

E.G.S. PILLAY ENGINEERING COLLEGE,(Autonomous)

Approved by AICTE, New Delhi

Affiliated to Anna University, Chennai | Accredited by NAAC with 'A++' Grade

Accredited by NBA (B.Tech-IT, B.E-CSE and ECE)(Tier-1)



NAGAPATTINAM – 611002

B.E – Mechanical Engineering

R-2023

CURRICULUM FOR FIRST YEAR

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	C	MAX. MARKS		
							CA	ES	TOTAL
2301IP101	Induction Program	-	0	0	0	0	0	0	
2301MA103	Engineering Mathematics – I	BSC	3	2	0	4	40	60	100
2301PH102	Applied Physics for Mechanical and Civil Engineers	BSC	3	0	2	4	50	50	100
2301CH104	Materials Chemistry	BSC	3	0	2	4	50	50	100
2301GEX04	Problem Solving using Python	ESC	3	0	2	4	50	50	100
2301ENX01	Professional English	HSMC	2	0	2	3	50	50	100
2301TA101	Tamil and Technology	HSMC	1	0	0	1	100	0	100
2301GEX52	Engineering Practices Laboratory	ESC	0	0	4	2	60	40	100
2301LS101	Life Skill Activity – I	MC	0	0	0	0	100	0	100
TOTAL			15	2	12	22	500	300	800

2301ENX01	PROFESSIONAL ENGLISH Common to B.E /B.Tech Programme (CIVIL,BME,CSE,ECE,EEE,IT,MECH)	L	T	P	C
		2	0	2	3

PREREQUISITE:

1. Basic English Knowledge

COURSE OBJECTIVES:

CO1	To improve the communicative competence of learners.
CO2	To learn to use basic grammatical structures in suitable contexts.
CO3	To acquire lexical competence and use them appropriately in a sentence and understand their meaning in a text.
CO4	To help learners use language effectively in professional contexts.
CO5	To develop learners' ability to read and write complex texts, summaries, articles, blogs, definitions, essays and user manuals.
CO6	To use language efficiently in expressing their opinions
CO7	To develop various listening strategies to comprehend various types of audio materials like lectures, discussions, videos etc.
CO8	To develop talent, facilitate employability enabling the incumbent to excel and sustain in a highly competitive world of business.

COURSE OUTCOMES:

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

CO1:	To use appropriate words in a professional context
CO2:	To gain understanding of basic grammatical structures and use them in right context.
CO3:	To read and infer the denotative and connotative meanings of technical texts
CO4:	To read and interpret information presented in tables, charts and other graphic forms
CO5:	To write definitions, descriptions, narrations and essays on various topics
CO6:	To listen to and comprehend general as well as complex academic and non academic in formations
CO7:	To speak fluently and accurately in formal and informal communicative contexts
CO8:	To understand, analyze develop and exhibit accurate sense of self

COs Vs POs MAPPING:

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

COs Vs PSOs MAPPING

COs	PSO1	PSO2	PSO3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-

COURSE CONTENTS:		
MODULE I	FUNDAMENTALS OF COMMUNICATION	6 Hours
Reading - Reading brochures (technical context)/ user manuals/, telephone messages / social media messages relevant to technical contexts and emails. Writing - Professional emails etiquette, emails / letters (seeking permission for Industrial visit& Complain letter)Grammar - Present Tense (simple and progressive); Question types: Why/ Yes or No/ and Tags. Vocabulary - Word forms (prefixes& suffixes); Synonyms and Antonyms, Punctuation.		
MODULE II	NARRATION AND SUMMATION	6 Hours
Reading - Reading longer technical texts (Reading biographies/ travelogues/ newspaper reports/ travel & technical blogs). Writing - Paragraph writing Short Report on an event (field trip etc.), emails / letters (Writing responses to complaints). Grammar –Past tense (simple); Subject-Verb Agreement. Vocabulary – Preposition, Prepositional Phrases& Phrasal verbs.		
MODULE III	DESCRIPTION OF A PROCESS / PRODUCT	6 Hours
Reading – Reading advertisements, gadget reviews. Writing – instructions, Checklists, Report Writing (Accident Report & Survey Report (IV)). Grammar – Present & Past Perfect Tenses, Voices (Active ,Passive & Impersonal Passive Voice); Vocabulary – Collocations, Homonyms; and Homophones,		
MODULE IV	CLASSIFICATION AND RECOMMENDATIONS	6 Hours
Reading – Newspaper articles; Journal reports –and Non Verbal Communication (tables, pie charts etc.); Writing- Job / Internship application – Cover letter &Resume ,recommendations. Grammar – Articles, Adjectives of Comparison, If conditional sentences Vocabulary – Conjunctions, discourse markers (connectives & sequence words)		
MODULE V	EXPRESSION	6 Hours
Reading – Company profiles, standard operating procedure (SOP)/ an excerpt of interview with professionals. Writing – Essay Writing (Descriptive or narrative), Grammar – Future Tenses, Numerical adjectives, Relative Clauses.Vocabulary - Cause & Effect Expressions – Content vs Function words.		
TOTAL: 30 HOURS		
Lab Exercises		
Listening : Listening for general information-specific details Audio / video (formal & informal). Listening IELTS/TOFEL/ TED Talks and educational videos. Listening to podcasts, anecdotes / stories / event narration; documentaries and interviews with celebrities. Listening - Listen to product and process descriptions; and advertisements about products. Listening – Listening to debates/ discussions; different viewpoints on an issue; and panel discussions.		
Speaking: Self Introduction - Role Play Exercises Based on Workplace Contexts- Group Discussion (Discussing advantages and disadvantages/ purposes and reasons)- discussing progress toward goals- discussing past events in life-discussing news stories- describing clothing Discussion (making plans, talking about tasks,, about progress analyze and present concepts and problems from various perspectives)-making telephone calls (politeness strategies- making polite requests, making polite offers, replying to polite requests and offers) Interpreting (Picture, locations in workplaces)- Presenting a product- describing shapes and sizes and weights- talking about quantities(large & small).		
Personality Development: Introduction to life skills -Multiple Intelligences Embracing diversity- emotional intelligence (visualizing and experiencing purpose)-Self-awareness - Time management-Stress management - body awareness- Leadership- teamwork & dealing with ambiguity--interview planning- Mock Interviews--paralinguistic features- spiritual quotient (ethics)- Self-Concept.		
REFERENCES:		
1.Technical Communication – Principles And Practices By Meenakshi Raman & Sangeeta Sharma, Oxford Univ. Press, 2016, New Delhi.		
2. A Course Book On Technical English By Lakshminarayanan, Scitech Publications (India) Pvt. Ltd.		
3. English For Technical Communication (With CD) By Aysha Viswamohan, Mcgraw Hill Education, ISBN : 0070264244.		
4. Effective Communication Skill, Kulbhusan Kumar, RS Salaria, Khanna Publishing House.		
5. Learning to Communicate – Dr. V. Chellammal, Allied Publishing House, New Delhi,2003.		

6. Raman. Meenakshi, Sharma. Sangeeta (2019). Professional English. Oxford university press. New Delhi
7. New Delhi. 2. Improve Your Writing ed. V.N. Arora and Laxmi Chandra, Oxford Univ. Press, 2001, New Delhi.
8. Developing Communication Skills by Krishna Mohan, Meera Bannerji- Macmillan India Ltd. 1990, Delhi.
9. Business Correspondence and Report Writing by Prof. R.C. Sharma & Krishna Mohan, Tata McGraw Hill & Co. Ltd., 2001, New Delhi.
7. https://swayam.gov.in/explorer?searchText=english (Link for NPTEL/SWAYAM/MOOC Courses)
8. https://ieltsionlinetests.com (Link for modern tool usage)

2301MA103	Engineering Mathematics –I (Matrices and Calculus(MECH&CIVIL))				L	T	P	C				
					3	1	0	4				
PREREQUISITE:												
1.Matrices 2.Differentiation 3.Integration.												
COURSEOBJECTIVES:												
1. To develop the use of matrix algebra techniques that is needed by engineers for practical applications.												
2. To familiarize the students with differential calculus.												
3. To familiarize the student with functions of several variables. This is needed in many branches of engineering.												
4. To make the students understand various techniques of integration.												
5. To acquaint the student with mathematical tools needed in evaluating multiple integrals and their applications.												
COURSEOUTCOMES:												
On the successful completion of the course, students will be able to												
CO1: Calculate the nature of the matrix using Orthogonal Transformation												
CO2: Develop the evolutes and envelopes of given curves by means of radius and centre of curvature												
CO3: Calculate the area and volume of a curve using double and triple integration.												
CO4: Determine the nature of series using comparison, Ratio, Leibnitz tests.												
CO5: Examine the maxima/minima for the given function with several variables by finding stationary points.												
COsVsPOsMAPPING:												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1									
CO2	3	2	1									
CO3	3	2	1									
CO4	3	2	1									
CO5	3	2	1									
COsVsPSOsMAPPING												
	COs	PSO1	PSO2	PSO3								
	CO1	-										
	CO2	1										
	CO3	1										
	CO4	-										
	CO5	1										
COURSECONTENTS:												
MODULE I	MATRICES								9Hours			
Characteristic equation-Eigen Values and Eigenvectors of a real matrix –Properties of Eigen values-Problemsolving using Cayley-Hamilton-Similarity Transformation-Orthogonal Transformation of a Symmetric matrix to diagonal form–Quadratic Orthogonal reduction to canonical form.												

MODULE II	DIFFERENTIAL CALCULUS	9Hours
Curvature in Cartesian co-ordinates–Centre and radius of curvature–Circle of curvature- Evolutes and involutes.		
MODULE III	INTEGRAL CALCULUS	9Hours
Double integration – Cartesian and polar coordinates – Change the order of Integration – Applications: Area of a curved surface using double integral– Triple integration in Cartesian co-ordinates– Volume a triple integral.		
MODULE IV	SEQUENCES AND SERIES	9Hours
Convergence of sequence and series, tests for convergence; Power series, Taylor's series, Series for exponential, trigonometric and logarithm functions.		
MODULE V	PARTIAL DIFFERENTIATION:	9Hours
Partial derivatives, total derivative; Maxima, minima and saddle points; Method of Lagrang multipliers.		
TOTAL: 45+15=60 HOURS		
REFERENCES:		
1. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2018.		
2. G.B.Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.		
3. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.		
4. Ramana B. V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.		
5. D.Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005.		
6. N.P.Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008		
7. B.S.Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.		

2301PH102	APPLIED PHYSICS FOR MECHANICAL AND CIVIL ENGINEERS							L	T	P	C	
								3	0	2	4	
PREREQUISITE: Basic knowledge in physics												
COURSE OBJECTIVES:												
<ol style="list-style-type: none"> To make the students effectively to achieve an understanding of Ultrasound To introduce the basics of oscillations, optics and lasers Equipping the students to be successfully understand the importance of quantum physics To establish a sound grasp of knowledge on different optical properties of materials, optical displays and applications To give an introduction to the processing and applications of new engineering materials 												
COURSE OUTCOMES:												
On the successful completion of the course, students will be able to												
CO1:		Utilize the ultrasonic waves for NDT, SONAR and medical scanning applications										
CO2:		Outline the different types of lasers and compare the different types of optical fibers based on mode and refractive index profile for data communication system										
CO3:		Understand the importance of quantum physics										
CO4:		Demonstrate a strong foundational knowledge in oscillations, optics and lasers										
CO5:		Differentiate about the processing and applications of composites, metallic glasses, shape memory alloys and ceramics										
COs Vs POs MAPPING:												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	1	1						
CO2	3	3	2	2	2	1						1
CO3	3	3	1	1	2	1						
CO4	3	3	2	2	2	1						
CO5	3		2	2	2	1						
COs Vs PSOs MAPPING												
	COs	PSO1	PSO2	PSO3								
	CO1											
	CO2											
	CO3											
	CO4											
	CO5											
COURSE CONTENTS:												
MODULE I ULTRASONICS										9 Hours		
Ultrasound: Properties-Production ultrasonics by Magnetostriction generator-Piezo electric generator-Deduction methods-Acoustic grating-Non destructive testing-pulse echo system through transmission and reflection modes-A, B and C scan display-Medical applications-Sonogram.												
MODULE II LASERS AND FIBER OPTICS										9 Hours		
Theory of laser - characteristics- Spontaneous and stimulated emission - Einstein's coefficients - population inversion - Nd-YAG laser, CO2 laser, semiconductor laser –Basic applications of lasers in engineering. Fibreoptics, types of optical fibers- and applications in engineering												
MODULE III BASIC QUANTUM MECHANICS										9 Hours		
Photons and light waves - Electrons and matter waves -Planck's radiation law-De-Broglie's wavelength- The Schrodinger equation (Time dependent and time independent forms) - meaning of wave function - Normalization - particle in a box,1D,2D and 3D Boxes- Normalization, probabilities and the correspondence principle- SEM, TEM and STEM												

MODULE IV	OPTICAL PROPERTIES OF MATERIALS	9 Hours
Classification of optical materials – Optical processes in semiconductors: optical absorption and emission, charge injection and recombination, optical absorption, loss and gain. Optical processes in quantum wells – Optoelectronic devices: light detectors and solar cells – light emitting diode – laser diode - optical processes in organic semiconductor devices –excitonic state – Electro-optics and nonlinear optics: Modulators and switching devices – plasmonics.		
MODULE V	NEW ENGINEERING MATERIALS	9 Hours
Composites - Definition and Classification - Fibre reinforced plastics (FRP) and fiber reinforced metals (FRM) - Metallic glasses - Shape memory alloys - Ceramics - Classification - Crystalline - Non Crystalline - Bonded ceramics, Manufacturing methods - Slip casting - Isostatic pressing - Gas pressure bonding - Properties - thermal, mechanical, electrical and chemical ceramic fibres - ferroelectric and ferromagnetic ceramics - High Aluminium ceramics.		
TOTAL: 45 HOURS		
REFERENCES:		
1. D.Kleppner and R.Kolenkow. An Introduction to Mechanics. McGraw Hill Education (Indian Edition), 2017.		
2. Arthur Beiser, Shobhit Mahajan, S. Rai Choudhury, Concepts of Modern Physics, McGrawHill (Indian Edition), 2017.		
3. Jasprit Singh, Semiconductor Optoelectronics: Physics and Technology, Mc-Graw Hill India (2019)		
4. K.Thyagarajan and A.Ghatak. Lasers: Fundamentals and Applications, Laxmi Publications, (Indian Edition), 2019.		
5. D.Halliday, R.Resnick and J.Walker. Principles of Physics, Wiley (Indian Edition), 2015.		
6. https://archive.nptel.ac.in/courses/112/103/112103108/		
7. https://archive.nptel.ac.in/courses/115/107/115107131/		
LIST OF EXPERIMENTS		
1. Torsional pendulum - Determination of rigidity modulus of wire and moment of inertia of regular and irregular objects.		
2. Simple harmonic oscillations of cantilever.		
3. Non-uniform bending - Determination of Young's modulus		
4. Uniform bending – Determination of Young's modulus		
5. Laser- Determination of the wavelength of the laser using grating		
6. Air wedge - Determination of thickness of a thin sheet/wire		
7. a) Optical fibre -Determination of Numerical Aperture and acceptance angle b) Compact disc- Determination of width of the groove using laser.		
8. Acoustic grating- Determination of velocity of ultrasonic waves in liquids.		
9. Ultrasonic interferometer – determination of the velocity of sound and compressibility of liquids		
10. Determination of Band gap of a semiconductor.		
11. Poiseuille's method for finding viscosity of a liquid		
12. Lee's Disc-Thermal conductivity of bad conductor		
13. Spectrometer-determination of wavelength using grating		
References		
1. Practical Physics', R.K. Shukla, AnchalSrivastava, New age international (2011		
2. B.Sc. Practical Physics', C.L Arora, S. Chand &Co. (2012)		

2301CH104	MATERIALS CHEMISTRY				L	T	P	C				
					3	0	2	4				
PREREQUISITE:												
<ul style="list-style-type: none"> Basic knowledge of science up to higher secondary level 												
COURSE OBJECTIVES:												
<ul style="list-style-type: none"> To make the students conversant with boiler feed water requirements, related problems and water treatment techniques To impart technological aspects of applied chemistry 												
COURSE OUTCOMES:												
On the successful completion of the course, students will be able to												
CO1:		Estimate the amount of ion present in the water sample.(K3)										
CO2:		Measure the percentage of corrosion using electrochemical principle. (K3)										
CO3:		Determine the amount of copper present in the alloy (K3)										
CO4:		Determine the molecular weight of the polymer. (K3)										
CO5:		Estimate the conduction ability of materials. (K3)										
COs Vs POs MAPPING:												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M			L			L	L			
CO2	S	M			L			L	L			
CO3	S	M			L			L	L			
CO4	S	M			L			L	L			
CO5	S	M			L			L	L			
COs Vs PSOs MAPPING												
	COs	PSO1	PSO2	PSO3								
	CO1											
	CO2											
	CO3	L										
	CO4	L										
	CO5											
COURSE CONTENTS:												
MODULE I	WATER TECHNOLOGY								9 Hours			
Hardness of water – types – expression of hardness – units – estimation of hardness of water by EDTA -Alkalinity- boiler troubles (scale and sludge) – treatment of boiler feed water – Internal treatment (phosphate, colloidal, sodium aluminate and calgon conditioning) external treatment – Ion exchange process, zeolite process – desalination of brackish water- Reverse Osmosis.												
MODULE II	CORROSION								9 Hours			
Corrosion – principles of corrosion – Pilling – Bed worth rule – principles of electrochemical corrosion – difference between chemical and electrochemical corrosion – galvanic corrosion – differential aeration corrosion – factors influencing corrosion – corrosion control – cathodic protection – sacrificial anodic method.												
MODULE III	PHASE RULE AND ALLOYS								9 Hours			
Phase rule: Introduction, definition of terms with examples, one component system -water system - reduced phase rule - thermal analysis and cooling curves - two component systems - lead-silver system - Pattinson process . Alloys: Introduction-Definition- properties of alloys-significance of alloying – heat treatment of steel.												

MODULE IV FUELS AND POLYMER MATERIAL	9 Hours
Fuels: Introduction - classification of fuels - coal - carbonization - manufacture of metallurgical coke (Otto Hoffmann method) - petroleum - manufacture of synthetic petrol (Bergius process) natural gas - compressed natural gas (CNG) - liquefied petroleum gases (LPG). Flue gas analysis (Orsat Method). Polymer - functionality - degree of polymerisation - molecular weight determination - Thermoplastic & Thermo setting - Nanoparticles embedded polymer composites.	
MODULE V NANOMATERIALS	9 Hours
Nanotechnology: Basics - distinction between molecules, nanoparticles and bulk materials; size-dependent properties. Nano particles: nano cluster, nano rod, nanotube (CNT) and nanowire. Synthetic methods: chemical vapour deposition, laser ablation; synthesis of metal oxide nano particles - applications. Conductive nanomaterials.	
TOTAL: 45 HOURS	
REFERENCES:	
Sashi Chawla, A Text book of Engineering Chemistry, Dhanpat Rai Publishing Co., Pvt. Ltd., Educational and Technical Publishers, New Delhi, 3rd Edition, 2015.	
S. S. Dara, A Text book of Engineering Chemistry, S. Chand & Co Ltd., New Delhi, 20th Edition, 2013.	
P.C. Jain and Monica Jain, A Textbook of Engineering Chemistry, Dhanpat Rai publications, New Delhi, 16th edition, 2015.	
Kumar Mehta P. and Paulo J. M. Monteiro, (2014), Concrete: Microstructure, Properties and Materials, 4 th Edition, McGraw-Hill, New Delhi.	
Alain Nouailhat, "An Introduction to Nanoscience and Nanotechnology", John Wiley, ISBN:978-1848210073	
https://onlinecourses.nptel.ac.in/noc23_mm01/preview	
https://onlinecourses.nptel.ac.in/noc23_me46/preview	

LIST OF EXPERIMENTS
1. Determination of total, temporary & permanent hardness of water by EDTA method
2. Comparison of alkalinities of the given water samples
3. Estimation of iron content of the given solution using potentiometer
4. Corrosion experiment – weight loss method
5. Conductometric titration of strong acid Vs strong Base
6. Determination of molecular weight of a polymer by viscometry method
7. Determination of percentage of copper in alloy
8. Determination of ferrous iron by Spectrophotometry method
9. Estimation of calcium present in cement.
10. Determination of strength of given hydrochloric acid using pH meter
11. Estimation of sodium ion present in water by flame photometer.
12. Estimation of dissolved oxygen in a water sample/sewage by Winklers method.
13. Synthesis of metal oxide nanoparticles by chemical method.

REFERENCES:
1. Experimental organic chemistry, Daniel R. Palleros, John Wiley & Sons, Inc., New York (2001)
2. Engineering Chemistry", Jain & Jain, 15th edition, Dhanpat Rai Publishing company, New Delhi
3. Vogel's Textbook of practical organic chemistry, Furniss B.S. Hannaford A.J, Smith P.W.G and Tatchell A.R LBS Singapore (1994)
4. LBS Singapore (1994). Kolthoff I.M., Sandell E.B. et al Mcmillan, Madras 1980

2301GEX04	PROBLEM SOLVING USING PYTHON (Common to B.E – ECE, EEE, Civil and BME)	L	T	P	C
		2	0	4	4
PREREQUISITE:					
1. Problem Solving					
COURSE OBJECTIVES:					
1. To know the basics of problem solving 2. To learn the basic syntax and semantics of python programming 3. To acquire programming skills in core python 4. To use python data structures and develop a skill of designing applications using modules and packages					
COURSE OUTCOMES:					
On the successful completion of the course, students will be able to					
CO1:	Develop an algorithm to solve various computational problems				
CO2:	Use of various python control flow constructs to solve various decision making statements				
CO3:	Use list, tuple, set, dictionary to develop python programs				
CO4:	Examine read and write operations of data from/to files using Python programs				
CO5:	Design an application using modules and packages				
COURSE CONTENTS:					
MODULE I	PROBLEM SOLVING AND PYTHON INTRODUCTION	6 Hours			
Problem Solving: Fundamentals of computing-Algorithms-Building blocks of an algorithm-Pseudocodes and flowcharts. Introduction: Python Interpreter and Interactive mode- Variables and Identifiers- Data Types- Operators-Operator Precedence-Expressions.					
MODULE II	DECISION MAKING	5 Hours			
Control Flow: If Statement - Elseif Statements-Nested If-else -Loop structure-While Loop-Nested While Loop-For Loop-Nested for Loop- Break and continue statements.					
MODULE III	DATA STRUCTURES IN PYTHON	7 Hours			
Introduction- Lists: List Operations-List Slicing-List methods- List Loop-Cloning lists- Mutability- Aliasing- Tuples: Tuple Assignment- Tuple as return value- Nested tuples- Basic tuple operations-Advanced list processing- List comprehension - Sets and Dictionaries: Operations and Methods-Arrays.					
MODULE IV	STRINGS AND FUNCTIONS	6 Hours			
Strings: Introduction, Indexing, Traversing, Concatenating, Appending, Multiplying, Formatting, Slicing, Comparing, Iterating – Basic Built-In String Functions – Functions: Parameters-Return Values-Local and Global Scope-Recursion- Lambda functions.					
MODULE V	FILES, EXCEPTIONS, MODULES AND PACKAGES	6 Hours			
Files and Exception: Text Files-Reading and writing files-Format operator-command line arguments- errors and exceptions- Handling exceptions – Multiple Exceptions. Modules: Loading and execution-Packages-Python standard Libraries.					
LIST OF EXPERIMENTS:					30 Hours
1. Familiarization with different python IDE 2. Develop simple programs using python syntax and semantics 3. Demonstrate python programs using Arithmetic expressions 4. Illustrate conditional statements with real time problems 5. Basic python applications using list, Tuples. 6. Implement Python program using Dictionaries 7. Implementation of sorting and searching 8. Implement Python program using Strings 9. Write python functions to facilitate code reuse 10. Illustrate file concepts with real time problems 11. Use Exception handling in python applications for error handling 12. Implement simple applications using modules and packages 13. Develop Real Time applications like number guessing, Dice rolling simulator etc.					

HARDWARE/SOFTWARE REQUIREMENTS:

1. Standalone Desktop Computer or Server Supporting
2. Python Interpreter Version 3 or above

TOTAL: 60 HOURS

COs Vs POs & PSOs MAPPING:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	2										
CO2	3	3	2	2	2										
CO3	3	3	3	2	2										
CO4	3	3	2	2	2										
CO5	3	3	3	2	2										

REFERENCES:

1. Martin C Brown, “Python The Complete Reference”, Mc Graw-Hill Education – Europe, 4th Edition, 2021
2. Reema Thareja, “Python Programming: Using Problem Solving Approach”, Oxford University Press, 2020.
3. Allen B. Downey, “Think Python: How to Think Like a Computer Scientist”, Second Edition, Shroff/O’Reilly Publishers, 2016. (<http://greenteapress.com/wp/thinkpython/>).
4. Ben Stephenson, “The Python workbook A brief introduction with exercises and solutions”, Springer International publishing, Switzerland 2017.
5. Guido van Rossum, Fred L. Drake Jr., “An Introduction to Python – Revised and Updated for Python 3.2”, Network Theory Ltd., 2017.
6. Charles Dierbach, “Introduction to Computer Science using Python”, Wiley India Edition, 2016.
7. Timothy A. Budd, “Exploring Python”, Mc-Graw Hill Education (India) Private Ltd., 2015.
8. <https://nptel.ac.in/courses/106106182>
9. <https://www.learnpython.org/>
10. <https://www.codecademy.com/learn/learn-python>

2301TA101	தமிழரும் தொழில் நுட்பமும்/ Tamil and Technology										L	T	P	C																							
											1	0	0	1																							
PRE REQUISITE:																																					
The Tamils living in different parts of the World need to keep in touch with the motherland and the mother tongue and be knowledgeable about their heritage in order to preserve their cultural identity and observe their traditional and cultural activities. Recognizing this fact and for meeting the felt and emerging needs of the Tamil Communities and others interested in Tamil studies																																					
COURSE OBJECTIVES:																																					
Tamil Literature is way of a life. It focuses on the historical significance of ethics, moral culture in the Tamil context. Tamil Modern literature emphasizes on the modern development of the behavioral, moral and ethical Technology is the important key for a language and a new sector for the students to voice out for a social cause																																					
COURSE OUTCOMES:																																					
On the successful completion of the course, students will be able to																																					
CO1: Develop a spirit of patriotism.																																					
CO2: Understand the plight of the people living in the society and Biological Struggles.																																					
CO3: Remember the life style of the Sangam people and To recognize the heroic spirit of the ancient Tamil kings																																					
CO4: Evaluate the quality and morals of local life through Tamil literature																																					
CO5: Introducing the various Literary Genres and dramas and enable them to produce innovative ideas in modern literary theories																																					
Cos Vs Pos MAPPING:																																					
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12																									
CO1																																					
CO2																																					
CO3																																					
CO4																																					
CO5																																					
Cos Vs PSOs MAPPING																																					
<table border="1"> <tr> <td>COs</td> <td>PSO1</td> <td>PSO2</td> <td>PSO3</td> </tr> <tr> <td>CO1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO4</td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO5</td> <td></td> <td></td> <td></td> </tr> </table>														COs	PSO1	PSO2	PSO3	CO1				CO2				CO3				CO4				CO5			
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CO4																																					
CO5																																					
COURSE CONTENTS:																																					
MODULE I WEAVING AND CERAMIC TECHNOLOGY											3 Hours																										
Weaving Industry during Sangam Age–Ceramic technology–Black and Red Ware Potteries (BRW) Graffition Potteries.																																					
MODULE II DESIGN AND CONSTRUCTION TECHNOLOGY											3 Hours																										
Designing and Structural construction House & Designs in house hold 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.																																					

MODULE III MANUFACTURING TECHNOLOGY	3 Hours
Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting, steel - Copper and gold - Coins as source of history - Minting of Coins – Beads making – industries Stone beads - Glass beads – Terra-cotta beads – Shell beads/bone beads – Archeological evidences – Gems tone types described in Silappathikaram.	
MODULE IV AGRICULTURE AND IRRIGATION TECHNOLOGY	3 Hours
Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoempu 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	
MODULE V SCIENTIFIC TAMIL & TAMIL COMPUTING	3 Hours
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:15HOURS	
REFERENCES:	
<ol style="list-style-type: none">1. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)2. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.3. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).4. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)5. Keeladi - ‘Sangam City Civilization on the banks of river Vaigai’ (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)6. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)7. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)8. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.	

2301GEX52	Engineering Practices Laboratory (Common to all B.E. / B.Tech Degree Programmes)	L	T	P	C
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PREREQUISITE: NIL

COURSE OBJECTIVES:

1. To provide hands on training for fabrication of components using sheet metal and welding equipment / tools.
2. To develop skill for using carpentry and fitting tools to make simple components and metal joints.
3. To provide training for making simple house hold pipe line connections using suitable tools.
4. To develop the skill to make / operate/utilize the simple engineering components.

COURSE OUTCOMES:

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

CO1: Fabricate simple components using sheet metal using suitable tools.

CO2: Prepare simple components using suitable fitting tools.

CO3: Fabricate simple components using welding equipments.

CO4: Make simple components / joints using carpentry power tools.

CO5: Make simple house hold pipe line connections using suitable tools.

COs Vs POs & PSOs MAPPING:

C Os	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS O1	PS O2	PS O3
CO1	2								2			1	-	2	-
CO2	2	1							2			1	-	2	-
CO3	2	1			1				2			1	-	2	-
CO4	2	1			1				2			1	-	2	-
CO5	2								2			1	-	1	-

LIST OF EXPERIMENTS

1. Forming of simple object in sheet metal using suitable tools.(Example: Dust Pan, Rectangular tray and Cone making)	6 Hours
2. Prepare V (or) Half round (or) Square (or) Dovetail joint from the given mild Steel flat.	5 Hours
3. Fabrication of a simple component using thin and thick plates using arc welding. (Example: Butt , Lap and T - Joints)	6 Hours
4. Making a simple component using carpentry power tools.(Example: Cross Lap, T-Lap, Dove tail joints and Electrical switch box / Tool box / Letter box)	6 Hours
5. Construct a household pipe line connections using pipes, Tee joint, four way joint, elbow, union, bend, Gate valve and Taps.	5 Hours
6. Study of gas welding equipment and its demonstration.	2 Hours

Total : 30 Hours

References:

1. S. Gowri & T. Jeyapoovan, "Engineering Practices Lab Manual" 5th Edition, Vikas Publishing.

Dr. V. Ramesh Babu, "Engineering Practices Laboratory Manual" Revised Edition 2019-20, VRB
Publishers Pvt. Ltd.