using Decision statements and looping statements.
4.	Write a Python program to demonstrate various built-in string handling function
5.	Construct a Python program to implement various string operations Without using built-in function
6.	Create Python Programs using user-defined functions with different types of function arguments. a) Create a simple calculator that can add, subtract, multiply and divide using functions. b) Implement the above concept by using pass by value and pass by reference.
7.	a) Implement linear search and binary search using list. b) Matrix operations using Nested List.
8.	Create a tuple and perform the following methods 1) Add items 2) len() 3) check for item in tuple 4)Access items
9.	Create a dictionary and apply the following methods 1) Print the dictionary items 2) access items 3) use get() 4)change values 5) use len()
10.	Write a python program to create a package (college), sub - package (all dept), modules (AI&DS, CSE) and create admin and cabin function to module.
11.	Simulate bouncing ball using Pygame and elliptical orbits in Pygame
12.	Write a Python program to perform read and write operations in a file, and find the occurrence of a given word in the text file using Jupyter / Lamda notebook
13.	Write a Python program to perform various array operations using Jupyter or Lamda note Book
13.	Write a Python program sorting numbers and strings using Jupyter perform various array operations using Jupyter or Lamda note Book
14.	Write a Python program for sorting numbers and Strings using Jupiter or Lamda notebook
	Total Instructional hours : (30+30)=60

Approved By BoS Chairman

Course Outcomes : Students will be able to	
CO1	Make use of basic elements of Python programming to develop an application
CO2	Experiment with the various Strings and functions in Python
CO3	Develop Python programs to implement the operations in Lists, Tuples & Dictionaries..
CO4	Construct a simple application by using modules and packages.
CO5	Build an application using Jupyter or Colab notebook in Python

Text Books	
1.	Allen B. Downey, “Think Python: How to Think Like a Computer Scientist”, 2nd edition, O Reilly Publishers, 2016.
2.	Reema Thareja, “Python Programming using Problem Solving Approach”, 4th Impression , Oxford University Press, 2019.

Reference Books	
1.	John V Guttag, “Introduction to Computation and Programming Using Python”, 3rd illustrated edition, MIT Press, 2021.
2.	Guido Van Rossum and Fred L. Drake Jr, “An Introduction to Python”, Network Theory Ltd., 2011.
3.	Robert Sedgewick, Kevin Wayne and Robert Dondero, “Introduction to Programming in Python: An Inter-disciplinary Approach”, Pearson India Education Services Pvt. Ltd, 2015.

List of Equipment Required:

S.NO.	Description of the Equipment	Quantity required (Nos.)
1	Python 3 interpreter for Windows/Linux	30

Approved by BoS Chairman

B.E / B.Tech	B25MET101 ENGINEERING GRAPHICS (COMMON TO ALL)	L	T	P	TW +SL / SL	Total Hours	C
		45	0	30	45	120	4

COURSE OBJECTIVES	
1.	To understand the importance of the drawing in engineering applications.
2.	To develop graphic skills for communication of concepts, ideas and design of engineering products.
3.	To expose them to existing national standards related to technical drawings.
4.	To improve their visualization skills so that they can apply this skill in developing new products.
5.	To improve their technical communication skill in the form of communicative drawings.

CONCEPTS AND CONVENTIONS (NOT FOR EXAMINATION)

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

UNIT - I	PLANE CURVES AND FREEHAND SKETCHING	9 + 6

Basic Geometrical constructions, Curves used in engineering practices: Conics — Construction of ellipse, parabola and hyperbola by eccentricity method — Construction of cycloid — construction of involutes of square and circle — Drawing of tangents and normal to the above curves - Visualization concepts and Free Hand sketching: Visualization principles — Representation of Three Dimensional objects — Layout of views- Freehand sketching of multiple views from pictorial views of objects. Practicing three dimensional modeling of simple objects by CAD Software (Not for examination)

UNIT - II	PROJECTION OF POINTS, LINES AND PLANE SURFACE	9 + 6

Orthographic projection- principles-Principal planes-First angle projection-projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes - Determination of true lengths and true inclinations by rotating line method and traces. Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method.

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UNIT - III	PROJECTION OF SOLIDS	9 + 6
Projection of simple solids like prisms, pyramids, cylinder, cone and truncated solids when the axis is inclined to one of the principal planes and parallel to the other by rotating object method.		

UNIT - IV	PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES	9 + 6
Sectioning of above solids in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other — obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids — Prisms, pyramids cylinders and cones. Practicing three dimensional modeling of simple objects by CAD Software (Not for examination)		

UNIT - V	ISOMETRIC AND PERSPECTIVE PROJECTIONS	9 + 6
Principles of isometric projection — isometric scale - Isometric projections of simple solids and truncated solids - Prisms, pyramids, cylinders, cones- combination of two solid objects in simple vertical positions - Perspective projection of simple solids-Prisms, pyramids and cylinders by visual ray method. Practicing three dimensional modeling of isometric projection of simple objects by CAD Software (Not for examination)		
Total Hours: (45 + 30 + 45) = 120		

Course Outcomes : Students will be able to	
CO1	Construct various engineering curves and create freehand sketches of multiple views from pictorial representations.
CO2	Apply the principles of orthographic projection to draw views of points, lines, and plane surfaces inclined to principal planes.
CO3	Illustrate projections of basic solid objects such as prisms, pyramids, cylinders, and cones in different orientations.
CO4	Develop sectional views and lateral surface developments of simple and truncated solids using standard projection methods.
CO5	Draw the isometric and perspective projections of simple solids.

Text Books	
1.	K. V. Natarajan, “A text book of Engineering Graphics”, 28th Edition, Dhana Lakshmi Publishers, Chennai, 2015.
2.	N.D. Bhatt and V.M. Panchal, “Engineering Drawing”, Charotar Publishing House, 53rd Edition, 2014.

Approved by BoS Chairman

B.E / B.Tech	B25HST201- TAMILS AND TECHNOLOGY (Common to all Branches)	L	T	P	C
		1	0	0	1

UNIT I WEAVING AND CERAMIC TECHNOLOGY	3
Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.	

UNIT II DESIGN AND CONSTRUCTION TECHNOLOGY	3
Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.	

UNIT III MANUFACTURING TECHNOLOGY	3
Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting,steel -Copper and goldCoins as source of history - Minting of Coins – Beads making-industries Stone beads - Glass beads - Terracotta beads -Shell beads/ bone beats - Archeological evidences - Gem stone types described in Silappathikaram.	

UNIT IV AGRICULTURE AND IRRIGATION TECHNOLOGY	3
Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoompu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society.	

Approved by BoS Chairman

UNIT V SCIENTIFIC TAMIL & TAMIL COMPUTING	3
Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries – Sorkuvai Project.	
	Total Instructional hours : 15

TEXT-CUM-REFERENCE BOOKS

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

Approved by BoS Chairman

Reference Books	
1.	K. Venugopal and V. Prabhu Raja, “Engineering Graphics”, New Age International Publishers, 2017.
2.	K.R. Gopalakrishna., “Engineering Drawing” (Vol. I & II combined) Subhas Publications, Bangalore, 2018.
3.	N.S Parthasarathy and Vela Murali, “Engineering Drawing”, Oxford University Press, 2015.

MOOC / SWAYAM / NPTEL / Course Era / Web Resources	
1.	https://nptel.ac.in/courses/112103019
2.	https://www.coursera.org/projects/autocad-for-beginners-drafting-blueprints-and-schematics
3.	https://www.youtube.com/watch?v=ht9GwXQMgpo

Evaluation Pattern						
Continuous Internal Assessment						End Semester Examinations
CIA I (Theory) (100 Marks)		CIA II (Theory) (100 Marks)		CIA III (Theory) (100 Marks)		
* Individual Assignment / Case Study / Seminar / Mini project / MCQ	Written Test	* Individual Assignment / Case Study / Seminar / Mini project / MCQ	Written Test	* Individual Assignment / Case Study / Seminar / Mini project / MCQ	Written Test	Theory End Semester Examinations (Examinations will be conducted for 100 Marks)
40 Marks	60 Marks	40 Marks	60 Marks	40 Marks	60 Marks	
40 Marks						60 Marks
						Total : 100 Marks

* Role Play / Group Discussion / Debates / Oral Presentations / Poster Presentations / Technical Presentations can also be provided course coordinator can choose any one/two components based on the nature of the course.

Approved by BoS Chairman

B.E / B.Tech	B25MEP101 ENGINEERING PRACTICES LABORATORY (GROUP - A & B) (COMMON TO ALL BRANCHES)	L	T	P	TW +SL / SL	Total Hours	C
		0	0	15	15	30	1

COURSE OBJECTIVES	
1.	Drawing pipe line plan; laying and connecting various pipe fittings used in common household plumbing work, Sawing, planning, making joints in wood materials used in common household wood work.
2.	Wiring various electrical joints in common household electrical wire work.
3.	Welding various joints in steel plates using arc welding work; Machining various simple processes like turning, drilling, tapping in parts; Assembling simple mechanical assembly of common household equipments, Making a tray out of metal sheet using sheet metal work.
4.	Soldering and testing simple electronic circuits; Assembling and testing simple electronic components on PCB.

GROUP – A (CIVIL & MECHANICAL)

I	Civil Engineering Practices	12

Plumbing Works

Making basic pipe connections involving the fittings like valves, taps, coupling, unions, reducers, elbows and other components used in household fittings.

Carpentry

Preparation of wooden joints by sawing, planning and cutting.

1.	Planning & Polishing operation
2.	Half lap joint
3.	Cross lap joint

Approved by BoS Chairman

II	Mechanical Engineering Practices	18
Welding Workshop Study of welding tools and equipment's - Study of various welding methods - Instruction of BI standards and reading of welding drawings.		
Exercise in arc welding for making		
1.	Lap joint	
2.	Butt joint	
3.	Demonstration of gas welding and cutting.	
Machine Shop		
1.	Drilling and Tapping	
2.	Lathe Exercise – Facing operation	
3.	Lathe Exercise – Straight turning and Chamfering	
Sheet metal		
Making of small parts using sheet metal		
1.	Making of a square tray	
Demonstration		
Making of small parts using sheet metal		
1.	Demonstration on 3D Printing	
2.	Demonstration on Line follower robot	

Approved by BoS Chairman

GROUP – B (ELECTRICAL & ELECTRONICS)	30

Expt. No.	Description of the Experiments
1.	Residential house wiring using switches, fuse, indicator, lamp and energy meter.
2.	Fluorescent lamp and Stair case wiring.
3.	Measurement of electrical quantities – voltage, current, power & power factor in RLC circuit.
4.	Measurement of energy using single phase energy meter.
5.	Measurement of resistance to earth of an electrical equipment.
6.	Study of Electronic components and equipment's – Resistor color coding
7.	Measurement of AC signal parameter (peak-peak, rms period, frequency) using CRO.
8.	Study of logic gates AND, OR, EX-OR and NOT.
9.	Soldering & desoldering practices.
	Total Instructional hours : 60

Course Outcomes : Students will be able to	
CO1	Explain the pipe connections and identify the various components used in plumbing.
CO2	Develop simple wooden joints using wood working tools and simple components using lathe and drilling machine.
CO3	Construct simple lap, butt and tee joints using arc welding equipment and simple parts using sheet metal.
CO4	Construct Residential house wiring, Fluorescent lamp wiring and Stair case wiring.
CO5	Measure electrical quantities such as voltage, current, power & power factor in RLC Circuit, resistance to earth, AC signal parameter (peak-peak, RMS period, frequency) and ripple factor.
CO6	Examine logic gates (AND, OR, EOR and NOT), Electronic components and equipment's.

Approved by BoS Chairman

GROUP – A (CIVIL & MECHANICAL)			
Sl. No.	**Description of Equipment**		**Quantity required**
1.	Assorted components for plumbing, Consisting of metallic pipes, plastic pipes, flexible pipes, couplings, unions, elbows, plugs and other fittings.		15
2.	Carpentry vice (fitted to work bench)		15
3.	Standard woodworking tools		15
4.	Models of industrial trusses, door joints, furniture joints		5
5.	Power Tools :		
	a.	Rotary Hammer	2
	b.	Demolition Hammer	2
	c.	Circular Saw	2
	d.	Planer	2
	e.	Hand Drilling Machine	2
	f.	Jigsaw	2
6.	Arc welding transformer with cables and holders		5
7.	Welding booth with exhaust facility		5
8.	Welding accessories like welding shield, chipping hammer, wire brush, etc.		5
9.	Oxygen and acetylene gas cylinders, blow pipe and other welding outfit.		2
10.	Centre lathe		2
11.	Hearth furnace, anvil and smithy tools		2
12.	Moulding table, foundry tools		2
13.	Power Tool : Angle Grinder		2
14.	Study-purpose items : Centrifugal pump, Airconditioner		1

EXCELLENCE BEYOND EXPECTATION KIT COIMBATORE

Approved by BoS Chairman

GROUP – B (ELECTRICAL & ELECTRONICS)		
Sl. No.	**Description of Equipment**	**Quantity required**
1.	Assorted Electrical Components for House Wiring	15 sets
2.	Electrical Measuring Instruments	10 sets
3.	Iron Box	1
4.	Fan and Regulator	1
5.	Emergency Lamp	1
6.	Megger	1
7.	Digital Live Wire Detector	2
8.	Soldering Guns	10
9.	Assorted Electronic Components for Making Circuits	50
10.	Multipurpose PCBs	10
11.	Multi Meters	10
12.	Telephone	2
13.	FM radio	2
14.	Regulated Power Supply	2
15.	CRO (30 MHz)	2
16.	Bread board	10
17.	Digital IC types (IC 7432, IC 7408, IC 7400, IC 7404, IC 7402, IC 7486)	Each 10

EXCELLENCE BEYOND EXPECTATION KIT COIMBATORE

Approved by BoS Chairman

B.E / B.Tech	B25MEP101- ENGINEERING PRACTICES LABORATORY (GROUP - B) (Common to all Branches)	L	T	P	TW +SL SL	Total Hours	C
		0	0	15	15	30	1

Course Objectives	
1.	To provide exposure to the students with hands on experience on various basic engineering practices in Electrical Engineering.
2.	To provide exposure to the students with hands on experience on various basic engineering practices in Electronics Engineering.

List of Experiments:

GROUP – B (ELECTRICAL AND ELECTRONICS)

Expt. No.	Description of the Experiments	COs
1.	Residential house wiring using switches, fuse, indicator, lamp and energy meter	CO4
2.	Fluorescent lamp and Stair case wiring	CO4
3.	Measurement of electrical quantities – voltage, current, power & power factor in RLC circuit	CO5
4.	Measurement of energy using single phase energy meter	CO5
5.	Measurement of resistance to earth of an electrical equipment	CO5
6.	Measurement of AC signal parameter (peak-peak, rms period, frequency) using CRO	CO5
7.	Study of Electronic components and equipment"s – Resistor color coding	CO6
8.	Study of logic gates: AND, OR, NOT, NAND, NOR and EX-OR	CO6
9.	Soldering and desoldering practices	CO6
10.	Study of Fan, Emergency Lamp, Iron box, Telephone and FM Radio	CO6
	Total hours :(15+15)= 30	

BoS Chairman

Course Outcomes : Students will be able to	
CO4	Construct Residential house wiring, Fluorescent lamp wiring and Stair case wiring.
CO5	Measure electrical quantities such as voltage, current and power in RLC Circuit, resistance to earth, AC signal parameters and ripple factor.
CO6	Examine logic gates (AND, OR, NOT, NAND, NOR and EOR), Electronic components and equipment"s.

List of Equipment's:

Requirements for a Batch of 30 Students		
Sl. No.	**Description of Equipment**	**Quantity required**
1.	Assorted Electrical Components for House Wiring	15 sets
2.	Electrical Measuring Instruments	10 sets
3.	Iron Box	1
4.	Fan and Regulator	1
5.	Emergency Lamp	1
6.	Megger	1
7.	Soldering Guns	10
8.	Assorted Electronic Components for Making Circuits	50
9.	Multipurpose PCBs	10
10.	Multi Meters	10
11.	Telephone	2
12.	FM radio	2
13.	Regulated Power Supply	2
14.	CRO (30MHz)	2
15.	Bread board	10
16.	Digital IC types (IC 7432, IC 7408, IC 7400, IC 7404, IC 7402, IC 7486)	Each 10

BoS Chairman

B.E / B.Tech	B25MCT201- Holistic Insights into UN SDGs (Common to ALL)	L	T	P	TW +SL / SL	Total Hours	C
		15	0	0	15	30	1

Course Objectives	
1.	To understand the origin, purpose, and significance of the UN Sustainable Development Goals (SDGs).
2.	To explore the 17 SDGs, their interconnections, and challenges in achieving them.
3.	To analyze global and local case studies of SDG implementation.
4.	To evaluate the role of governments, businesses, and individuals in sustainable development.
5.	To develop practical solutions and action plans for achieving SDGs at community and policy levels

SYLLABUS:

UNIT - I	INTRODUCTION TO SUSTAINABLE DEVELOPMENT & SDGS	6

Concept of **sustainability** and its evolution.

UN Millennium Development Goals (MDGs) vs. Sustainable Development Goals (SDGs).

Overview of the **17 SDGs**, their targets, and indicators.

Importance of **global collaboration** for sustainable development.

UNIT - II	PEOPLE-CENTERED SDGS (SDG 1–6)	6

SDG 1: No Poverty – Causes, measures & policies.

SDG 2: Zero Hunger – Food security & sustainable agriculture.

SDG 3: Good Health & Well-being – Universal healthcare & disease prevention.

SDG 4: Quality Education – Inclusive and equitable education.

SDG 5: Gender Equality – Women"s empowerment & equal opportunities.

SDG 6: Clean Water & Sanitation – Water conservation & access to sanitation.

Approved by BoS Chairman

UNIT - III	ECONOMIC & INFRASTRUCTURE SDGS (SDG 7–12)	6

SDG 7: Affordable & Clean Energy – Renewable energy solutions.

SDG 8: Decent Work & Economic Growth – Inclusive economic policies.

SDG 9: Industry, Innovation & Infrastructure – Sustainable development & digital transformation.

SDG 10: Reduced Inequalities – Social inclusion & global justice.

SDG 11: Sustainable Cities & Communities – Smart urban planning & resilience.

SDG 12: Responsible Consumption & Production – Circular economy & waste management.

UNIT - IV	ENVIRONMENTAL SDGS (SDG 13–15)	6

SDG 13: Climate Action – Climate change impacts & mitigation strategies.

SDG 14: Life Below Water – Ocean conservation & marine biodiversity.

SDG 15: Life on Land – Forest preservation & biodiversity protection.

UNIT - V	Governance & Global Partnerships (SDG 16–17)	6

SDG 16: Peace, Justice & Strong Institutions – Human rights & good governance.

SDG 17: Partnerships for the Goals – Role of international cooperation, businesses & individuals.

Text Books	
1.	Sachs, J. D. (2015). The Age of Sustainable Development. Columbia University Press.
2.	United Nations (2015). Transforming Our World: The 2030 Agenda for Sustainable Development.
3.	Griggs, D., Stafford-Smith, M., Gaffney, O., & Rockström, J. (2017). Sustainable Development Goals: Harnessing Business to Achieve the SDGs Through Finance, Technology and Innovation. Routledge.
4.	Mebratu, D., & Swilling, M**. (2019).** Transformational Infrastructure for Development of a Wellbeing Economy. Springer.

Approved by BoS Chairman

Reference Books	
1.	Leal Filho, W. (Ed.). (2020). Encyclopedia of the UN Sustainable Development Goals. Springer.
2.	Sachs, J. D. (2021). The Decade of Action: Mobilizing the World to Achieve the SDGs. Columbia University Press.

Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	United Nations Sustainable Development Goals (SDGs) – https://sdgs.un.org
2.	United Nations Development Programme (UNDP) – https://www.undp.org
3.	The World Bank – Sustainable Development – https://www.worldbank.org/en/topic/sustainabledevelopment
4.	OECD Sustainable Development – https://www.oecd.org/sdgs/
5.	Global Sustainable Development Report (GSDR) – https://sdgs.un.org/gsdr
6.	Nature Sustainability – https://www.nature.com/natsustain/

Course Outcomes: Students will be able to	
CO1	Explain the origin, purpose, and significance of the UN Sustainable Development Goals.
CO2	Summarize the 17 SDGs, their interconnections, and challenges in achieving them.
CO3	Interpret global and local case studies of SDG implementation.
CO4	Describe the roles of governments, businesses, and individuals in sustainable development.
CO5	Illustrate practical solutions and action plans for achieving SDGs at community and policy levels.

Approved by BoS Chairman

For Non-Credit Course (Mandatory Course)

Evaluation Pattern:					
Continuous Internal Assessment					
CIA I (Theory) (100 Marks)		CIA II (Theory) (100 Marks)		CIA III (Theory) (100 Marks)	
* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ	Written Test	* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ	Written Test	* Individual Assignment/ Case Study/ Seminar/ Mini project/ MCQ	Written Test
40 Marks	60 Marks	40 Marks	60 Marks	40 Marks	60 Marks
Total: 100 Marks					

Role Play/Group Discussion /Debates/Oral Presentations/Poster Presentations/Technical Presentations can also be provided course coordinator can choose any one/two components based on the nature of the course.

Approved by BoS Chairman

B.E / B.Tech	B25HST202 – PROFESSIONAL ENGLISH (Common to ALL)	L	T	P	TW +SL / SL	Total Hours	C
		30	0	0	30	60	2

Course Objectives	
1.	To improve students ability to read and comprehent complex technical content.
2.	To improve their ability to read and write effective business correspondence.
3.	To develop the writing skills through appropriate vocabulary and grammar.
4.	To help learners make effective presentations in writing and speaking.
5.	To demonstrate communication skills through LSRW.

SYLLABUS:

UNIT - I	ENGLISH FOR COMMUNICATION	6

Vocabulary development: Abbreviations and Acronyms
Grammar: Auxiliary verbs and usage
Reading: Use of extensive reading texts - Analytical and critical reading practice
Listening: Listening process & practice - Exposure to recorded & structured talks, Listening Comprehension
Writing: Writing Effective sentences: appropriateness, brevity & clarity in writing – Note-making, writing articles and reviews
Speaking - Introducing oneself and peer members - Interpersonal Conversation -Developing persuasive Speech

UNIT - II	BUSINESS CORRESPONDENCE	6

Vocabulary development: Different between British and American spelling and vocabulary
Grammar: Types of questions
Reading: Reading emails and business correspondence
Listening: Listening to presentations and meetings interviews
Writing: business letters-Inviting Quotations, Placing Orders, writing official letters- complaint letters, invitation letters- requisition letters
Speaking: Participating in formal and informal conversations

UNIT - III	TECHNICAL WRITING	6

Vocabulary development: Writing definitions and Purpose statements
Grammar: Spotting errors
Reading: Technical journals and business documents
Listening: Listening to technical process
Writing: Writing captions for products and posters, rearranging jumbled sentence, process descriptions
Speaking: Participating in role play based on workplace content

Approved by BoS Chairman

UNIT - IV	TECHNICAL PRESENTATIONS	6
Vocabulary development: Word formation - Compound nouns Grammar: Types of sentences Reading: Business and technical reports, proposals Listening: Listening to Group discussion Writing: Instructions and recommendations Speaking: Describing situations, events and objects		

UNIT - V	REPORTS AND DOCUMENTATION	6
Vocabulary development: Idioms, Cause and effect expressions Grammar: Reported speech Reading: Circulars and notice in in professional environment Listening: Business meetings and presentations, Writing: Memorandum, Agenda and minutes of meetings Speaking: Giving welcome speech and vote of thanks		
		Total Hours: (30+30) = 60

Text Books	
1.	Dhanavel, S.P. English and Communication Skills for Students of Science and Engineering. Orient Blackswan, Chennai, 2011.
2.	Raman, Meenakshi & Sangeetha Sharma. Technical Communication: Principles and Practice.Oxford University Press, New Delhi.2011.

Reference Books	
1.	Board of editors. Fluency in English A Course book for Engineering and Technology. Orient Blackswan, Hyderabad: 2016
2.	Rizvi, Ashraf. M. Effective Technical Communication. Tata McGraw-Hill, New Delhi.2005
3.	Great Business English - Phrases, Verbs and Vocabulary for Speaking Fluent English by Hilary F. MooreMba·2013

Approved by BoS Chairman

Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	https://onlinecourses.nptel.ac.in/noc21_hs16/preview
2.	https://onlinecourses.swayam2.ac.in/cec24_lg08/preview
3.	https://onlinecourses.swayam2.ac.in/aic21_ge24/preview

Course Outcomes: Students will be able to	
CO1	Apply Listening and reading skills to Communicate effectively and confidently in English.(K3)
CO2	Develop writing skills through business correspondence. (K3)
CO3	Build their communication skills effectively and fluently in real-life situation. (K3)
CO4	Utilize appropriate strategies for Technical writing and Presentation skills. (K3)
CO5	Demonstrate ability of professional correspondence through LSRW skills. (K2)

Theory Course

<table>
<tr><th colspan="5">Evaluation Pattern:</th></tr>
<tr><th colspan="4">Continuous Internal Assessment</th><th>End Semester Examinations</th></tr>
<tr><td colspan="2">CIA I (Theory)
(100 Marks)</td><td colspan="2">CIA II (Theory)
(100 Marks)</td><td rowspan="3">Theory End Semester Examinations
(Examinations will be conducted for 100 Marks)</td></tr>
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Approved by BoS Chairman

B.E / B.Tech	B25HST203 – GERMAN LANGUAGE (Common to ALL)	L	T	P	TW +SL SL	Total Hours	C
		30	0	0	30	60	2

Course Objectives	
1.	To introduce learners to the fundamentals of the German language, including vocabulary, grammar, pronunciation, and everyday expressions.
2.	To enable students to engage in basic conversations in German for common situations such as greetings, introductions, shopping, and dining.
3.	To develop listening and speaking skills through interactive lessons and practical exercises.
4.	To help learners recognize and write the German alphabet and construct simple sentences using basic grammar.
5.	To build foundational reading and writing skills using commonly used words, phrases, and sentence structures in German.

SYLLABUS:

UNIT - I	Introduction to German Scripts	9

Theme and Text (Introduction to German-German script, Deutsche Namen, Daily Greetings and Expressions) Grammar ('wh' questions, das Alphabet)-Speak Action (Buchstabieren, sich und andere vorstellen nach Namen und Herkunft fragen, internationale Wörter auf Deutsch verstehen, jemanden begrüßen) pronunciation (Buchstabieren J,V,W,Y, Long vowels A,E,I,O,U Pronunciation of Ä. Ö, Ü) To learn (internationale Wörter in Texten finden, Wörter sortieren)
Theme and Text (Gespräche im caf'e, Getränkekarte, Telefon-buch, Namen, Rechnungen) - Grammar (Frägesatze mit wie, woher, wo, was Verben in präsens Singular und Plural, das Verb Sein, Personalpronomen und Verben)- Speak Action (eine Gespräch beginnen sich und andere vorstellen zählen, etwas bestellen und bezhalen Telefonnummern und verstehen)-pronunciation (Wortakzent in Verben und in Zahlen) - To learn (Grammatiktabelmit einem Redemittelkasten arbeiten)

UNIT - II	Numbers and Nominative Case	9

Theme and Text (Numbers 1 to 12 (Eins bis Zwolf) -20, 30, 40, 90 (zwanzig-Neunzig) -All Numbers (1-10000) German Currency (Euro) Basic Mathematics (plus, Minus, Malen, Geteilt durch)) Grammar (Introduction of verbs-Have Verb-To Come, To Speak, To Read, To Drive, To Fly, To write, To Eat, To sleep, To take etc.,)
Theme and Text (Communication in course) Grammar (Singular and Plural, Artikel: der,das,die/ ein,eine, verneinung kein, keine, Komposita: das Kursbuch) - Speak Action (Gegenständen fragen/ Gegenstände benennen im kurs) pronunciation (word accent Marking, Umlaute ö ä ü hören und sprechen) To learn (Lernkarien schreiben, Memotipps, eine Regel selbst finden)
Theme and Text (City, Town, Language: Nachbar, Sprachen, Sehenswürdigkeiten in Europa) Grammar (Past tense for Sein, W-Frage, Aussagesatz und Satzfrage) - Speak Action (about city and siteseeing) - pronunciation (Satzakzent in Frage- und Aussagesätzen) -To learn (eine Regel ergänzen, eine Grammatiktabelle erarbeiten, Notizen machen)

Approved by BoS Chairman

UNIT - III	Akkusative Case and Prepositions	9

Theme and Text (Menschen und Hauser, Furniture catalogue, E-Mail, House information) Grammar (possesivartikel im Nominativ, Artikel im Akkusativ, Adjektive im satz, Graduierung mit zu) Speak Action (Whonung bescreiben about perons and things)-pronunciation (consonantch)To learn (wortschatz systematisch)

Theme and Text (Termine - Appointment and punctuality in Germany)-Grammar (questions with wann?, Preposition (am, um, von... bis), verneinung mit nicht, trennbare verben, präteritum von haben) - Speak Action (Daily plan making, time commitment, excuse for late coming) - pronunciation (consonants-p,b,t,d/kg)-To learn (Rollenkarten arbeiten)
Theme and Text (orientation in the working area, go for work, floor plan city plan, office and computer) Grammar (preposition: in,neben, unter, auf, vor, hinter, an, zwischen, bei und mit Datic) Speak Action (workplace, work, giving appointments) pronunciation (consonants: f,w und v) - To learn (Making notice in the calendar)

UNIT - IV	DATIV CASE AND PREPOSITIONS	9

Theme and Text (Holiday and Party, holiday plan, party plan in Germany) (regular and irregular verbs) - Speak Action (holiday speak, accident, Ich-Text schreiben) -pronunciation (lange und kurze vokale markieren) - To learn (Text Order)
Theme and Text (organising an Excursion to Berlin through city orientation, Bus plan, City plan, postcard Excursion programme) -Grammar (preposition: in, durch, über + Akkusativ: zu, an... vorbei Dativ, Modalverb wollen) Speak Action (Tourism, culture, postcard preparation, travel description) - pronunciation (r and 1)- To leam (plaket making)
Theme and Text (Beruf und all Tag, Visiten karten, wörterbuch) Grammar- Speak Action (profession, statistic speaking) pronunciation (n,ng and nk)- To learn (wörterbuch, text information in tabel)

UNIT - V	Verb Conjugations and their Usages	9

Theme and Text (Haushaltstipp, kochrezept, maßße und gewichte, Mahlzeiten und Gerichte) - Grammar (jeden Tag, manchmal, nie, Question welche, Comparison viel, gut, gern) -Speak Action (about eat, drink question and answers) - pronunciation (e,en,el,er) To leam (Text auswerten und zusammenfassen)
Theme and Text (Clothing, colour, weather) Grammar (Adjecktive im Akkusativ, unbestimmer Artikel) Speak Action (weather, dress and colour understanding) pronunciation (e-o-ö and ie-u-ü) To learn (wetter and Farben interkulturelle)
Theme and Text (in supermarket, purchase, House Maintenance, Emotions, Sports, Body parts) Grammar (Modal Verb) Speak Action (Body parts) To learn (Rollenkarten arbeiten)

Total Hours : 60

Approved by BoS Chairman

Text Books	
1.	Funk, Kuhn, Demme, "Studio D A1 Deutsch als Fremdsprache" Goyal Publishers and Distributors, 2016
2.	Hueber, "Fit for Goethe Zertifikat Al (Start Deutsch 1)" Goyal Publishers and Distributors, 2016

Reference Books	
1.	Stefanie Dengler, "Netzwerk Deutsch Als Fremdsprache Al" by Goyal Publishers & Distributors Pvt Ltd
2.	Fran Martin, "Grammar Tables for Student of German" by Independently Published, 2017

Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	www.memrise.com/courses/english/german/
2.	www.deutsch-lernen.com/

Course Outcomes: Students will be able to	
CO1	Identify and write the German alphabets accurately using correct spelling and pronunciation. (K1)
CO2	Produce simple spoken sentences using basic phonetic sounds of the German language. (K3)
CO3	Apply relevant vocabulary to participate in basic everyday conversations in German. (K3)
CO4	**Use** appropriate grammatical structures to construct correct spoken and written expressions in German. (K3)
CO5	Interpret spoken or written conversations and derive the correct meaning based on context. (K4)

Approved by BoS Chairman

Theory Course

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Approved by BoS Chairman

B.E / B.Tech	B25HST204 – JAPANESE LANGUAGE (Common to ALL)	L	T	P	TW +SL SL	Total Hours	C
		30	0	0	30	60	2

Course Objectives	
1.	To develop foundational proficiency in the four core Japanese language skills–speaking, listening, reading, and writing–for effective everyday communication.
2.	To understand and apply basic Japanese grammar, vocabulary, and pronunciation to form simple and meaningful sentences.
3.	To strengthen communication skills through interactive methods such as role-plays, group activities, and real-life scenarios.
4.	To build learners' confidence in using Japanese in practical contexts, encouraging active participation and engagement.
5.	To lay the groundwork for advanced language learning and cultural immersion, fostering interest in deeper exploration of Japanese society and traditions.

SYLLABUS:

UNIT - I	Introduction to Japanese Scripts and Basic Greetings	9
Japanese Scripts (Hiragana & Katakana) - Daily greetings and expressions - Introduction to grammar particles - N1 wa N2desu N1 wa N2 ja arimasen - Phrase/Sentence ka N1 mo N2desu Ni no N2desu Honorific suffixes (san, kun, chan) - Demonstrative words (Ko, So. A & Do series) - Soudesu Soudesuka - Soudesune - Sou ja arimasen/Chigaimasu - SI ka S2 kaN1(noun) wa N2(place)desu - Numbers - Days of the week - Days of the month		

UNIT - II	Introduction to Concept of Time	9
Ji, fun, pun-Ima wa nan ji desuka - Introduction to verbs (group 1, group II, group III verbs) - Verb tense forms V masu V mashita V masen V masendeshita N(time) ni V-NI kara N2made-N1 to N2-N to V-Sne-N(place) e ikimasu/kimasu/kaerimasu - Doko(e) mo ikimasen/ikimasendeshita itsuS yo Introduction to de particle N(place) de V-N(vehicle) de ikimasu/kimasu/kaerimasuN(tool) de V-No V(transitive) - No Shimasu Usage of nan and nani V masenka V mashou, mashouka Honorific prefixes(o/go) -"word/sentence" wa-go de nan desuka N(person) ni agemasu/moraimasu/kuremasu V mou mashita.		

UNIT - III	Introduction to Adjectives	9
I ending adjectives - na ending adjectives - forms of adjectives(negative form, past form) -I ending adjective →ku/Na ending adjective ni narimasu-degrees of adjectives - S1 ga S2 -Nga adjective-N ga arimasu/wakarimasu - degrees of adverbs - degrees of quantity - S1 kara S2 Doushite N1(place) ni N2(noun) ga arimasu NI(noun) wa N2(place) ni arimasu/imasu-N1(noun) no N2(position)-N1 ya N2 nado.		

Approved by BoS Chairman

UNIT - IV	INTRODUCTION TO COUNTERS	9

Counters for objects Counters for person - Ikutsu-nan+counter suffix - kurai and gurai - Quantifier(period) ni frequency counter(kai) Quantifier/Noun+dake N1 wa N2 yori "adjective" desu N1 to N2to Dochira ga "adjective" desuka N no naka de nani/doko/dare/itsu ga "adjective" desuka - Interrogatives ka/mo/demo.

UNIT - V	Verb Conjugations and their Usages	9

5.1 V masu form and its usages : N ga hoshii desu V masu form tai desu V masu form ni ikimasu/kimasu/kaerimasu -V masu form mashouka.

5.2 V te form and its usages : V te form kudasai V te form imasu V te form mo iidesu V te form wa ikimasen -shirimasu, shirimasen, shitte imasu-te form of adjectives-V1 te form kara V2-douyatte - V te form agemasu/kuremasu/moraimasu

5.3 V nai form and its usages : V nai form de kudasai- V nai form kereba narimasen V nai form to V nai form kutemo iidesu-N(time) madeni V.

5.4 V dictionary form and its usages : V dictionary form koto ga dekimasu - Shumi wa N suru/V dictionary form koto desu - N no/Quantifier(time)/V1 dictionary form maeni V2-nakanaka-zehi/zettai/mochiron – V dictionary form jikan/youji/yakusoku.

5.5: V ta form and its usages : V ta form koto ga arimasu - V ta ri, V ta ri Shimasuusage of plain form and polite form - kedo - noun modification using V plain form V plain form/N no toki-. 5.6: If clause V dictionary form to V ta form ra V te form/I adj→kute/Na adj→de/N de mo-moshi/ikura.

Total Hours :60

Text Books	
1.	Minna no Nihongo, Japanese for Everyone: Elementary main textbook 1-1 & 1-2". 1 edition, Goyal Publishers and Distributors Pvt. Ltd., Delhi, 2007.
2.	"Basic Kanji 320", published by Meguro Language Centre, Tokyo.

Reference Books	
1.	Genki: An Integrated Course in Elementary Japanese, Eri Banno, Yoko Ikeda, and Yutaka Ohno,, The Japan Times, 2011.
2.	Nihongo So-matome: JLPT N5 grammar" authored and published by Ask Publications, 2021 edition.
3.	Great Business English - Phrases, Verbs and Vocabulary for Speaking Fluent English by Hilary F. MooreMba·2013

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Mooc/SWAYAM/NPTEL/Course Era/ Web Resources:	
1.	www.japaneselifestyle.com
2.	www.learn-japanese.info/
3.	www.kanjisite.com/
4.	www.learn-hiragana-katakana.com/typing-hiragana-characters/

Course Outcomes: Students will be able to	
CO1	Identify Hiragana and Katakana characters accurately without errors. (K2)
CO2	Construct simple conversations using basic phonetic sounds and sentence structures in Japanese. (K3)
CO3	Explain the concept of time in Japanese through the use of verbs, tenses, and related vocabulary. (K2)
CO4	Apply suitable vocabulary and expressions to engage in basic conversations in Japanese. (K3)
CO5	Interpret spoken conversations and demonstrate understanding by deriving the correct meaning. (K4)

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