



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN  
(Autonomous)  
Elayampalayam, Tiruchengode – 637205



**B.E.-COMPUTER SCIENCE AND TECHNOLOGY**

**Regulations – 2023 CHOICE BASED CREDIT SYSTEM**

**COLLEGE VISION**

- To impart value based education in Engineering and Technology to empower young women to meet the societal exigency with a global outlook.

**COLLEGE MISSION**

- To provide holistic education through innovative teaching learning practices
- To instill self confidence among rural students by supplementing with co-curricular and extra-curricular activities
- To inculcate the spirit of innovation through training, research and development
- To provide industrial exposure to meet the global challenges
- To create an environment for continual progress through lifelong learning

**DEPARTMENT VISION**

- To impart quality education in the field of Computer Science and Technology and to produce globally competent engineers with research experience to serve the society.

**DEPARTMENT MISSION**

- To impart knowledge in cutting edge technologies in par with current industrial standards
- To create a platform for strong communication skills and possess the ability to design computing systems individuals as well as part of a multidisciplinary terms
- To instill societal, safety and ethical responsibilities in professional activities
- To be collaborate with industries to uplift innovative research and development

**PROGRAMME EDUCATIONAL OBJECTIVES (PEOs) :**

- PEO 1:** Able to perform in technical/managerial roles ranging from design, development, problem solving, support software industries and R&D sectors
- PEO 2:** The ability to adapt, contribute and innovative new technologies and systems in the key domains of Computer Science and Technology
- PEO 3:** To Societal responsible solution provider and entrepreneur in Computer Science and Technology

**PROGRAMME SPECIFIC OUTCOMES (PSOS):**

<b>PSO1</b>	<b>Ideal Solutions:</b> Demonstrate basic knowledge of computer real applications and apply standard practices in software project development.
<b>PSO2</b>	<b>Research Capability:</b> Students at the time of graduation will be able to apply domain knowledge and expertise for enhancing research capability to transform innovative ideas into reality.

## **PROGRAMME OUTCOMES (POs):**

Undergraduate engineering programmes are designed to prepare graduates to attain the following program outcomes:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change



## Mapping of Program Educational Objectives with Program Outcomes

A broad relation between the program objective and the outcomes is given in the following table

Programme Educational Objectives	Programme Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
I	√	√	√		√	√		√	√			
II		√		√			√	√	√	√		
III		√	√		√		√		√	√	√	√

CURRICULUM BREAKDOWN STRUCTURE									
Summary of Credit Distribution									
Category	Semester								Total No.of Credits
	SEM 1	SEM 2	SEM 3	SEM 4	SEM 5	SEM 6	SEM 7	SEM 8	
HS	4								4
BS	8	8	4	4	4				28
ES	7	8	2						17
PC			18	15	8	12	7		60
PE					3	3	6	6	18
OE					3	3	3		9
EEC	1				1	1	4	8	15
MC			1	2					3
CTC				1	1	1	1		4
HSMC		4							4
<b>Semester wise total</b>	<b>20</b>	<b>20</b>	<b>25</b>	<b>22</b>	<b>20</b>	<b>20</b>	<b>21</b>	<b>14</b>	<b>162</b>

**BSC** - Basic Science Courses, **ESC**- Engineering Science Courses, **MC**-Mandatory courses, **HSMC**- Humanities and Social Sciences including management courses, **EEC** – Employability Enhancement courses, **CA**- Continuous Assessment, **ESE** - End Semester Examination..

	<b>VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN</b> (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	<b>B.E.</b>	Programme Code	107	Regulation	<b>2023</b>				
Department	<b>COMPUTER SCIENCE AND TECHNOLOGY</b>			Semester	<b>I</b>				
<b>CURRICULUM</b> (Applicable to the students admitted from the academic year 2023 - 2024 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
<b>THEORY</b>									
U23MA101	Matrices and Calculus*	BSC	3	1	0	4	40	60	100
U23EN101	English For Communication*	HSMC	3	0	0	3	40	60	100
U23PH101	Engineering Physics <sup>§</sup>	BSC	3	0	0	3	40	60	100
U23CS101	Programming for Problem Solving*	ESC	3	0	0	3	40	60	100
U23TA101	தமிழர் மரபு / Heritage of Tamils*	HSMC	1	0	0	1	40	60	100
<b>THEORY INTEGRATED WITH PRACTICAL</b>									
U23GE101	Engineering Graphics*	ESC	2	0	3	3	50	50	100
<b>PRACTICAL INTEGRATED WITH THEORY</b>									
U23GE102	Design Thinking*	EEC	1	0	2	1	50	50	100
<b>PRACTICAL</b>									
U23PH102	Physics Laboratory <sup>§</sup>	BSC	0	0	2	1	60	40	100
U23CS102	Programming for Problem Solving Laboratory*	ESC	0	0	2	1	60	40	100
<b>MANDATORY COURSES</b>									
-	Induction Programme*	3 Weeks				0	-	-	-
U23MCFY1	Environmental Science and Engineering <sup>§</sup>	MC	2	0	0	0	100	-	100
<b>Total</b>						<b>20</b>	<b>520</b>	<b>480</b>	<b>1000</b>

\*Common for all branches

<sup>§</sup> Common for CSE, CST, IT & BT



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Programme	<b>B.E.</b>	Programme Code	107	Regulation	<b>2023</b>				
Department	<b>COMPUTER SCIENCE AND TECHNOLOGY</b>			Semester	<b>II</b>				
<b>CURRICULUM</b> (Applicable to the students admitted from the academic year 2023 - 2024 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
<b>THEORY</b>									
U23MA202	Complex Analysis and Ordinary Differential Equations*	BSC	3	1	0	4	40	60	100
U23CH201	Engineering Chemistry <sup>\$</sup>	BSC	3	0	0	3	40	60	100
U23EE201	Basic Electrical and Electronics Engineering <sup>#</sup>	ESC	3	0	0	3	40	60	100
U23TA202	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology*	HSMC	1	0	0	1	40	60	100
<b>THEORY INTEGRATED WITH PRACTICAL</b>									
U23CS204	Object Oriented Programming <sup>@</sup>	ESC	3	0	2	4	50	50	100
U23EN202	Professional Communication*	HSMC	2	0	3	3	50	50	100
<b>PRACTICAL</b>									
U23CH202	Chemistry Laboratory <sup>\$</sup>	BSC	0	0	2	1	60	40	100
U23GE204	Engineering Practices Laboratory*	ESC	0	0	3	2	60	40	100
<b>MANDATORY COURSES</b>									
U23MCFY2	Indian Constitution <sup>\$</sup>	MC	2	0	0	0	100	-	100
<b>Total</b>						<b>21</b>	<b>480</b>	<b>420</b>	<b>900</b>

\*Common for all branches



#Common for BT, CSE, CST & IT

@Common for CSE, IT & CST



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Programme	<b>B. E.</b>	Programme Code	107	Regulation	<b>2023</b>				
Department	<b>COMPUTER SCIENCE AND TECHNOLOGY</b>			Semester	<b>III</b>				
<b>CURRICULUM</b> (Applicable to the students admitted from the academic year 2023 - 2024 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
<b>THEORY</b>									
U23MA304	Discrete Mathematics*	BSC	3	1	0	4	40	60	100
U23CT301	Python for Machine Learning	PCC	3	0	0	3	40	60	100
U23IT302	Data Structures*	PCC	3	0	0	3	40	60	100
U23CT302	Artificial Intelligence*	PCC	3	0	0	3	40	60	100
U23CS305	Computer Organization and Architecture*	PCC	3	0	0	3	40	60	100
	VQAR	ESC	2	0	0	2	40	60	100
<b>THEORY INTEGRATED WITH PRACTICAL</b>									
U23CT303	Operating Systems*	PCC	3	2	0	4	40	60	100
<b>PRACTICAL</b>									
U23CT304	Python for Machine Learning Laboratory	PCC	0	0	2	1	60	40	100
U23IT303	Data Structures Laboratory *	PCC	0	0	2	1	60	40	100
<b>MANDATORY COURSES</b>									
	Personality Development	MC	2	0	0	1	100	-	100
<b>Total</b>						<b>25</b>	<b>500</b>	<b>500</b>	<b>1000</b>

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Programme	<b>B. E.</b>	Programme Code	107	Regulation		<b>2023</b>				
Department	<b>COMPUTER SCIENCE AND TECHNOLOGY</b>			Semester		<b>IV</b>				
<b>CURRICULUM</b> (Applicable to the students admitted from the academic year 2023 - 2024 onwards)										
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks			
			L	T	P		C	CA	ESE	Total
<b>THEORY</b>										
U23MA405	Statistics and Numerical Methods*	BSC	3	1	0	4	40	60	100	
U23IT404	Database Management systems*	PCC	3	0	0	3	40	60	100	
U23CS512	Compiler Design*	PCC	3	0	0	3	40	60	100	
U23CT405	Computer Networks*	PCC	3	0	0	3	40	60	100	
<b>THEORY INTEGRATED WITH PRACTICAL</b>										
U23CT406	Artificial Intelligence and its Applications	PCC	3	0	2	4	40	60	100	
<b>PRACTICAL</b>										
U23IT406	Database Management systems Laboratory*	PCC	0	0	2	1	60	40	100	
U23CT407	Computer Networks Laboratory*	PCC	0	0	2	1	60	40	100	
<b>MANDATORY COURSES</b>										
	Additional Language	MC	2	0	0	2	100	-	100	
<b>CAREER TRACK COURSE</b>										
	Career Track Course - I	CTC	2	0	0	1	100	-	100	
<b>Total</b>							<b>22</b>	<b>520</b>	<b>380</b>	<b>900</b>

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Programme	<b>B. E.</b>	Programme Code	107	Regulation	<b>2023</b>				
Department	<b>COMPUTER SCIENCE AND TECHNOLOGY</b>			Semester	<b>V</b>				
<b>CURRICULUM</b> (Applicable to the students admitted from the academic year 2023 - 2024 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
<b>THEORY</b>									
U23MA509	Probability, Queueing Theory & Game theory	BSC	3	1	0	4	40	60	100
U23CT508	Machine Learning*	PCC	3	0	0	3	40	60	100
U23CS513	Microprocessor and Embedded System*	PCC	3	0	0	3	40	60	100
	Professional Elective – I	PEC	3	0	0	3	40	60	100
	Open Elective -I	OEC	3	0	0	3	40	60	100
<b>PRACTICAL</b>									
U23CT509	Machine Learning Laboratory*	PCC	0	0	2	1	60	40	100
U23CS514	Microprocessor and Embedded System Laboratory*	PCC	0	0	2	1	60	40	100
U23CT510	Mini Project – I	EEC	0	0	2	1	60	40	100
<b>CAREER TRACK COURSE</b>									
	Career Track Course - II	CTC	2	0	0	1	100	-	100
<b>Total</b>						<b>20</b>	<b>480</b>	<b>420</b>	<b>900</b>

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Programme	<b>B. E.</b>	Programme Code	107	Regulation	<b>2023</b>					
Department	<b>COMPUTER SCIENCE AND TECHNOLOGY</b>			Semester	<b>VI</b>					
<b>CURRICULUM</b> (Applicable to the students admitted from the academic year 2023 - 2024 onwards)										
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks			
			L	T	P		C	CA	ESE	Total
<b>THEORY</b>										
U23IT608	Internet Programming <sup>§</sup>	PCC	3	0	0	3	40	60	100	
U23CT613	Foundations of Data Science	PCC	3	0	0	3	40	60	100	
	Professional Elective – II	PEC	3	0	0	3	40	60	100	
	Open Elective – II	OEC	3	0	0	3	40	60	100	
<b>THEORY INTEGRATED WITH PRACTICAL</b>										
U23CT614	Deep Learning	PCC	3	2	0	4	40	60	100	
<b>PRACTICAL</b>										
U23IT610	Internet Programming Laboratory <sup>§</sup>	PCC	0	0	2	1	60	40	100	
U23CT615	Data Science Laboratory	PCC	0	0	2	1	60	40	100	
U23CT614	Mini Project – II	EEC	0	0	2	1	60	40	100	
<b>CAREER TRACK COURSE</b>										
	Career Track Course - III	CTC	2	0	0	1	100	-	100	
<b>Total</b>						<b>20</b>	<b>480</b>	<b>420</b>	<b>900</b>	



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Programme	<b>B. E.</b>	Programme Code	107	Regulation	<b>2023</b>				
Department	<b>COMPUTER SCIENCE AND TECHNOLOGY</b>			Semester	<b>VII</b>				
<b>CURRICULUM</b> (Applicable to the students admitted from the academic year 2023 - 2024 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
<b>THEORY</b>									
U23CT715	Internet of Things <sup>§</sup>	PCC	3	0	0	3	40	60	100
U23CT716	Professional Ethics and Human values	PCC	3	0	0	3	40	60	100
	Professional Elective – III	PEC	3	0	0	3	40	60	100
	Professional Elective – IV	PEC	3	0	0	3	40	60	100
	Open Elective-III	OEC	3	0	0	3	40	60	100
<b>PRACTICAL</b>									
U23CT717	Internet of things Laboratory <sup>§</sup>	PCC	0	0	2	1	60	40	100
U23CT718	Internship Training	EEC	0	0	4	2	60	40	100
U23CT719	Project Phase-I	EEC	0	0	4	2	100	-	100
<b>CAREER TRACK COURSE</b>									
	Career Track Course - IV	CTC	2	0	0	1	100	-	100
<b>Total</b>						<b>21</b>	<b>520</b>	<b>380</b>	<b>900</b>

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Programme	<b>B. E.</b>	Programme Code	107	Regulation	<b>2023</b>				
Department	<b>COMPUTER SCIENCE AND TECHNOLOGY</b>			Semester	<b>VIII</b>				
<b>CURRICULUM</b> (Applicable to the students admitted from the academic year 2023 - 2024 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
<b>THEORY</b>									
	Professional Elective – V	PEC	3	0	0	3	40	60	100
	Professional Elective – VI	PEC	3	0	0	3	40	60	100
<b>PRACTICAL</b>									
U23CT820	Project Phase - II	EEC	0	0	16	8	60	40	100
<b>Total</b>						<b>14</b>	<b>140</b>	<b>160</b>	<b>300</b>

**Total Credits: 162**

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Programme	<b>B.E./B.Tech</b>	Programme Code	<b>107</b>	Regulation	<b>2023</b>										
Department	<b>COMPUTER SCIENCE AND TECHNOLOGY</b>				Semester	<b>I</b>									
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks									
		L	T	P	C	CA	ESE	Total							
<b>U23MA101</b>	<b>Matrices and Calculus</b>	3	1	0	4	40	60	100							
<b>Course Objective</b>	The Main Objective of the course is to														
	<ul style="list-style-type: none"> <li>To develop the use of matrix algebra techniques that is needed by engineers for practical applications.</li> <li>To familiarize the students with differential calculus.</li> <li>To familiarize the student with functions of several variables. This is needed in many branches of engineering.</li> <li>To make the students understand various techniques of integration.</li> <li>To acquaint the student with mathematical tools needed in evaluating multiple integrals and their applications.</li> </ul>														
	At the end of the course the students will be able to										Knowledge level				
	<b>CO1:</b> Use the matrix algebra methods for solving practical problems.										K1,K3				
	<b>CO2:</b> Apply differential calculus tools in solving various application problems.										K2,K4				
<b>CO3:</b> Able to use differential calculus ideas on several variable functions.										K3,K5					
<b>CO4:</b> Apply different methods of integration in solving practical problems.										K2,K5					
<b>CO5:</b> Apply multiple integral ideas in solving areas, volumes and other practical problems.										K3,K5					
<b>Pre-requisites</b>	-														
<b>CO / PO Mapping</b> (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak													<b>CO/PSO Mapping</b>		
<b>COs</b>		<b>Programme Outcomes (POs)</b>											<b>PSOs</b>		
		<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PO 7</b>	<b>PO 8</b>	<b>PO 9</b>	<b>PO 10</b>	<b>PO 11</b>	<b>PO 12</b>	<b>PSO 1</b>	<b>PSO 2</b>
<b>CO 1</b>		3	2		1	1								2	
<b>CO 2</b>		3	3	2		1								2	
<b>CO 3</b>		3		2	1									2	
<b>CO 4</b>		3	2	2	1	1								2	
<b>CO 5</b>		3		1	1	1								2	
<b>Course Assessment Methods</b>															
<b>Direct</b>															
1. Continuous Assessment Test I, II & III															
2. Assignment.															
3. End-Semester examinations															
<b>Indirect</b>															
1. Course - end survey															

<b>Content of the syllabus</b>			
<b>Unit – I</b>	<b>MATRICES</b>	Periods	<b>12</b>
Characteristic equation – Eigen values and Eigenvectors of a real matrix– Properties of Eigen values and Eigenvectors – Cayley-Hamilton theorem(excluding proof) – Diagonalization of matrices – Reduction of a quadratic form to canonical form by orthogonal transformation – Nature of quadratic forms. Simple application in encoding message using 2×2 matrix.			
<b>Unit - II</b>	<b>DIFFERENTIAL CALCULUS</b>	Periods	<b>12</b>
Limit, Continuity, Differentiability, Rules of differentiation, Differentiation of various functions, Rolle’s theorem(excluding proof), Mean value theorem(excluding proof), Taylor’s theorem(excluding proof), Maxima and Minima. Applications: Newton’s law of cooling – Heat flow problems.			
<b>Unit – III</b>	<b>FUNCTIONS OF SEVERAL VARIABLES</b>	Periods	<b>12</b>
Partial differentiation – Homogeneous functions and Euler’s theorem(excluding proof) – Total derivative – Change of variables – Jacobians – Partial differentiation of implicit functions – Taylor’s series for functions of two variables(excluding proof) – Maxima and minima of functions of two variables. Applications: Lagrange’s method of undetermined multipliers.			
<b>Unit - IV</b>	<b>INTEGRAL CALCULUS</b>	Periods	<b>12</b>
Definite and Indefinite Integrals- Methods of integration: Integration by parts, Trigonometric integrals, Trigonometric substitutions, Integration of rational functions by partial fraction, Integration of irrational functions -Reduction formula on $\int_0^{\frac{\pi}{2}} \cos^n x dx, \int_0^{\frac{\pi}{2}} \sin^n x dx$ .			
<b>Unit - V</b>	<b>MUTIPLE INTEGRALS</b>	Periods	<b>12</b>
Double integrals – Change of order of integration – Double integrals in polar coordinates – Area enclosed by plane curves – Triple integrals – Volume of solids – Change of variables in double and triple integrals.			
<b>Total Periods</b>			<b>60</b>
<b>Text Books</b>			
1.	Stewart, J. Calculus: Early Transcendentals (8 <sup>th</sup> Edition), Cengage Learning, 2015.		
2.	Grewal B.S., “Higher Engineering Mathematics”, Khanna Publishers, New Delhi, 43rd Edition, 2014.		
<b>References</b>			
1.	Kreyszig E, Advanced Engineering Mathematics (10 <sup>th</sup> Edition), John Wiley (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, 2009.		
3.	Thomas. G. B., Hass. J, and Weir. M.D, “Thomas Calculus “, 14th Edition, Pearson India, 2018.		
4.	Anton H, Calculus: Early Transcendentals, 10th Edition, Wiley (2016).		
5.	B V Ramana, Higher Engineering Mathematics, Tata McGraw Hill Education Pvt Ltd., New Delhi (2016)		
<b>Resources</b>			
1.	<a href="https://freevideolectures.com">https://freevideolectures.com</a> › All Courses › Calculus › UCLA		
2.	<a href="http://www.learnerstv.com">www.learnerstv.com</a> /Free-engineering-Video-lectures		
3.	<a href="http://www.nptel.ac.in">www.nptel.ac.in</a>		



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<b>Programme</b>	<b>B.E.</b>	Programme Code				<b>107</b>	Regulation	<b>2023</b>						
<b>Department</b>	<b>Computer Science &amp; Technology</b>					Semester		<b>I</b>						
<b>Course Code</b>	<b>Course Name</b>	Periods Per Week			Credit	Maximum Marks								
		L	T	P	C	CA	ESE	Total						
<b>U23EN101</b>	<b>English for Communication</b>	3	0	0	3	40	60	100						
<b>Course Objective</b>	The main objective of this course is to:													
	<ul style="list-style-type: none"> <li>• Improve the communicative ability of learners.</li> <li>• Make learners read widely in order to practice writing</li> <li>• Make learners develop vocabulary and strengthen grammatical understanding</li> <li>• Assist students in the development of intellectual flexibility, creativity, and cultural literacy so that they may engage in life-long learning.</li> <li>• Identify and begin to apply the language features of academic and professional writing and speaking</li> </ul>													
<b>Course Outcome</b>	The students who complete this course successfully are expected to:						Knowledge Level							
	<b>CO1:</b> Use appropriate vocabulary in a professional context						K1							
	<b>CO2:</b> Write appropriately based on the knowledge gained through reading of a variety of materials						K1							
	<b>CO3:</b> Use language through their grammatical acquisition						K2							
	<b>CO4:</b> Read and infer meanings of technical texts						K2							
<b>CO5:</b> Comprehend and retain the contextual and syntax understanding from reading.						K3								
<b>Pre-requisites</b>	-													
<b>CO / PO Mapping</b>												<b>CO/PSO Mapping</b>		
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
Programme Outcomes (POs)												PSOs		
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1						2			3	3		3		2
CO2						2			3	3		3		2
CO3						2			3	3		3		2
CO4						2			3	3		3		2
CO5						2			3	3		3		2
<b>Course Assessment Methods Direct</b>														
<b>Direct</b>														
1.Continuous Assessment Test I, II & III														
2.Assignment.														
3.End-Semester examinations														
<b>Indirect</b>														
1.Course - end survey														

<b>Content of the syllabus</b>			
<b>Unit – I</b>		Periods	<b>9</b>
<b>Listening</b> -Introduction to Different Types of Listening, Listening to Casual Conversations, <b>Speaking</b> -Introduction to develop the Art of Speaking, Giving Self Introduction, <b>Reading</b> -Understanding the Basics of Reading Skills, Reading Instructions and Technical Manuals, <b>Writing</b> - Introduction to writing strategies, Writing Definitions, <b>Focus on Language</b> - -Technical terms (Jargon), Word Formation with Prefixes and Suffixes, Using Active Voice and Passive Voice, Basic sentence patterns, Tenses (past, present, perfect and continuous tenses).			
<b>Unit – II</b>		Periods	<b>9</b>
<b>Listening</b> - Listening to lectures, listening to description of equipment, <b>Speaking</b> - Strategies for Developing Conversational Skills, Short Conversations through Role Play Activities, <b>Reading</b> - Reading Comprehension, Reading e-mails, Reading Headlines, Predicting the Content, <b>Writing</b> - Note making, Writing Descriptions, <b>Focus on Language</b> -Collocations, One word substitution, Subject - verb agreement			
<b>Unit – III</b>		Periods	<b>9</b>
<b>Listening</b> - Listening to different kinds of interviews (Face - to - face, radio, TV and telephone interviews), <b>Speaking</b> -Describing an Object, Asking Questions, Participating in Discussions <b>Reading</b> - Intensive reading, Reading passages for gist. <b>Writing</b> - Writing short & lengthy e-mails with emphasis on Brevity, Clarity, Coherence and Cohesion), <b>Focus on Language</b> -Sequential Connectives, Impersonal Passive.			
<b>Unit – IV</b>		Periods	<b>9</b>
<b>Listening</b> -Note Taking, <b>Speaking</b> - Improving Fluency through Narration. <b>Reading</b> -Reading passages for specific information- Phone messages, Reading and Transferring Information. <b>Writing</b> - Effective writing strategies, Informal writing, Writing a Memo, <b>Focus on Language</b> -Cause and Effect, Conditional Statements (if - clauses and types), Usage of Modal Verbs.			
<b>Unit – V</b>		Periods	<b>9</b>
<b>Listening</b> - Listening to understand Modulation, Listening to Welcome Speeches, <b>Speaking</b> - Delivering Welcome Address, Understanding Segmental and Suprasegmental Features-Practicing Stress, Pause and Intonation, <b>Reading</b> - Reading for a purpose, Reading Business Documents, Interpreting Charts and Graphs., <b>Writing</b> - Describing a Process. <b>Focus on Language</b> -Synonyms and Antonyms, Common Errors in English.			
<b>Total Periods</b>			<b>45</b>
<b>Text Books</b>			
1.	Sumant. s, Pereira Joyce, Shameem.M, Selvarajan.R-English Communication Skills, Vijay Nicole imprints Pvt.Ltd, 2015.		
2.	Sokkaalingam, S.RM., The Art Of Speaking English Versatile Publishing House, 2018.		
<b>References</b>			
1.	Dr. Padma Ravindran, Poorvadevi, M. Y. Abdur Razack- English for life, English for work, students Book, Ebek language laboratory pvt ltd, 2011.		
2.	Dutt Rajeevan, Prakash. A Course in Communication Skill (Anna University, Coimbatore edition): Cambridge University Press India Pvt.Ltd, 2007.		
3.	S.P. Dhanavel, English and Communication Skills for Students of Science and Engineering, Orient Blackswan Pvt, Ltd, 2009.		
4.	Technical English – I & II, Sonaversity, Sona College of Technology, Salem, First Edition, 2012.		
5.	Meenakshmi Raman and Sangeeta Sharma- ‘Technical communication English Skills for Engineers; oxford University Press, 2008.		
<b>E-Resources</b>			
1.	<a href="http://www.sparknotes.com/lit/the-alchemist/summary.html">http://www.sparknotes.com/lit/the-alchemist/summary.html</a>		
2.	<a href="https://www.stephencovey.com/7habits/7habits.php">https://www.stephencovey.com/7habits/7habits.php</a>		
3.	<a href="http://en.wikipedia.org/wiki/The_Seven_Habits_of_Highly_Effective_People">http://en.wikipedia.org/wiki/The_Seven_Habits_of_Highly_Effective_People</a>		

	<b>VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN</b> (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205													
<b>Programme</b>	<b>B.E.</b>	Programme Code				<b>107</b>	Regulation	<b>2023</b>						
<b>Department</b>	<b>Computer Science &amp; Technology</b>					Semester		<b>I</b>						
<b>Course Code</b>	<b>Course Name</b>	Periods Per Week			Credit	Maximum Marks								
		L	T	P	C	CA	ESE	Total						
<b>U23PH101</b>	<b>ENGINEERING PHYSICS</b>	3	0	0	3	40	60	100						
<b>Course Objective</b>	The student should be made to,													
	<ul style="list-style-type: none"> <li>understand the basic concepts of properties of matter</li> <li>gain knowledge about the conduction properties of metals</li> <li>identify the different types of crystal structures and crystal growth techniques. Study the production and applications of ultrasonics.</li> <li>correlate better understanding the carrier concentration and its variations with temperature in a semiconductor. Study the properties of modern engineering materials and its uses</li> <li>categorize the types of laser and fiber optics</li> </ul>													
<b>Course Outcome</b>	At the end of the course, the student will be able to							Knowledge Level						
	<ul style="list-style-type: none"> <li>understand the elastic properties of the materials</li> </ul>							K2						
	<ul style="list-style-type: none"> <li>gain knowledge about the conduction properties of metals</li> </ul>							K3						
	<ul style="list-style-type: none"> <li>determine packing factor for various unit cells and understand different types of crystal imperfections and learn the engineering, medical applications.</li> </ul>							K1						
	<ul style="list-style-type: none"> <li>discuss the basic idea of semiconducting materials and realize the function of modern engineering materials</li> </ul>							K1						
<b>Pre-requisites</b>	-													
	-													
<b>CO / PO Mapping</b>													<b>CO/PSO Mapping</b>	
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
Programme Outcomes (POs)													PSOs	
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	3	2	3	1	2									2
CO2	3	2	3	3	1									
CO3	3	3		3	1									2
CO4	3		2	1	1								3	2
CO5	3			1	2	2								2
<b>Course Assessment Methods Direct</b>														
<b>Direct</b>														
1. . Continuous Assessment Test I, II & III														
2. Assignments and Mind map														
3. End-Semester examinations														
<b>Indirect</b>														
1.Course - end survey														
<b>Content of the syllabus</b>														
<b>Unit – I</b>	<b>Properties Of Matter</b>										Periods	<b>9</b>		
<b>Elasticity:</b> Types of moduli of elasticity - Stress - Strain Diagram – uses. Young’s modulus: Uniform bending (qualitative) Experimental determination by non-uniform bending - Twisting couple on a wire – Application: Torsional pendulum.														
<b>Viscosity:</b> Co-efficient of viscosity - Poiseuilles' formula - Experimental determination – uses.														







<b>Unit – II</b>	<b>Electrical Properties Of Metals</b>	Periods	<b>9</b>
<p><b>Classical theory:</b> Classical free electron theory of metals- Expressions for electrical conductivity and Thermal Conductivity of metals – Wiedemann-Franz law (Qualitative) - Success and failures.</p> <p><b>Quantum theory:</b> de Broglie’s hypothesis - Schrodinger’s time independent and time dependent wave equations (Qualitative) - Particle in a one-dimensional box - Fermi – Dirac Statistics - Density of energy states (Qualitative).</p>			
<b>Unit – III</b>	<b>Crystal Physics And Ultrasonics</b>	Periods	<b>9</b>
<p>Crystallography - Unit cell - Crystal systems - Bravais lattices- Lattice planes - Miller indices - Interplanar spacing in cubic lattice- Calculation of number of atoms per unit cell- Atomic radius – Coordination number- Packing Factor for HCP structures.</p> <p><b>Ultrasonics:</b> Introduction - Properties and Generation of Ultrasonics – Magnetostriction and Piezoelectric Oscillator methods – Applications: Sound Navigation and Ranging (SONAR), Non – Destructive Testing (NDT) and Sonogram.</p>			
<b>Unit – IV</b>	<b>Semiconducting &amp; Modern Engineering Materials</b>	Periods	<b>9</b>
<p><b>Semiconductors:</b> Elemental and Compound semiconductors - Intrinsic semiconductor: (Qualitative only) – Carrier concentration – Fermi level – Electrical conductivity - Band gap determination. Extrinsic semiconductors: Carrier concentration in n – type and p – type semiconductor (Qualitative) – Variation of Fermi level with temperature. Application; Construction and working of LED.</p> <p><b>Metallic glasses:</b> preparation, properties and applications - Shape memory alloys (SMA): Characteristics and applications of NiTi alloy.</p>			
<b>Unit – V</b>	<b>Laser And Fiber Optics</b>	Periods	<b>9</b>
<p><b>Laser:</b> Interactions of Radiations with matters - Characteristics of laser – Derivation of Einstein’s A and B coefficients. Types: CO2 laser - Semiconductor laser: Homo junction - Applications.</p> <p><b>Optical fiber:</b> Principle of propagation of light through optical fiber - Numerical aperture and acceptance angle (Qualitative) -Types of optical fibers -Fiber optical communication system (block diagram) - Application: Temperature sensor.</p>			
<b>Total Periods</b>			<b>45</b>
<b>Text Books</b>			
1.	R.K. Gaur and Gupta. S.L, Engineering Physics, Dhanpat Rai Publishers, 2017.		
2	S.O Pillai., Solid state physics, New Age International Private Limited.		
3.	Dr.P.Mani, “Engineering Physics”, Shri Dhanam publisher, Chennai – 600 042		
<b>References</b>			
1.	B.K. Pandey, S. Chaturvedi. “Engineering Physics”, 1 <sup>st</sup> Edition, Cengage Learning India Pvt Ltd, (2012).		
2.	Fundamentals Of Physics Extended 8/Ed 8th Edition, David Halliday, Robert ResnickJearl Walker, Wiley India Pvt Ltd, 2008.		
3.	Lawrence H.Vanvlack, “Elements of materials Science Engineering, 6 <sup>th</sup> Edition, Pearson Publication.		
4.	S.O.Pillai, “Solid State Physics”, New Age International Publishers		
5.	Dr.V.Rajendran, “Engineering Physics”, Tata McGraw Hill Education Private Limited, New Delhi		
<b>E-Resources</b>			
1.	<a href="http://www.e-booksdirectory.com">www.e-booksdirectory.com</a>		
2.	<a href="http://Home.iitk.ac.in">Home.iitk.ac.in</a>		
3.	<a href="http://physics.cu.ac.bd/">physics.cu.ac.bd/</a>		

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<b>Programme</b>	<b>B.E.</b>	Programme Code					<b>107</b>	Regulation	<b>2023</b>									
<b>Department</b>	<b>Computer Science &amp; Technology</b>					Semester			<b>I</b>									
<b>Course Code</b>	<b>Course Name</b>	Periods Per Week			Credit	Maximum Marks												
		L	T	P		C	CA	ESE	Total									
<b>U23CS101</b>	<b>Programming for Problem Solving</b>	3	0	0	3	40		60	100									
<b>Course Objective</b>	The main objective of this course is to: <ul style="list-style-type: none"> <li>Learn the fundamentals of computers, languages, number systems and acquire problem solving skills in C Programming</li> </ul>																	
<b>Course Outcome</b>	At the end of the course, the student should be able to,										Knowledge Level							
	<b>CO1:</b> Examine number systems and to apply problem solving techniques										K3							
	<b>CO2:</b> Learn the basics of C programming with branching and looping statements										K2							
	<b>CO3:</b> Experiment the C programs using Arrays and Pointers for simple applications										K3							
	<b>CO4:</b> Solve C programs with the Functions and Strings										K3							
<b>CO5:</b> Apply Structures, Union and File concepts to solve simple real world problems										K3								
<b>Pre-requisites</b>	-																	
<b>CO / PO Mapping</b> (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak													<b>CO/PSO Mapping</b>					
Programme Outcomes (POs)													PSOs					
<b>COs</b>	<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO6</b>	<b>PO 7</b>	<b>PO 8</b>	<b>PO 9</b>	<b>PO 10</b>	<b>PO 11</b>	<b>PO 12</b>	<b>PSO 1</b>	<b>PSO 2</b>				
<b>CO1</b>	3	2	1	1	2							2	3	3				
<b>CO2</b>	2	1	1		2							2	2	2				
<b>CO3</b>	3	2	1	1	2							2	3	3				
<b>CO4</b>	3	2	1	1	2							2	3	3				
<b>CO5</b>	3	2	1	1	2							2	3	3				
<b>Course Assessment Methods Direct</b>																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;"><b>Direct</b></td> </tr> <tr> <td style="padding: 5px;">           1. Continuous Assessment Test I, II &amp; III            2. Assignment / Quiz / Seminar            3. End-Semester examination         </td> </tr> <tr> <td style="padding: 5px;"><b>Indirect</b></td> </tr> <tr> <td style="padding: 5px;">1.Course - end survey</td> </tr> </table>															<b>Direct</b>	1. Continuous Assessment Test I, II & III 2. Assignment / Quiz / Seminar 3. End-Semester examination	<b>Indirect</b>	1.Course - end survey
<b>Direct</b>																		
1. Continuous Assessment Test I, II & III 2. Assignment / Quiz / Seminar 3. End-Semester examination																		
<b>Indirect</b>																		
1.Course - end survey																		
<b>Content of the syllabus</b>																		
<b>Unit – I</b>		<b>INTRODUCTION TO PROBLEM SOLVING</b>										Periods	<b>9</b>					
Basic organization of Computer - Programming languages - Compilers – Interpreter - Flowchart – Pseudocode – Algorithm.																		
<b>Number Systems</b> – Decimal, Binary, Octal and Hexadecimal conversions																		



<b>Unit – II</b>	<b>BASICS OF C PROGRAMMING</b>	Periods	<b>9</b>
Introduction to C – Features - Data Types – Constants – Variables - I/O Statement - Operators –Expressions - Decision Making and Branching – Looping Statements - Break, Go to, Continue.			
<b>Unit – III</b>	<b>ARRAYS AND POINTERS</b>	Periods	<b>9</b>
<b>Arrays:</b> Concepts – Need – one dimensional array – array declaration – features – array initialization - Two-Dimensional Arrays- Multidimensional Arrays.			
<b>Pointers:</b> Introduction, pointer declaration-accessing variable through pointer- Pointers and Arrays, Pointers and strings – Pointers structures - Pointer Arithmetic - Array of Pointers – dynamic memory allocation - malloc, realloc, free.			
<b>Unit – IV</b>	<b>FUNCTIONS AND STRINGS</b>	Periods	<b>9</b>
<b>Functions:</b> Introduction, function declaration, defining and accessing functions, User-defined Functions- storage classes-function prototypes-parameter passing methods-recursion.			
<b>Strings:</b> Concepts – Strings manipulation - String Input / Output Functions- Strings standard functions - Arrays of Strings.			
<b>Unit – V</b>	<b>STRUCTURES, UNIONS AND FILE SYSTEMS</b>	Periods	<b>9</b>
<b>Structures:</b> Introduction- nested structures- Arrays of Structures - Structures and Functions - Pointers to Structures – Unions.			
<b>File:</b> opening, defining, closing, File Modes, File Types , Writing contents into a file, Reading file contents, Appending an existing file, File permissions and rights, Changing permissions and rights.			
<b>Total Periods</b>			<b>45</b>
<b>Text Books</b>			
1.	S.Kuppuswami, S.Malliga, C. S. Kanimozhi and K.Kousalya, “Problem Solving and Programming”, McGraw Hill, 2019.		
2.	E. Balagurusamy, “Programming in ANSI C”, 8 <sup>th</sup> Edition, Mc Graw Hill, 2019.		
<b>References</b>			
1.	Herbert Schildt, C: The Complete Reference, Mc Graw Hill, 4th Edition, 2017		
2.	Kernighan BW and Ritchie DM, “The C Programming Language”, 2 <sup>nd</sup> Edition, Prentice Hall of India, 2017.		
3.	Dr.V.Rameshbabu, Dr.R.Samyutha, M.Muni Rathnan, “Computer Programming”, VRB Publishers Pvt.Ltd, 2016.		
<b>Tools Required</b>			
	Codetandra/HackerRank/ HackerEarth / Any online Problem Solving Platforms		
<b>E-Resources</b>			
1.	<a href="https://www.geeksforgeeks.org/c-language-set-1-introduction/">https://www.geeksforgeeks.org/c-language-set-1-introduction/</a>		
2.	<a href="https://www.programiz.com/c-programming">https://www.programiz.com/c-programming</a>		
3.	<a href="https://www.cprogramming.com/">https://www.cprogramming.com/</a>		

 <b>VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN</b> (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B.E.	Programme Code	107	Regulation	2023			
Department	Computer Science & Technology		Semester		I			
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U23TA101	தமிழர்மரபு /Heritage of Tamils	1	0	0	1	40	60	100
<b>Content of the syllabus</b>								
அலகு 1	மொழி மீற்றும் இலக்கியம்				Periods	3		
இந்தியமொழிக் குடும்பங்கள் - திராவிடமொழிகள் - தமிழ் ஒருசெம்மொழி-தமிழ் செவ்விலக்கியங்கள் - சங்க இலக்கியத்தின் சமயச் சார்பற்றதன்மை-சங்க இலக்கியத்தில் பகிர்தல் அறம் திருக்குறளில் மேலாண்மைக் கருத்துக்கள் தமிழ்க் காப்பியங்கள் தமிழகத்தில் சமணபௌத்தசமயங்களின் தாக்கம் - பக்தி இலக்கியம்,ஆழ்வார்கள் மற்றும் நாயன்மார்கள் - சிற்றிலக்கியங்கள் - தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி - தமிழ் இலக்கியவளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.								
அலகு 2	மரபு-பாறைஓவியங்கள் முதல் நவீனஓவியங்கள் வரை- சிற்பக் கலை				Periods	3		
நடுகல் முதல் நவீனசிற்பங்கள் வரை-ஐம்பொன் சிலைகள் பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள்,பொம்மைகள் - தேர் செய்யும் கலை - சுடுமண் சிற்பங்கள் - நாட்டுப்புறத் தெய்வங்கள் - குமரிமுனையில் திருவள்ளூர் சிலை - இசைக் கருவிகள் - மிருதங்கம்,பறை,வீணை. யாழ்,நாதஸ்வரம் - தமிழர்களின் சமூகபொருளாதாரவாழ்வில் கோவல்களின் பங்கு.								
அலகு 3	நாட்டுப்புறக் கலைகள் மற்றும் வீரவிளையாட்டுகள்:				Periods	3		
தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஓயிலாட்டம், தோல்பாவைக்கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம்,தமிழர்களின் விளையாட்டுகள்.								
அலகு 4	தமிழர்களின் திணைக் கோட்பாடுகள்:				Periods	3		
தமிழகத்தின் தாவரங்களும்,விலங்குகளும் - தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள் - தமிழர்கள் போற்றியஅறக்கோட்பாடு - சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும்,கல்வியும் - சங்ககாலநகரங்களும் துறைமுகங்களும் - சங்ககாலத்தில் ஏற்றுமதிமற்றும் இறக்குமதி-கடல்கடந்தநாடுகளில் சோழர்களின் வெற்றி.								
அலகு 5	இந்தியதேசிய இயக்கம் மற்றும் இந்தியபண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு:				Periods	3		
இந்தியவிடுதலைப்போரில் தமிழர்களின் பங்கு - இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் - சுயமரியாதை இயக்கம் - இந்தியமருத்துவத்தில்,சித்தமருத்துவத்தின் பங்கு-கல்வெட்டுகள்,கையெழுத்துப்படிக்கள் - தமிழ்ப் புத்தகங்களின் அச்சுவரலாறு.								
					<b>Total Periods</b>	<b>15</b>		
<b>Text Books</b>								
1.	தமிழகவரலாறும் - மக்களும்பண்பாடும் - கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடுபாடநூல்மற்றும்கல்வியியல்பணிகள்கழகம்).							
2.	கணினித்தமிழ் - முனைவர்இல. சுந்தரம். (விகடன்பிரசுரம்).							
3.	கீழடி - வைகைநதிக்கரையில்சங்கநகரநாகரிகம் (தொல்லியல்துறைவெளியீடு)							
4.	பொருறை - ஆற்றங்கரைநாகரிகம். (தொல்லியல்வெளியீடு)							

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Programme	B.E.	Programme Code			107	Regulation	2023		
Department	Computer Science & Technology				Semester		I		
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks			
		L	T	P	C	CA	ESE	Total	
U23TA101	தமிழர் மரபு/ Heritage of Tamils	1	0	0	1	40	60	100	
<b>Content of the syllabus</b>									
<b>UNIT I</b>	<b>LANGUAGE AND LITERATURE</b>					<b>Periods</b>	<b>3</b>		
Language Families in India- Dravidian Languages–Tamil as a Classical Language-Classical Literature in Tamil–Secular Nature of Sangam Literature — Distributive Justice in Sangam Literature-Management Principles in Thirukural –Tamil Epics and Impact of Buddhism & Jainism in Tamil Land-Bakthi Literature-Azhwars and Nayanmars-Forms of minor Poetry-Development of Modern Literature in Tamil- Contribution of Bharathiyar and Bharathidhasan.									
<b>UNIT II</b>	<b>HERITAGE-ROCK ART PAINTING TO MODERN ART-SCULPTURE</b>					<b>Periods</b>	<b>3</b>		
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, Yazhan and Nadhaswaram-Role of Temples in Social and Economic Life of Tamils .									
<b>UNIT III</b>	<b>FOLK AND MARTIAL ARTS</b>					<b>Periods</b>	<b>3</b>		
Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance – Sports and Games of Tamils.									
<b>UNIT IV</b>	<b>THINAI CONCEPT OF TAMILS</b>					<b>Periods</b>	<b>3</b>		
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.									
<b>UNIT V</b>	<b>CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE</b>					<b>Periods</b>	<b>3</b>		
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.									
<b>Total Periods</b>							<b>15</b>		
<b>Text Books</b>									
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.								



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Department	Computer Science & Technology						Semester			I																																																																																														
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							L	T	P	C	CA	ESE	Total																																																																																											
U23GE101	Engineering Graphics						2	0	3	3	50	50	100																																																																																											
Course Objective	<b>The main objective of this course is to:</b> <ul style="list-style-type: none"> <li>Develop skills to enhance their ability to know the concept of engineering graphics and to draw the points kept in various positions, lines and planes.</li> <li>Project the drawing of various solids.</li> <li>Sketch sectioned views of solids.</li> <li>Draw the development of surfaces.</li> <li>Draw the isometric and orthographic projections for any given object to the required standard</li> </ul>																																																																																																							
	Course Outcome	At the end of the course, the student should be able to										Knowledge Level																																																																																												
		CO1: Construct plane curves and develop projection of points , lines and plane surfaces										K2																																																																																												
		CO2: Construct projection of solids with various conditions.										K4																																																																																												
		CO3: Design the section of solids and analyze the true shape of the section										K3																																																																																												
CO4: Design and develop the different solid surfaces.										K2																																																																																														
CO5: Construct isometric and orthographic projection of different solids.										K1																																																																																														
Pre-requisites -																																																																																																								
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CO1	3	3	3	3	3	-	-	-	-	-	-	-	3	2																																																																																										
CO2	3	3	2	2	2	-	-	-	-	-	-	-	2	-																																																																																										
CO3	3	2	2	2	3	-	-	-	-	-	-	-	2	2																																																																																										
CO4	3	2	3	3	2	-	-	-	-	-	-	-	3	3																																																																																										
CO5	3	3	2	3	3	-	-	-	-	-	-	-	2	2																																																																																										
<b>Course Assessment Methods Direct</b>																																																																																																								
<table border="1" style="width: 100%;"> <tr> <td colspan="15"><b>Direct</b></td> </tr> <tr> <td colspan="15">1. Continuous Assessment Test I, II &amp; III</td> </tr> <tr> <td colspan="15">2. Assignment</td> </tr> <tr> <td colspan="15">3. End-Semester examination</td> </tr> <tr> <td colspan="15"><b>Indirect</b></td> </tr> <tr> <td colspan="15">1.Course - end survey</td> </tr> </table>															<b>Direct</b>															1. Continuous Assessment Test I, II & III															2. Assignment															3. End-Semester examination															<b>Indirect</b>															1.Course - end survey														
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1.Course - end survey																																																																																																								
<b>Content of the syllabus</b>																																																																																																								
<b>Concepts &amp; Conventions (Not for Examination)</b>		Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.										<b>Periods</b>		<b>1</b>																																																																																										

<b>Unit – I</b>	<b>PROJECTION OF POINTS, LINES AND PLANE SURFACES</b>	Periods	<b>3+8</b>
Introduction to Plane curves, Orthographic projection – principles – projection of points, straight lines (only first angle projections) and plane surfaces (polygonal and circular).			
<b>Unit – II</b>	<b>PROJECTION OF SOLIDS</b>	<b>Periods</b>	<b>3+8</b>
Projections of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane.			
<b>Unit – III</b>	<b>SECTION OF SOLIDS</b>	Periods	<b>3+8</b>
Sectioning of solids - prisms, pyramids, cylinder and cone in simple vertical position by cutting planes inclined to one reference plane and perpendicular to the other - Obtaining true shape of section.			
<b>Unit – IV</b>	<b>DEVELOPMENT OF SURFACES</b>	Periods	<b>3+8</b>
Development of lateral surfaces of simple solids like prisms, pyramids, cylinders and cones – development of simple truncated solids involving prisms, pyramids, cylinders and cones.			
<b>Unit – V</b>	<b>ISOMETRIC PROJECTIONS, ORTHOGRAPHIC VIEWS FROM PICTORIAL VIEWS</b>	<b>Periods</b>	<b>5+10</b>
<b>Isometric Projection and Introduction to AutoCAD / Solid Edge:</b> Principles of isometric projection - Isometric scale -Isometric projections of simple solids like prisms, pyramids, cylinders and cones & orthographic views from pictorial views.			
<b>Demonstration only:</b>			
<b>Computer Aided Drafting (Auto CAD / Solid Edge):</b> Introduction to drafting packages and demonstration of their use.			
<b>Total Periods</b>			<b>60</b>
<b>Text Books</b>			
1.	Basant Agrawal and C.M Agrawal ,“Engineering Drawing ”,Tata McGraw Hill ,Third Edition,2019		
2	Jain and Gautam ,“Engineering Graphics & Design ”,Khanna Publishing House, 2018		
<b>References</b>			
1.	Dr.P.Kannan and Dr.J.Bensam Raj, “Engineering Graphics”, JBR Tri Sea Publishers Pvt. Ltd,2018.		
2.	K.V Natarajan, "Engineering Drawing and Graphics", M/s. N.Dhanalakshmi, Chennai,2014.		
3.	K.Venugopal and V. Prabhu Raja, “Engineering Graphics”New Age International Publishers,2011.		
4.	N.S Parthasarathy and Velamurali, “ Engineering Graphics”, Oxford University, New Delhi,2015		
5.	Bhatt N.D and Panchal V.M, “Engineering Drawing”, Charotar Publishing House,50 <sup>th</sup> Edition,2010		
<b>E-Resources</b>			
1.	<a href="http://nptel.ac.in/courses/105104148">http://nptel.ac.in/courses/105104148</a> , “Engineering Graphics” - Dr. Nihar Ranjan Patra , IIT Kanpur		
2.	<a href="http://cfd.annauniv.edu/webcontent.htm">http://cfd.annauniv.edu/webcontent.htm</a> , “Engineering Graphics” - Dr.Velamurali		
3.	<a href="http://link.springer.com/">http://link.springer.com/</a> “Engineering Graphics”-Springer Nature.		



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<b>Programme</b>	<b>B.E.</b>	Programme Code					<b>107</b>	Regulation	<b>2023</b>					
<b>Department</b>	<b>Computer Science &amp; Technology</b>					Semester			<b>I</b>					
<b>Course Code</b>	<b>Course Name</b>	Periods Per Week			Credit	Maximum Marks								
		L	T	P		C	CA	ESE	Total					
<b>U23GE102</b>	<b>Design Thinking</b>	1	0	2	1	50	50	100						
<b>Course Objective</b>	The student should be made to, <ul style="list-style-type: none"> <li>Familiarize with design thinking concepts and principles</li> <li>Practice the methods, processes and tools of design thinking.</li> </ul> apply the design thinking approach and have ability to model real world situations.													
<b>Course Outcome</b>	At the end of the course, the student should be able to,							Knowledge Level						
	<b>CO1:</b> Understand and apply the concept of team building activity							K2						
	<b>CO2:</b> Understand Design Thinking and apply the design thinking approach to empathize situations in real world							K3						
	<b>CO3:</b> Identify various methods of empathy and define the problem							K3						
	<b>CO4:</b> Develop creative ideas through design thinking							K4						
<b>CO5:</b> Understand benefits of learning through observation, experience and application							K5							
<b>Pre-requisites</b>	-													
<b>CO / PO Mapping</b> (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak													<b>CO/PSO Mapping</b>	
Programme Outcomes (POs)													PSOs	
<b>COs</b>	<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PO 7</b>	<b>PO 8</b>	<b>PO 9</b>	<b>PO 10</b>	<b>PO 11</b>	<b>PO 12</b>	<b>PSO 1</b>	<b>PSO 2</b>
<b>CO1</b>	2	3	3	3	3	2	2	3	3	3	2	2	3	3
<b>CO2</b>	3	3	3	3	3	3	3	3	3	3	3	3	2	2
<b>CO3</b>	3	3	1	2	2	2	2	1	2	1			2	2
<b>CO4</b>	3	3	3	3	3	2	2	2	2	2	2	1	2	2
<b>CO5</b>	3	3	3	3	1	2	2	2	1	2	2	1	2	2
<b>Course Assessment Methods Direct</b>														
<b>Direct</b>														
1. Continuous Assessment Test through activities, assignment & Quiz														
2. Models (Chart/paper/3D)														
3. Prototype & Presentation														
<b>Indirect</b>														
1.Course - end survey														



<b>SESSION-I</b>		Periods	<b>6</b>
Introduction – Team Building - Types – 4 C’s of Team Building – Levels of Team Building – Benefits of Team Work – Team Building Activity.			
<b>SESSION II</b>		Periods	<b>9</b>
Introduction to Design Thinking – Purpose of Design Thinking – Design Thinking Framework, Empathy and related case studies.			
<b>SESSION III</b>		Periods	<b>6</b>
Define : Examine and Reflect on the problem.			
<b>SESSION IV</b>		Periods	<b>12</b>
Generating Ideas – Identifying ideas – Bundling the ideas and create concepts – Rapid Prototyping – Idea Refinement.			
<b>SESSION V</b>		Periods	<b>12</b>
Importance & testing the design with people - Retest and redefine results			
<b>Total Periods</b>			<b>45</b>
<b>Text Books</b>			
1.	Solving Problems with Design Thinking - Ten Stories of What Works by Jeanne Liedtka 2013.		
2	Idris Mootee, "Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School", John Wiley & Sons 2013.		
3.	Yousef Haik and Tamer M.Shahin, “Engineering Design Process”, Cengage Learning, 2 <sup>nd</sup> edition, 2011		
4.	Design of Business: Why Design Thinking is the Next Competitive Advantage by Roger L. Martin 2009.		
5.	Change by Design: How Design thinking transforms organizations and empires Innovation, 2009, Harper Business, Brown, Tim and Berry.		
<b>References</b>			
1.	Design thinking toolbox by Michael Lewick, Wiley 2020		
2.	Design thinking playbook by Michael Lewrick , Wiley 2019		
3.	Creative Confidence: Unleashing the Creative Potential Within Us All by Tom 2014		
4.	The Design of Everyday Things: by Don Norman 2013		
<b>E-Resources</b>			
1.	<a href="https://www.collectivecampus.io/blog/6-resources-to-help-you-learn-design-thinking">https://www.collectivecampus.io/blog/6-resources-to-help-you-learn-design- thinking</a>		
2.	<a href="https://thisisdesignthinking.net/on-design-thinking/design-thinking-resources/">https://thisisdesignthinking.net/on-design-thinking/design-thinking-resources/</a>		
3.	<a href="http://hs.griet.ac.in/pdf/studymaterialsgr20/Design%20Thinking%20Lab%202020-21.pdf">http://hs.griet.ac.in/pdf/studymaterialsgr20/Design%20Thinking%20Lab%202020-21.pdf</a>		
4.	<a href="https://www.mindtools.com/brainstm.html">https://www.mindtools.com/brainstm.html</a>		
5.	<a href="https://www.quicksprout.com/. /how-to-reverse-engineer-your-competit">https://www.quicksprout.com/. /how-to-reverse-engineer-your-competit</a>		
6.	<a href="https://www.youtube.com/watch?v=2mjSDIBaUIM">https://www.youtube.com/watch?v=2mjSDIBaUIM</a>		
7.	<a href="http://thevirtualinstructor.com/foreshortening.html">thevirtualinstructor.com/foreshortening.html</a>		
<b>Activity Based Learning/Practical Based Learning</b>			
<a href="http://dschool.stanford.edu/dgift/">http://dschool.stanford.edu/dgift/</a>			
<b>Online Course</b>			
1.	<a href="https://onlinecourses.nptel.ac.in/noc19_mg60/preview">https://onlinecourses.nptel.ac.in/noc19_mg60/preview</a>		
2.	<a href="https://www.ibm.com/design/thinking/page/badges/core-skills">https://www.ibm.com/design/thinking/page/badges/core-skills</a>		



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Programme	<b>B.E.</b>	Programme Code			<b>107</b>	Regulation		<b>2023</b>						
Department	Computer Science and Technology (CST)					Semester		<b>I</b>						
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks								
		L	T	P	C	CA	ESE	Total						
<b>U23PH102</b>	<b>PHYSICS LABORATORY</b>	0	0	2	1	60	40	100						
<b>Course Objective</b>	<ul style="list-style-type: none"> <li>• Understand elastic behavior of Materials</li> <li>• Predict viscous force in liquids.</li> <li>• Gain knowledge in measuring the lowest thickness materials</li> <li>• To Identify wavelengths of prominent lines using polychromatic lamp</li> <li>• Observe heat conduction in bad conductor</li> <li>• Understand the principle of interferometer</li> <li>• To learn about the characteristics of Lasers</li> </ul>													
<b>Course Outcome</b>	the end of the course, the student will be able to							Knowledge Level						
	<b>CO1:</b> Measure the young's modulus of the materials, Rigidity modulus – Torsion pendulum							K3						
	<b>CO2:</b> Calculate Coefficient of viscosity of liquid and thickness of thin wire using Air wedge							K3						
	<b>CO3:</b> Observe and measure the different wavelengths of mercury Spectrum and dispersive power of a prism							K3						
	<b>CO4:</b> Illustrate the conductivity of bad conductors. To know how to determine the velocity of ultrasonic waves in liquid							K3						
	<b>CO5:</b> To understand the importance of laser beam compared to ordinary light							K2						
<b>CO / PO Mapping</b> (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak													<b>CO/PSO Mapping</b>	
<b>COs</b>	<b>Programme Outcomes (POs)</b>												<b>PSOs</b>	
	<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PO 7</b>	<b>PO 8</b>	<b>PO 9</b>	<b>PO 10</b>	<b>PO 11</b>	<b>PO 12</b>	<b>PSO1</b>	<b>PSO 2</b>
<b>CO 1</b>	3	1											2	
<b>CO 2</b>	3	3	1	2	2								2	
<b>CO 3</b>	3	2			2								3	
<b>CO 4</b>	3	3		1									1	
<b>CO 5</b>	3	1	1		1								2	
<b>Course Assessment Methods</b>														
<b>Direct</b>														
<ol style="list-style-type: none"> <li>1. Prelab and post lab test</li> <li>2. Execution of experiment and Viva-Voce</li> <li>3. End-Semester examinations</li> </ol>														
<b>Indirect</b>														
Course - end survey														

<b>Content of the syllabus</b>		
<b>PHYSICS</b>		
<b>S.No.</b>	<b>Experiments</b>	<b>CO</b>
1.	Determination of Young's modulus of the material - Uniform bending method	CO1
2.	Determination of Young's modulus of the material - Non uniform bending method	CO1
3.	Determination of Rigidity modulus – Torsion pendulum	CO1
4.	Determination of Coefficient of viscosity of a liquid – Poiseuille's method	CO2
5.	Determination of thickness of a thin material – Air wedge method	CO2
6.	Determination of wavelength of mercury spectrum – spectrometer grating	CO3
7.	Determination of Dispersive power of a prism – Spectrometer	CO3
8.	Determination of thermal conductivity of metallic glass using Lee's Disc Method	CO4
9.	Determination of velocity of sound and compressibility of liquid – Ultrasonic interferometer	CO4
10.	Determination of Wavelength and particle size using Laser	CO5
<b>Total Periods</b>		<b>30</b>
<b>Lab Manual</b>		
1.	R. Jayaraman, Engineering Physics Laboratory Manual, Pearson Pub, Edition-2021.	
2.	K. Katiyar & C.K. Pandey Engineering Physics: Theory and Practical, Wiley Pub, 2 nd Edition.	

	<b>VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN</b> (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205													
Programme	<b>B.E. / B.Tech.,</b>	Programme Code				Regulation		<b>2023</b>						
Department	<b>CSE, EEE, ECE, IT, BT, CST &amp; BME</b>					Semester		<b>I</b>						
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks								
		L	T	P	C	CA	ESE	Total						
<b>U23CS102</b>	<b>Programming for Problem Solving Laboratory</b>	0	0	2	1	60	40	100						
<b>Course Objective</b>	<p>The main objective of the course is to</p> <ul style="list-style-type: none"> <li>Develop simple C programs to illustrate the applications of User Defined and Derived Data Types such as Arrays, Pointers, Structures, and Functions.</li> </ul>													
<b>Course Outcome</b>	At the end of the course, the student should be able to,								Knowledge Level					
	<b>CO1:</b> Develop C programs for computer based solution of simple real world problems using Conditional and Looping statements								K3					
	<b>CO2:</b> Implement simple C Programs using Strings and Arrays								K3					
	<b>CO3:</b> Implement C program for simple applications using Pointers								K3					
	<b>CO4:</b> Write C programs that perform operations on File								K4					
<b>CO5:</b> Demonstrate C Programs using Structures								K3						
<b>CO / PO Mapping</b> (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak												<b>CO/PSO Mapping</b>		
<b>COs</b>	<b>Programme Outcomes (POs)</b>											<b>PSOs</b>		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2
CO 1	3	2	1	1	2							2	3	3
CO 2	3	2	1	1	2							2	3	3
CO 3	3	2	1	1	2							2	3	3
CO 4	3	2	1	1	2							2	3	3
CO 5	3	2	1	1	2							2	3	3
<b>Course Assessment Methods</b>														
<b>Direct</b>														
1. Pre lab and post lab test														
2. End-Semester examination														
<b>Indirect</b>														
1. Course - end survey														
<b>List of Experiments</b>												<b>CO's</b>		
1. Write a C program that accepts an employee's ID, total worked hours in a month and the amount he received per hour. Print the ID and salary (with two decimal places) of the employee for a particular month.												CO1		
2. Write a program in C to calculate the sum of three numbers with input on one line separated by a comma.												CO1		

3. Write a program in C to find the sum of the series $[x - x^3 + x^5 + \dots]$ .	CO1
4. Write a program in C to find the number and sum of all integers between 100 and 200 which are divisible by 9.	CO1
5. Write a program in C to count the total number of duplicate elements in an array.	CO2
6. You are given an input string 'S'. Your task is to find and return all possible permutations of the input string. <b>Note:</b> 1. The input string may contain the same characters, so there will also be the same permutations. 2. The order of permutation does not matter. <b>Sample Input</b> xyz sample Output xyz, xzy, yxz, yzx, zxy, zyx <b>Sample Output :</b> All the possible permutations for string "XYZ" will be "XYZ", "XZY", "YXZ", "YZX", "ZXY" and "ZYX".	CO2
7. Find the Smallest and Largest Element in an Array  <b>Method 1:</b> Traverse the array iteratively and keep track of the smallest and largest element until the end of the array. <b>Method 2:</b> Traverse the array recursively and keep track of the smallest and largest element until the end of the array. <b>Method 3:</b> Sort the array using STL and return the first element as the smallest element and the last element as the largest element. <b>For example, consider the array.</b> arr = { 1, 2, 3, 4, 5 } <b>Sample output:</b> Smallest element: 1 Largest element: 5	CO2
8. Write a C program to find the sum of all the multiples of 3 and 5 below 100 using pointers. We have to find the number of numbers which are multiples of both 3 and 5 in the first 100 natural numbers. Multiples of both 3 and 5 in the first 100 natural numbers are the multiples of LCM of 3 and 5. LCM of 3 and 5 = $3 \times 5 = 15$ <b>Sample output:</b> Multiples of 15 below 100 are 15, 30, 45, 60, 75 and 90.	CO3
9. Write a C program to count number of characters, words and lines in a text file. Logic to count characters, words and lines in a file in C program. How to count total characters, words and lines in a text file in C programming.  <b>Example Source file</b> I love programming. Working with files in C programming is fun. I am learning C programming at VCEW. <b>Sample output</b> Total characters = 100 Total words = 18 Total lines = 3	CO4


10. Write a C program to implement Student database using Structure		CO5
<b>Sample output:</b>		
<b>Enter details of student:</b>		
Name :abi RollNo:101 Percentage :89.7		
<b>Entered details:</b>		<b>Total Periods</b>
Name: abi RollNo: 101 Percentage: 89.70		
		<b>45</b>
<b>Tools Required</b>		
Codetandra / HackerRank / HackerEarth / Any online Problem Solving Platforms		
<b>E-Resources</b>		
1.	<a href="https://www.programiz.com/c-programming">https://www.programiz.com/c-programming</a>	
2.	<a href="https://www.cprogramming.com/">https://www.cprogramming.com/</a>	
3.	<a href="https://beginnersbook.com/2015/02/simple-c-programs/">https://beginnersbook.com/2015/02/simple-c-programs/</a>	

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Programme	<b>B.E.</b>		Programme Code					<b>107</b>	Regulation	<b>2023</b>																																																																															
Department	<b>Computer Science &amp; Technology</b>						Semester			<b>I</b>																																																																															
Course Code	Course Name		Periods Per Week			Credit	Maximum Marks																																																																																		
			L	T	P	C	CA	ESE	Total																																																																																
<b>U23MCFY1</b>	<b>Environmental Science and Engineering</b>		2	0	0	0	100	0	100																																																																																
Course Objective	The main objective of this course is to: <ul style="list-style-type: none"> <li>• Familiarize basics of ecosystem and creating environmental awareness.</li> <li>• Congregate about environmental pollution.</li> <li>• Contrast on solid waste and social issues.</li> <li>• Acquire knowledge in environmental legislation and protection.</li> <li>• Summarize population growth, human rights and Environment</li> </ul>																																																																																								
Course Outcome	At the end of the course, the student should be able to								Knowledge Level																																																																																
	<b>CO1:</b> Acquire knowledge about Eco-system, Natural resources and Bio-diversity.								K1																																																																																
	<b>CO2:</b> Be aware of Environmental Pollution and its control.								K3																																																																																
	<b>CO3:</b> Infer and express Solid waste management and Social issues.								K3																																																																																
	<b>CO4:</b> Acquire Knowledge about Environmental legislation and protection.								K3																																																																																
	<b>CO5:</b> Aweraness about population growth, human rights and Environment								K2																																																																																
Pre-requisites	-																																																																																								
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<b>CO1</b>	1	2	2			2	3					2	2																																																																												
<b>CO2</b>	3	2	2		1	2	3				1	3	3																																																																												
<b>CO3</b>	3	2	2		1	3	3				1	2	3																																																																												
<b>CO4</b>	1	1	1			2	3				1	2	2																																																																												
<b>CO5</b>	1	2	1			2	2				1	3	1																																																																												
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Content of the syllabus																																																																																									
Unit – I	<b>INTRODUCTION TO ENVIRONMENTAL SCIENCE AND ENGINEERING</b>										Periods	<b>6</b>																																																																													
Nature and scope of environmental education- Natural Resources – (Forest, Water, Food,& Land Resources) problems and remedial measures, Ecosystem and Biodiversity- Ecosystem-Structure, Characteristics and																																																																																									


functions of ecosystem - Biodiversity – Definition – Conservation of Biodiversity (in-situ and Ex-situ)-Values and Threats of Biodiversity Environmental awareness and sustainable development.

<b>Unit – II</b>	<b>ENVIRONMENTAL POLLUTION AND ITS CONTROL</b>	<b>Periods</b>	<b>6</b>
Water pollution-causes, effects and control measures of water pollution- Waste water treatment process (Secondary-BOD,COD) - Air Pollution – Types of Air pollutants-CO <sub>2</sub> , SO <sub>2</sub> , NO <sub>2</sub> , PAN-Sources- control measures (Electro static precipitator, Bag house filter, Wet Scrubber and cyclone separator).			
<b>Unit – III</b>	<b>SOCIAL ISSUES AND SUSTAINABILITY</b>	<b>Periods</b>	<b>6</b>
Solid waste Management-Types (E-Waste, Hazardous waste, Bio-waste)-Disposal method. Sustainability-Definition-Sustainable development Goals-Environmental issues-global warming and Ozone depletion, Climate change, Acid rain, Carbon foot print-Possible solutions to Environmental issues			
<b>Unit – IV</b>	<b>SUSTAINABILITY PRACTICES AND ENVIRONMENTAL LEGISLATION</b>	<b>Periods</b>	<b>6</b>
Zero waste and R-Concept-Circular economy, Material life cycle assessment-EIA, Energy efficiency and management-Environmental Legislation-Air act, Water Act-Wildlife protection act-Environmental protection act.			
<b>Unit – V</b>	<b>Human population and the environment</b>	<b>Periods</b>	<b>6</b>
Population growth, Human rights, Value education, environment and Human health, Family welfare Program, Women and Child welfare, Role of information technology in environment – Satellite, Data base, Geographical Information System (GIA), Environmental impact Analysis (EIA) and Human health			
<b>Total Periods</b>			<b>30</b>
<b>Text Books</b>			
1.	Dr.S. Vairam - “Environment Science and Engineering” Gems publication. Edition 2018		
2	Dr.S. Mageswari,Dr. G.Vijayakumar, Ms.A. Preethi, Environmental Science and Engineering, RK Publications, Revised Edition 2022		
<b>References</b>			
1.	Linda Williams- “Environmental Science”-Tata McGRAW – Hill Edition. Edition-I-2008		
2.	T.G.Miller Jr-“Environmental Science”-Wadsworth publishing Co. Edition -10-2004		
3.	William P. Cunningham, Barbara Woodworth Saigo- Tata McGraw Hill.Edition-4-2011		
4.	NPTEL Course Notes		
5.	Cunnighum and cooper-“Environmental Science”-Jaico Publ, House Edition-4-2007		
<b>E-Resources</b>			
1.	<a href="https://libraries.ou.edu/">https://libraries.ou.edu/</a>		
2.	<a href="https://libguides.reading.ac.uk/">https://libguides.reading.ac.uk/</a>		
3.	<a href="https://www.loc.gov/">https://www.loc.gov/</a> , <a href="https://rdl.lib.uconn.edu/">https://rdl.lib.uconn.edu/</a>		



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U23MA202	<b>Complex Analysis and Ordinary Differential Equations</b>						3	1	0	4	40	60	100																																																																																											
<b>Course Objective</b>	Main Objective of the course is to <ul style="list-style-type: none"> <li>Understand the Analytic functions and Bilinear transformations.</li> <li>Proficiently understand the Complex Integration.</li> <li>Demonstrate Vector Differentiation and Integration..</li> <li>To know about the Ordinary Differential Equations.</li> <li>Identify the Laplace Transform of Derivatives and Integrals.</li> </ul>																																																																																																							
<b>Course Outcome</b>	At the end of the course, the student should be able to,											Knowledge level																																																																																												
	CO1:Analyze the construction of analytic functions.											K3, K4																																																																																												
	CO2:Apply the concepts of cauchy's integral theorem and residue theorem in evaluation of complex integrals.											K2, K3																																																																																												
	CO3:Apply Green's , Stoke's and Gauss Divergence theorems.											K1, K5																																																																																												
	CO4:Understand the concepts of solving second order differential equations.											K2, K5																																																																																												
CO5:Apply the concepts of Laplace transform in solving ODE.											K5, K3																																																																																													
<b>Pre-requisites</b>	-																																																																																																							
<b>CO / PO Mapping</b>													<b>CO/PSO Mapping</b>																																																																																											
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CO1	3		2	1	1								2																																																																																											
CO2	3	2	1	1									2																																																																																											
CO3	3	2		1									2																																																																																											
CO4	3	2		1	1								2																																																																																											
CO5	3	2	1	1									2																																																																																											
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<b>Content of the syllabus</b>																																																																																																								
<b>Unit – I</b>		<b>ANALYTIC FUNCTIONS</b>									Periods	<b>12</b>																																																																																												
Analytic functions – Necessary and sufficient conditions for analyticity in Cartesian and polar coordinates – Properties – Harmonic conjugates – Construction of analytic function - Conformal mapping – Mapping by functions $c+z$ , $cz$ , $1/z$ and Bilinear transformation.																																																																																																								



<b>Unit - II</b>	<b>COMPLEX INTEGRATION</b>	Periods	<b>12</b>
Problem solving using Cauchy's integral theorem and integral formula- Taylor's and Laurent's expansions- Residues- Cauchy's residue theorem- Application:Contour integration over unit circle.			
<b>Unit – III</b>	<b>VECTOR DIFFERETIATION &amp; INTEGRATION</b>	Periods	<b>12</b>
Vector Differentiation: Vector and Scalar Functions- Derivatives- Curves, Gradient of a Scalar Field-Directional Derivative -Divergence of a Vector Field - Curl of a Vector Field – Line, Surface and Volume integrals (concepts only), Green's theorem in a plane(excluding proof), Gauss Divergence theorem(excluding proof), Stoke's theorem (Excluding proof).			
<b>Unit - IV</b>	<b>ORDINARY DIFFERENTIAL EQUATIONS</b>	Periods	<b>12</b>
Second order Linear ordinary differential equations with constant coefficients, Cauchy's - Euler equations(excluding proof)- Legendre's Linear differential equations(excluding proof) - Method of variation of parameters.			
<b>Unit – V</b>	<b>LAPLACE TRANSFORMS</b>	Periods	<b>12</b>
Existence conditions – Transforms of elementary functions – Transform of unit step function and unit impulse function – Basic properties – Shifting theorems(excluding proof) -Transforms of derivatives and integrals – Initial and final value theorems(excluding proof) – Inverse transforms – Convolution theorem(excluding proof) – Transform of periodic functions – Application to solution of linear second order ordinary differential equations with constant coefficients.			
<b>Total Periods</b>			<b>60</b>
<b>Text Books</b>			
1.	Grewal B.S., “Higher Engineering Mathematics”, Khanna Publishers, New Delhi, 43rd Edition, 2014.		
2	Ravish R Sing , Mukul Bhatt, “Engineering Mathematics”, Mc Graw Hill Education Pvt. Ltd-2018		
3.	Sivaramakrishna Das. P, Vijayakumari.C, “ Engineering Mathematics – II”, Pearson India Education Pvt. Ltd-2022.		
<b>References</b>			
1.	Wylie, R.C. and Barrett, L.C., “Advanced Engineering Mathematics” , Tata McGraw Hill Education Pvt. Ltd, 6th Edition, New Delhi, 2012.		
2.	Kreyszig, E., Advanced Engineering Mathematics (10th Edition), John Wiley (2015).		
3.	Alan Jefferis , Advanced Engineering Mathematics,Academic Press- New Delhi-2003		
4.	Yunus A.Cengel, William J.Palm III,” Differential equations for Engineers & Scientists”, Tata McGraw Hill Education Pvt. Ltd, 6th Edition, New Delhi, 2012.		
5.	John Bird, Higher Engineering Mathematics, Anuradha Agencies(2004)		
<b>E-Resources</b>			
1.	<a href="https://en.wikipedia.org/wiki/Ordinary_differential_equation">https://en.wikipedia.org &gt; wiki &gt; Ordinary_differential_equation</a>		
2.	www.learnerstv.com/Free-engineering-Video-lectures		
3.	www.nptel.ac.in		

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Programme	B.E.		Programme Code							107	Regulation	2023		
Department	Computer Science & Technology							Semester			II			
Course Code	Course Name						Periods Per Week			Credit	Maximum Marks			
							L	T	P	C	CA	ESE	Total	
U23CH201	Engineering Chemistry						3	0	0	3	40	60	100	
Course Objective	The main objective of this course is to:													
	<ul style="list-style-type: none"> <li>Recognize the basic technology requirements in water treatment</li> <li>Gain knowledge in basics and preparations, properties and applications of Polymers.</li> <li>Enrich the Knowledge of the students with the basics of Nano materials, their properties and applications.</li> <li>Familiarize about the Non renewable, renewable energy and different types of storage devices in the engineering application.</li> <li>Gain knowledge in destruction and protection of metals for engineering applications.</li> </ul>													
	The students who complete this course successfully are expected to:										Knowledge Level			
	CO1: Implement innovative solutions in wastewater treatment process.										K3			
	CO2: Familiarize with the applications of polymers in the field of engineering										K3			
CO3: Identify the synthesis methods of Nanoparticles and their industrial applications										K2				
CO4: Recognize the renewable, non renewable energy and storage devices for domestic and industrial applications.										K3				
CO5: Categorize the metal corrosion in different environment and find out appropriate control techniques to avoid corrosion.										K3				
Pre-requisites	-													
<b>CO / PO Mapping</b>												<b>CO/PSO Mapping</b>		
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
Programme Outcomes (POs)												PSOs		
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	3	3	3	2	1	2	2	2					1	1
CO2	3	2	2	2		2	2	1					2	2
CO3	3	2	2	3	2	1	2	1					2	1
CO4	3	3	2	2	1	1	3	2					3	2
CO5	3	3	3	2	1	2	2	1					2	1
<b>Course Assessment Methods Direct</b>														
<b>Direct</b>														
1.Continuous Assessment Test I, II & III														
2.Assignment														
3.End-Semester examinations														
<b>Indirect</b>														
1.Course - end survey														

<b>Content of the syllabus</b>			
<b>Unit – I</b>	<b>WATER TECHNOLOGY</b>	Periods	<b>9</b>
Introduction-Sources and impurities in Water, Soft and Hard water, Water quality parameters, Types of Hardness – Determination of Hardness by EDTA method, Domestic Water Treatment. Boiler Feed Water –Requisites, Problems due to hard water in boilers - Scale and Sludge formation in boilers-Caustic Embrittlement-Boiler corrosion, Treatment of boiler feed Water – Internal conditioning (Carbonate, Phosphate, and Calgon conditioning) External conditioning – Ion exchange process, Zeolite process, Brackish water –Water purification by Reverse osmosis.			
<b>Unit – II</b>	<b>POLYMER CHEMISTRY</b>		<b>9</b>
Introduction - Occurrence, definitions – Functionality - Degree of Polymerization, Classification of polymers – structure (Linear, Branched & network polymer structure) block, random & graft copolymers, Tacticity, Tg, molecular weight - number and weight average method. Types of polymerizations: Addition, condensation and copolymerization. Mechanism of polymerization (Free radical). Preparation, properties and applications of PE, PMMA, PC, Nylon6, Nylon 6 6, Poly urethane, Poly isoprene and vulcanization of rubber, Teflon, PET, and Bakelite.			
<b>Unit – III</b>	<b>NANO CHEMISTRY</b>		<b>9</b>
Basics- distinction between molecules, nanoparticles and bulk materials; size dependent properties. Nanoparticles: nanocluster, nanorod, nanotube (CNT) and nanowires. Synthesis: Top down process- Laser ablation, Spray Pyrolysis, Chemical Vapour deposition, Electro deposition. Bottom up process- Precipitation, Sol-gel, Thermolysis - hydrothermal, solvothermal -Properties and applications of nano materials in medical and electronic devices.			
<b>Unit – IV</b>	<b>ENERGY RESOURCES AND STORAGE DEVICES</b>		<b>9</b>
Nonrenewable energy - Nuclear energy, nuclear reaction and its types, nuclear power plant and its working (Light water nuclear power plant & Breeder reactor). Renewable energy and its sources - Solar Energy - Photo voltaic cells, Importance of Solar cells - p-n junctions in Solar cells - Working of Photovoltaic cell, Recent advances in solar cell materials, Wind energy - Types of Wind Power Plants (WPPs), Components and working of WPPs. Batteries and fuel cells: Types of batteries -Alkaline battery, lead storage battery, Ni-Cd battery, lithium battery, Fuel cell - H <sub>2</sub> -O <sub>2</sub> fuel cell-applications.			
<b>Unit – V</b>	<b>CORROSION AND ITS CONTROL</b>		<b>9</b>
Introduction, Types of corrosion - chemical and electrochemical corrosion, mechanism, Pilling -Bedworth rule, Types of electrochemical corrosion – Galvanic corrosion, Pitting corrosion, Crevice corrosion, Corrosion on wire fence and Pipeline corrosion, Factors influencing rate of corrosion, corrosion control methods – Sacrificial anode and impressed cathodic current. Protective coatings – Paints: constituents and functions, Metallic coatings - steps involved in cleaning the surface for Electroplating, Electroplating (Au), Electro less plating (Ni).			
<b>Total Periods</b>			<b>45</b>
<b>Text Books</b>			
1.	O.G.Palanna, “Engineering Chemistry “Tata Mc GrawHill PVT,Ltd. Second Edition -2017		
2	Dr.S.Mageswari, Dr.K.Balachandran, M.S.Viswaksenan, Engineering Chemistry : First Edition, RK publication, Edition-2022		
<b>References</b>			
1.	Engineering Chemistry: Jain & Jain, Dhanpat Rai Publishing Company Edition- 16- 2015.		
2.	Arun Bahl, B.S. Bahl, G.D. Tuli, Essentials of Physical Chemistry, Published by S. Chand & Company Ltd, 2014		
3.	Engineering Chemistry: Sashi Chawla, Dhanpat Rai & Co (pvt.)ltd. Edition- 5- 2013.		
4.	Dr.S.Vairam ,Dr.Suba Ramesh, Engineering Chemistry: First Edition, Wiley publication,Reprint-2016		
5.	Engineering Chemistry: Jain & Jain, Dhanpat Rai Publishing Company Edition- 16- 2015.		

**E-Resources**



1.	<a href="https://www.who.int/water_sanitation_health/dwq/arsenicun6.pdf">https://www.who.int/water_sanitation_health/dwq/arsenicun6.pdf</a>
2.	<a href="https://www.schandpublishing.com/books/tech-professional/applied-science/a-textbook-polymer-chemistry/9788121941129/#.XdZ214MzY2w">https://www.schandpublishing.com/books/tech-professional/applied-science/a-textbook-polymer-chemistry/9788121941129/#.XdZ214MzY2w</a>
3.	<a href="https://www.elsevier.com/books/nanochemistry/klabunde/978-0-444-59397-9">https://www.elsevier.com/books/nanochemistry/klabunde/978-0-444-59397-9</a>

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Programme	<b>B.E.</b>		Programme Code					<b>107</b>	Regulation		<b>2023</b>																																																																																													
Department	<b>Computer Science &amp; Technology</b>						Semester			<b>II</b>																																																																																														
Course Code	Course Name		Periods Per Week			Credit	Maximum Marks																																																																																																	
			L	T	P		C	CA	ESE	Total																																																																																														
<b>U23EE201</b>	<b>Basic Electrical and Electronics Engineering</b>		3	0	0	3	40	60	100																																																																																															
<b>Course Objective</b>	The students should made to <ul style="list-style-type: none"> <li>• Introduce the basics of electric circuits and analysis</li> <li>• Impart knowledge in the basics of working principles and application of electrical machines</li> <li>• Learn the electrical wiring methods</li> <li>• Analyze the characteristics of Semiconductor devices</li> <li>• Educate on the fundamental concepts of digital electronics and introduce the functional elements and working of measuring instruments</li> </ul>																																																																																																							
<b>Course Outcome</b>	At the end of the course, the student should be able to,											Knowledge Level																																																																																												
	<b>CO1:</b> Understand the basics of electric circuits and type of the connection											K2																																																																																												
	<b>CO2:</b> Understand the basics of electromagnetic laws and basic working principle of DC and AC machines.											K2																																																																																												
	<b>CO3:</b> Understand the concepts of tariff, energy saving, illumination, electric lamps and safety measures.											K2																																																																																												
	<b>CO4:</b> Understand the basic operating characteristics of semiconductor devices.											K2																																																																																												
	<b>CO5:</b> Understand the fundamentals of digital logics and measuring instruments											K2																																																																																												
<b>Pre-requisites</b>	Basic concepts and understanding of magnetic fields																																																																																																							
<b>CO / PO Mapping</b>												<b>CO/PSO Mapping</b>																																																																																												
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak																																																																																																								
Programme Outcomes (POs)												PSOs																																																																																												
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2																																																																																										
<b>CO1</b>	3	2	1					1				3	3																																																																																											
<b>CO2</b>	3	2	1					1				3	3																																																																																											
<b>CO3</b>	3	1	1					1				3	3																																																																																											
<b>CO4</b>	3	2	1					1				3	3																																																																																											
<b>CO5</b>	3	2	1					1				3	3																																																																																											
<b>Course Assessment Methods Direct</b>																																																																																																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="15" style="text-align: center;"><b>Direct</b></td> </tr> <tr> <td colspan="15">1. 1. Continuous Assessment Test I, II &amp; III</td> </tr> <tr> <td colspan="15">2. Assignment</td> </tr> <tr> <td colspan="15">3. End-Semester examinations</td> </tr> <tr> <td colspan="15" style="text-align: center;"><b>Indirect</b></td> </tr> <tr> <td colspan="15">1.Course - end survey</td> </tr> </table>															<b>Direct</b>															1. 1. Continuous Assessment Test I, II & III															2. Assignment															3. End-Semester examinations															<b>Indirect</b>															1.Course - end survey														
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<b>Content of the syllabus</b>																																																																																																								


<b>Unit – I</b>	<b>INTRODUCTION OF ELECTRICAL CIRCUITS</b>	Periods	<b>9</b>
Definition of Voltage, Current, Power, Energy, Power factor, Circuit parameters, Ohm’s law, Kirchhoff’s law Introduction to AC Circuits and Parameters: Waveforms, Average value, RMS Value, Real power, Reactive power and Apparent power, Power factor. Introduction to three phase systems - types of connections Concept of DC circuits.			
<b>Unit – II</b>	<b>ELECTRICAL MACHINES AND ITS APPLICATIONS</b>	Periods	<b>9</b>
Faraday’s laws of electromagnetic induction - Lens law - Fleming's left hand rule and Right hand rule. Working principle and construction of AC and DC machines - Construction, Working principle and Applications of single phase Transformer. Motor used for domestic applications.			
<b>Unit – III</b>	<b>WIRING AND ILLUMINATION</b>	Periods	<b>9</b>
Types of wiring-staircase and corridor wiring - wiring accessories. Different types of safety measures - Earthing. Electrical tariff -Energy conservation. Simple layout of power system-various energy resources, The Laws of Illumination- Different types of electrical lamps.			
<b>Unit – IV</b>	<b>SEMICONDUCTOR DEVICES</b>	Periods	<b>9</b>
PN junction diodes - Zener diodes - characteristics. Transistors: PNP and NPN transistors - Theory of operation - Transistor configurations -characteristics - comparison. Special semiconductor devices: FET - SCR - LED – V-I characteristics – Rectifier and Inverters -UPS – SMPS.			
<b>Unit – V</b>	<b>DIGITAL FUNDAMENTALS AND MEASUREMENTS</b>	Periods	<b>9</b>
Number systems - Boolean Theorems – DeMorgan's Theorem - Logic gates -Implementation of Boolean Expression using Gates - SOP and POS forms- Functional elements of an instrument, Standards and calibration, Operating Principle of Ammeters and Voltmeters.			
<b>Total Periods</b>			<b>45</b>
<b>Text Books</b>			
1.	S.K.Bhattacharya, “Basic Electrical and Electronics Engineering”, Pearson, 2017		
2	D.P. Kotharti and I.J Nagarath, “Basic Electrical and Electronics Engineering”, Mc Graw Hill, Third Edition, 2020.		
<b>References</b>			
1.	Lal Seksena and Kaustuv Dasgupta, “Fundaments of Electrical Engineering”, Cambridge, 2016		
2.	Mittle, Mittal, Basic Electrical Engineering, 2nd Edition, Tata McGraw-Hill Edition, 2016.		
3.	T.K. Nagsarkar and M.S. Sukhija, “Basic Electrical Engineering”, Oxford, 2017.		
4.	John Bird, “Electrical and Electronic Principles and Technology”, Fourth Edition, Elsevier, 2010.		
5.	K MurugeshKumar, “Elements of Electrical Engineering”, Vikas Publishing House Pvt. Ltd. 2011.		
<b>E-Resources</b>			
1.	<a href="https://nptel.ac.in/courses">https://nptel.ac.in/courses</a>		
2.	<a href="https://www.electrical4u.com/electrical-engineering-articles/illumination-engineering/">https://www.electrical4u.com/electrical-engineering-articles/illumination-engineering/</a>		
3.	<a href="https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-002-circuits-and-electronics-spring-2007/lecture-notes">https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-002-circuits-and-electronics-spring-2007/lecture-notes</a>		
4.	<a href="https://www.google.co.in/books/edition/_/4nJROSC7iK8C?hl=en&amp;gbpv=1">https://www.google.co.in/books/edition/_/4nJROSC7iK8C?hl=en&amp;gbpv=1</a>		


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Programme	B.E.	Programme Code			107	Regulation	2023		
Department	Computer Science & Technology				Semester		II		
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks			
		L	T	P	C	CA	ESE	Total	
U23TA202	தமிழரும் தொழில் நுட்பமும்/ TAMILS AND TECHNOLOGY	1	0	0	1	40	60	100	
<b>Content of the syllabus</b>									
<b>அலகு 1</b>		<b>நெசவுமற்றும்பாணைத்தொழில்நுட்பம்</b>				<b>Periods</b>	<b>3</b>		
சங்க காலத்தில் நெசவுத்தொழில் - பாணைத் தொழில்நுட்பம் - கருப்பு சிவப்பு பாண்டங்கள் - பாண்டங்களில் கீறல்குறியீடுகள்.									
<b>அலகு 2</b>		<b>வடிவமைப்புமற்றும்கட்டிடத்தொழில்நுட்பம்</b>				<b>Periods</b>	<b>3</b>		
சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் ௬ சங்ககாலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு- சங்ககாலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் - சிலப்பதிகாரத்தில் மேடை அமைப்புபற்றிய விவரங்கள்-மாமல்ல புரச்சிற்பங்களும் இ கோவில்களும் - சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிறவழிபாட்டுத்தலங்கள் - நாயக்கர் காலக்கோயில்கள் - மாதிரி கட்டமைப்புகள் பற்றி அறிதல்இ மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர்மஹால் - செட்டிநாட்டு வீடுகள் - பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ-சாரோசெனிக் கட்டிடக்கலை.									
<b>அலகு 3</b>		<b>உற்பத்தித்தொழில்நுட்பம்</b>				<b>Periods</b>	<b>3</b>		
கப்பல்கட்டும்கலை - உலோகவியல் - இரும்புத்தொழிற்சாலை - இரும்பை உருக்குதல் இஎஃகு - வரலாற்றுச் சான்றுகளாக-செம்புமற்றும்தங்கநாணயங்கள் - நாணயங்கள் அச்சடித்தல் - மணி உருவாக்கும் தொழிற்சாலைகள் - கல்மணிகள்இ கண்ணாடி மணிகள் - சுடுமண்மணிகள் - சங்குமணிகள் - எலும்புத்துண்டுகள் - தொல்லியல் சான்றுகள் - சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.									
<b>அலகு 4</b>		<b>வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில்நுட்பம்</b>				<b>Periods</b>	<b>3</b>		
அணைஇ ஏரிஇ குளங்கள் இமதகு - சோழர் காலக்கு முழித்தாம்பின் முக்கியத்துவம் - கால் நடை பராமரிப்பு - கால் நடைகளுக்காக வடி வமைக்கப்பட்ட கிணறுகள் - வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் - கடல்சார் அறிவு - மீன்வளம் - முத்து மற்றும் முத்துக் குளித்தல் - பெருங்கடல் குறித்த பண்டையஅறிவு - அறிவு சார்சமூகம்									
<b>அலகு 5</b>		<b>அறிவியல்தமிழ்மற்றும்கணினித்தமிழ்</b>				<b>Periods</b>	<b>3</b>		
அறிவியல் தமிழின்வளர்ச்சி - கணினித் தமிழ் வளர்ச்சி - தமிழ் நூல்களை மின்பதிப்புசெய்தல் - தமிழ்மின் பொருட்கள் உருவாக்கம் - தமிழ் இணையக்கல்விக்கழகம் - தமிழ் மின்நூலகம் - இணையத்தில் தமிழ்அகராதிகள் - சொற்க்குவைத் திட்டம்.									
<b>Total Periods</b>						<b>15</b>			
<b>Text Books</b>									
1.	தமிழகவரலாறும் - மக்களும்பண்பாடும் - கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடுபாடநூல்மற்றும்கல்வியியல்பணிகள்கழகம்).								
2.	கணினித்தமிழ் - முனைவர்இல. சுந்தரம். (விகடன்பிரசுரம்).								
3.	கீழடி - வைகைநதிக்கரையில்சங்கநகரநாகரிகம் (தொல்லியல்துறைவெளியீடு)								
4.	பொருறை - ஆற்றங்கரைநாகரிகம். (தொல்லியல்வெளியீடு)								



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Programme	<b>B.E.</b>	Programme Code			<b>107</b>	Regulation	<b>2023</b>		
Department	<b>Computer Science &amp; Technology</b>				Semester		<b>II</b>		
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks			
		L	T	P	C	CA	ESE	Total	
<b>U23TA202</b>	<b>தமிழரும் தொழில் நுட்பமும்/ TAMILS AND TECHNOLOGY</b>	1	0	0	1	40	60	100	
<b>Content of the syllabus</b>									
<b>UNIT I</b>	<b>WEAVING AND CERAMIC TECHNOLOGY</b>					<b>Periods</b>	<b>3</b>		
Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) –Graffiti on Potteries									
<b>UNIT II</b>	<b>DESIGN AND CONSTRUCTION TECHNOLOGY</b>					<b>Periods</b>	<b>3</b>		
Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)-ThirumalaiNayakarMahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.									
<b>UNIT III</b>	<b>MANUFACTURING TECHNOLOGY</b>					<b>Periods</b>	<b>3</b>		
Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting,steel -Copper and gold- Coins as source of history - Minting of Coins – Beads making-industries Stone beads - Glass beads - Terracotta beads -Shell beads/ bone beats - Archeological evidences - Gem stone types described in Silappathikaram.									
<b>UNIT IV</b>	<b>AGRICULTURE AND IRRIGATION TECHNOLOG</b>					<b>Periods</b>	<b>3</b>		
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.									
<b>UNIT V</b>	<b>SCIENTIFIC TAMIL &amp; TAMIL COMPUTING</b>					<b>Periods</b>	<b>3</b>		
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.									
<b>Total Periods</b>							<b>15</b>		
<b>Text Books</b>									
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.								

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Programme	<b>B.E. / BT.ech.</b>	Programme Code				Regulation	<b>2023</b>							
Department	<b>CSE, IT &amp; CST</b>				Semester		<b>II</b>							
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks								
		L	T	P	C	CA	ESE	Total						
<b>U23CS204</b>	<b>OBJECT ORIENTED PROGRAMMING</b>	3	0	2	4	50	50	100						
Course Objective	The main objective of the course is to, <ul style="list-style-type: none"> <li>• Provide the concepts of object oriented programming with a comprehensive introduction to C++.</li> <li>• Learn Java programming and its basic packages including GUI programming.</li> </ul>													
Course Outcome	At the end of the course, the student should be able to,						Knowledge Level							
	<b>CO1:</b> apply the concepts of classes and objects to solve simple problems using C++						K3							
	<b>CO2:</b> develop simple applications using basic Java constructs						K3							
	<b>CO3:</b> build applications making use of packages, interfaces and exception handling in Java						K3							
	<b>CO4:</b> make use of multithreading and I/O streams						K3							
<b>CO5:</b> develop simple event-based GUI applications in Java using AWT classes and controls						K3								
e-requisites	Nil													
<b>CO / PO Mapping</b> (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak													<b>CO/PSO Mapping</b>	
Cos	Programme Outcomes (POs)												PSOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2
CO 1	3	2	1	1									3	3
CO 2	3	2	1	1									3	3
CO 3	3	2	1	1									3	3
CO 4	3	2	1	1									3	3
CO 5	3	2	1	1									3	3
<b>Course Assessment Methods</b>														
<b>Direct</b>														
1. Continuous Assessment Test I, II & III 2. Assignments / Quiz 3. End-Semester examinations														
<b>Indirect</b>														
1. Course - End survey														
<b>Content of the syllabus</b>														
Unit – I	<b>INTRODUCTION TO OOP AND C++</b>						Periods	<b>9</b>						
Object Oriented Programming - Features – Merits & Demerits- Applications – Difference –Structure ofC++ - Input and Output statements- Classes and Objects– Constructors – Destructors														
Unit - II	<b>INTRODUCTION TO JAVA</b>						Periods	<b>9</b>						

Structure of Java - Data Types - Variables – control statements - Arrays –Classes – Fundamentals –Declaring Objects - Assigning Object Reference Variables - Methods –Constructors - this keyword - Overloading Methods - Access Control – Static – Inheritance – Basics – Super keyword			
<b>Unit – III</b>	<b>PACKAGES, INTERFACES AND EXCEPTION HANDLING</b>	Periods	<b>9</b>
Abstract Classes - final with Inheritance. Packages - Access Protection - Importing Packages – Interfaces - Exception Handling basics – Multiple catch Clauses- Nested try Statements – Java’s Built-in Exceptions – User defined Exception			
<b>Unit - IV</b>	<b>MULTITHREADING AND I/O</b>	Periods	<b>9</b>
Java Thread Model - Creating a Thread –Creating Multiple Threads – Synchronization – Enumerations –Type Wrappers - Auto Boxing. I/O Basics - Reading and Writing Console I/O – Reading and Writing Files.			
<b>Unit – V</b>	<b>STRINGS AND EVENT HANDLING</b>	Periods	<b>9</b>
String Class – operations – String Buffer Class. Event Handling – Mechanisms -- Event Classes – Action Event - Action Listener. AWT Classes - Window Fundamentals - Frame Windows – AWT Controls - Layout Managers.			
<b>Total Periods</b>			<b>45</b>
<b>Suggested List of Experiments</b>			<b>CO’s</b>
1.	Develop a simple C++ application using operator overloading and function overloading		CO1
2.	Develop simple Java programs using control statements and arrays		CO2
3.	Demonstrate polymorphism using Java programs		CO3
4.	Develop Java applications using interfaces and packages		CO3
5.	Demonstrate exception handling in Java		CO3
6.	Develop multithreaded applications in Java		CO4
7.	Develop programs in Java using java.io packages		CO4
8.	Demonstrate string manipulation in Java		CO5
9.	Develop applications in Java using collections classes		CO5
10.	Design a GUI based simple application using AWT classes		CO5
<b>Lecture 45: Practical 30; Total: 75</b>			
<b>Text Books</b>			
1.	Reema Thareja, "Object Oriented Programming with C++", Third Edition, Oxford University Press, New Delhi, 2018 (UNIT 1)		
2.	Herbert Schildt, "Java: The Complete Reference", 12 <sup>th</sup> Edition, McGraw Hill Education, New Delhi, 2022.(UNIT 2 to 5)		
<b>References</b>			
1.	Buyya Rajkumar, ThamaraiSelvi S. and Xingchen Chu, "Object Oriented Programming with Java Essentials and Applications", 1 <sup>st</sup> Edition, McGraw Hill, New Delhi, 2009.		
2.	Cay S. Horstmann, "Core Java: Volume I Fundamentals", 11 <sup>th</sup> Edition, Addison Wesley, New Delhi, 2019.		
3.	Deitel Paul and Deitel Harvey, "Java How to Program", 11 <sup>th</sup> Edition, Pearson Education, New Delhi, 2018.		
<b>Tools Required</b>			
1.	edtandra / HackerRank / HackerEarth / Any online Problem Solving Platforms		
<b>Resources</b>			
1.	<a href="http://www.nptel.ac.in">www.nptel.ac.in</a>		
2.	<a href="https://www.javatpoint.com/cpp-oops-concepts">https://www.javatpoint.com/cpp-oops-concepts</a>		
3.	<a href="https://www.javatpoint.com/java-tutorial">https://www.javatpoint.com/java-tutorial</a>		

	<b>VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN</b> (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205													
Programme	B.E.		Programme Code					107		Regulation		2023		
Department	Computer Science & Technology							Semester			II			
Course Code	Course Name		Periods Per Week			Credit		Maximum Marks						
			L	T	P	C	CA	ESE	Total					
U23EN202	Professional Communication		2	0	3	3	50	50	100					
Course Objective	The main objective of this course is to: <ul style="list-style-type: none"> <li>• Provide suitable reading &amp; writing tasks to develop communicative ability for academic and professional progress</li> <li>• Inculcate channelized reading to make learners proficient in the chosen professional writing contexts.</li> <li>• Improve learners' vocabulary and grammar to supplement their language use at professional contexts</li> <li>• Assist students in the development of intellectual flexibility, creativity, and cultural literacy so that they may engage in life-long learning.</li> <li>• Identify and begin to apply the language features of academic and professional writing and speaking</li> </ul>													
	Course Outcome	The students who complete this course successfully are expected to:										Knowledge Level		
CO1: Acquire sufficient command over language to speak at an academic or professional context										K1				
CO2: Write technically well at professional contexts through exposing them to similar readings.										K1				
CO3: Use language at length at technical and professional situations through enrichment of vocabulary and strengthening of grammatical knowledge.										K2				
CO4: Ethically gather, understand, evaluate and synthesize information from a variety of written and electronic sources.										K2				
CO5: Be proficient in oral communication and writing.										K3				
Pre-requisites														
<b>CO / PO Mapping</b>													<b>CO/PSO Mapping</b>	
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
Programme Outcomes (POs)													PSOs	
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1						2			3	3		3		2
CO2						2			3	3		3		2
CO3						2			3	3		3		2
CO4						2			3	3		3		2
CO5						2			3	3		3		2

Course Assessment Methods Direct			
<b>Direct</b>			
1. Continuous Assessment Test I & II			
2. Continuous Assessment Test III in the Communication Skills Lab			
3. Assignments			
4. End-Semester examinations			
<b>Indirect</b>			
1.Course - end survey			
Content of the syllabus			
Unit - I		Periods	15
<b>Listening-</b> Listening for Cultural Awareness, Listening to Professional Conversations, Talks, Interviews and Lectures <b>Speaking-</b> Developing Confidence to get rid of Fear on the Dias, Discussion at a Corporate Context. <b>Reading-</b> Inferential Reading, Reading Short Messages and Technical Articles, <b>Writing-</b> Introduction to Letter Writing, Writing Formal and Informal Letters, Thanking Letters, Letters Calling for Quotations, Letters Placing an Order, Seeking clarification, Letters of Complaint. <b>Focus on Language-</b> Adjectives and Degrees of Comparisons			
Unit - II		Periods	15
<b>Listening-</b> Listening to specific information relating to technical content, Listening for statistical information <b>Speaking-</b> Expressing opinions, Formal Discussions, Describing Role Play at Business Context and Consolidating Ideas. <b>Reading-</b> Reading Technical Articles in Journals and Comparing Articles. <b>Writing-</b> Letter seeking permission to undergo practical training and to undertake project work. <b>Focus on Language-</b> Simple, compound and complex sentences and Transformation of Sentences.			
Unit - III		Periods	15
<b>Listening-</b> Listening to understand the overall meaning, Listening to Interviews and Presentations. <b>Speaking-</b> Giving Instructions and Showing Directions and Rephrasing Instructions. <b>Reading-</b> Skimming and Scanning, Reading Job Advertisements. <b>Writing-</b> Applying for a Job, Writing a CV. <b>Group Discussion:</b> Introduction – Topic Analysis – Thematic Expressions-Objective and content of discussion.			
Unit - IV		Periods	15
<b>Listening-</b> Listening and retrieving Information. <b>Speaking-</b> Developing fluency and Coherence, Accent Neutralization, Voice Modulation, and Intonation, Improving Voice Quality. <b>Reading-</b> Reading and understanding Advertisements. <b>Writing-</b> Letters to the Editor, Letter of Complaint, Various kinds of Reports, Permission to go for Industrial visits. <b>Presentation skills:</b> Making Self Introduction effectively-Elements of effective presentation – Structure of presentation - Presentation tools – Voice Modulation – Audience analysis - Body language – Accents analysis – Stylistics.			
Unit - V		Periods	15
<b>Listening-</b> Listening to Fragmented Texts and Filling in the Blanks. <b>Speaking-</b> Mind Mapping, Developing Coherence and Self-Expression, Making presentations, Paralinguistic and Extra linguistic Features (body language), <b>Reading-</b> Predicting content, Interpreting Reports. <b>Writing-</b> Writing Proposals, Agenda, Minutes of the Meeting. <b>Soft Skills:</b> Introduction - Change in Today's Workplace: Soft Skills as a Competitive Weapon - Antiquity of Soft Skills - Classification of Soft skills - Ability to work as a team.			
<b>Total Periods</b>			<b>75</b>
Text Books			
1.	Sumant.S,Pereira Joyce, English for Communication, Vijay Nicole Imprints Pvt.Ltd., 2014.		
2	Sokkaalingam, S.RM., The Art Of Speaking English Versatile Publishing House, 2018.		
References			
1.	Norman Whitby - Business Benchmark Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2008. , 1997.		

2.	Dutt, Rajeevan, Prakash .A Course in Communication Skills (Anna University, Coimbatore edition) :. Cambridge University Press India Pvt.Ltd, 2007.
3.	Meenakshi Raman and Sangeeta Sharma-'Technical Communication English Skills for Engineers'; Oxford University Press, 2008.
4.	S.P. Dhanavel, English and Communication Skills for Students of Science and Engineering, Orient Blackswan Pvt, Ltd, 2009.
5.	Technical English – I & II, Sonaversity, Sona College of Technology, Salem, First Edition, 2012.
<b>E-Resources</b>	
1.	<a href="http://www.kalevleataru.com/Publish/Book_Review_Who_Moved_My_Cheese.pdf">http://www.kalevleataru.com/Publish/Book_Review_Who_Moved_My_Cheese.pdf</a>
2.	<a href="http://www.bookbrowse.com/reviews/index.cfm/book_number/304/who-moved-my-cheese">http://www.bookbrowse.com/reviews/index.cfm/book_number/304/who-moved-my-cheese</a>
3.	<a href="http://www.imdb.com/title/tt0482629/plotsummary">http://www.imdb.com/title/tt0482629/plotsummary</a>



**VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN**  
(Autonomous Institution, Affiliated to Anna University, Chennai)  
Elayampalayam, Tiruchengode – 637 205



Programme	<b>B.E.</b>	Programme Code	<b>107</b>	Regulation	<b>2023</b>			
Department	Computer Science and Technology (CST)			Semester	<b>I</b>			
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
<b>U23CH202</b>	<b>CHEMISTRY LABORATORY</b>	0	0	2	1	60	40	100

<b>Course Objective</b>	The main objective of this course is to:							
	<ul style="list-style-type: none"> <li>• Gather basic simple acid-base reactions and study the mechanism of acid mixture with base.</li> <li>• Learn pH and potential of hydrogen in a sample solution.</li> <li>• Study the redox reaction through potential difference.</li> <li>• Infer iron forms complex with thiocyanate.</li> <li>• Gather knowledge on hardness producing salts and removal of hardness through estimation.</li> <li>• Collect data required for dissolved oxygen present in water sample.</li> <li>• Understand alkalinity and available chlorine present in water sample</li> </ul>							

<b>Course Outcome</b>	The students who complete this course successfully are expected to:							Knowledge Level
	<b>CO1:</b> Infer knowledge on neutralization reaction between acid, acid mixture with base and identify the concentrations.							K3
	<b>CO2:</b> Identify the concentration of sample using pH.							K3
	<b>CO3:</b> Spot the concentration of sample solution through redox reaction by potentiometric method							K4
	<b>CO4:</b> Estimate Iron by complexation reaction spectrometric ally.							K4
	<b>CO5:</b> Determine hardness and dissolved oxygen present in domestic water supply and Identify alkalinity and available chlorine present in the given sample.							K4

CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak													CO/PSO Mapping	
COs	Programme Outcomes (POs)												PSOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2
CO 1	3	3		2	2	1	1						2	2
CO 2	3	3		2	2	2	2						2	1
CO 3	3	3		2	2	1							1	2
CO 4	3	3	1	2	2	1							2	2
CO 5	2	3	1	2		2	3						2	2

<b>Course Assessment Methods</b>	
<b>Direct</b>	
1. Pre lab and Post lab Test 2. Execution of Experiment and Viva-voce 3. End semester examination	
<b>Indirect</b>	
Course - end survey	
<b>Content of the syllabus</b>	

<b>CHEMISTRY</b>		
<b>S.No.</b>	<b>Experiments</b>	<b>CO</b>
1.	Estimation of HCl using NaOH by Conductometric titration	CO1
2.	Estimation of Mixture of acid using NaOH by Conductometric titration.	CO1
3.	Estimation of Barium Chloride using Sodium Sulphate by Conductometric precipitation titration	CO1
4.	Determination of HCl using NaOH by pH metry	CO2
5.	Estimation of Ferrous iron by Potentiometric titration.	CO3
6.	Estimation of Ferric ion by Spectrophotometry	CO4
7.	Determination of Total, Temporary and Permanent hardness of water by EDTA method.	CO5
8.	Estimation of Dissolved Oxygen content in water by Winkler's method	CO5
9.	Estimation of Alkalinity in water sample.	CO5
10.	Estimation of available Chlorine in bleaching powder.	CO5
<b>Total Periods</b>		<b>30</b>
<b>Lab Manual</b>		
1.	Chemistry laboratory I & II by Dr.A.Ravikrishnan,Sri Krishna Pub,Revised Edition-2017	
2.	Chemistry laboratory Manual by Dr.Veeraiyan, Revised Edition-2017	



<b>Programme</b>	<b>B.E.</b>	Programme Code			<b>107</b>	Regulation	<b>2023</b>		
<b>Department</b>	<b>Computer Science &amp; Technology</b>				Semester			<b>II</b>	
<b>Course Code</b>	<b>Course Name</b>	Periods Per Week			Credit	Maximum Marks			
		L	T	P	C	CA	ESE	Total	
<b>U23GE204</b>	<b>Engineering Practices Laboratory</b>	0	0	3	1	60	40	100	

<b>Course Objective</b>	The students should made to
	<ul style="list-style-type: none"> <li>• Know the plumbing line assemblies.</li> <li>• Weld lap joint, butt joint and T-joint.</li> <li>• Learn the assembling and dismantling methodology of home appliances.</li> <li>• Learn the resistor value identification through colors coated on resistor.</li> <li>• Learn the basics of signal generation in CRO.</li> <li>• Learn the soldering techniques in PCB board for designing the projects.</li> </ul>

<b>Course Outcome</b>	At the end of the course, the student should be able to,	Knowledge Level
	<b>CO1:</b> Perform basic machining operations and finish the job to the requirements and quantify the accuracy.	K2
	<b>2:</b> Make various joints such as cross lap joint and Tee lap joint in the carpentry.	K2
	<b>CO3:</b> Understand the basics of house wiring techniques and the measurements of basic electrical quantities.	K2
	<b>4:</b> Understand the resistor value identification through colors coated on resistor.	K2
	<b>5:</b> Understand the soldering techniques in PCB board for designing the projects.	K2



**Pre-requisites-**

<b>CO / PO Mapping</b> (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak													<b>CO/PSO Mapping</b>	
Programme Outcomes (POs)													PSOs	
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	3	2	3	2	2	-	-	-	2	-	-	-	2	2
CO2	3	2	3	2	2	-	-	-	2	-	-	-	3	2
CO3	3	2	2	3	2	2	-	-	2	-	-	-	2	-
CO4	3	2	2	3	2	2	-	-	2	-	-	-	2	-
CO5	3	2	3	3	2	2	-	-	2	-	-	-	3	3

**Course Assessment Methods Direct**

<b>Direct</b>
1.Pre lab and Post lab test 2. Record mark 3.End- Semester Examinations
<b>Indirect</b>
1.Course - end survey

<b>Content of the syllabus</b>	
<b>GROUP A</b>	
<b>(CIVIL &amp; MECHANICAL ENGINEERING)</b>	
<b>(CIVIL ENGINEERING PRACTICE)</b>	
<b>1.Plumbing :</b> a) Single Tap G.I/ PVC pipe connection involving the fitting like valves, taps & bends. b) Two Tap G.I/ PVC pipe connection involving the fitting like valves, taps & bends.	CO2
<b>2.Carpentry:</b> a) To make a Cross Lap Joint from the given work piece. b) Preparation of ‘ T ’ Lap Joint from the given work piece.	CO2
<b>MECHANICAL ENGINEERING PRACTICE</b>	
<b>3.Welding:</b> a) To join the metal plates by a Butt Joint in arc welding machine. b) To join the metal plates by a Lap Joint in arc welding machine.	CO1
<b>4.Basic Machining:</b> a) To perform simple facing & turning operation. b) To perform of step turning operation.	CO1
<b>5.Sheet Metal Work:</b> a) To make a rectangular tray from the given sheet metal. b) To make a basket from the given sheet metal.	CO1
<b>6.Special Laboratory</b> a) Study of 3D Printing machine and its applications. b) Study of CO <sub>2</sub> Laser engraving & cutting machine and its applications. c) Study of Wood routing machine and its applications.	CO1
<b>GROUP B</b>	
<b>(ELECTRICAL &amp; ELECTRONICS ENGINEERING)</b>	
<b>ELECTRICAL ENGINEERING PRACTICE</b>	
1. Residential house wiring and stair case wiring using switches, fuse, indicator & lamp.	CO3
2. LED lamp assembly.	CO3
3. Measurement of voltage, current, power & power factor using R-Load.	CO3
4. Measurement of energy using single phase meter.	CO3
5. Measurement of resistance to earth of electrical equipment.	CO3
6. Measurement of illumination in different lamps	CO3
7. Study of batteries.	CO3
<b>ELECTRONICS ENGINEERING PRACTICE</b>	
1. Study of Electronic components and equipments –Resistor, color coding, Inductor, Capacitor and CRO	CO4
2. Logic gates AND, OR, NOR, NAND and NOT.	CO4
3. Generation of Clock Signal.	CO4
4. Soldering practice – Components Devices and Circuits – Using general purpose PCB	CO5
<b>Total Periods</b>	<b>45</b>
<b>Reference Book :</b>	
<b>R1.</b> Dr.P.Kannan, Mr.T.Satheeskumar & Mr.K.Rajasekar, “Engineering Practices Laboratory” Manual. First Edition, 2017.	
<b>R2.</b> Mr.T.Jeyapooan, Mr.M.Saravana Pandian, “Engineering Practices Lab” Manual, Vikas Publishing House Pvt Ltd, 2017.	

	<b>VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN</b> (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205																																																																																								
Programme	B.E.		Programme Code					107	Regulation	2023																																																																															
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							L	T	P	C	CA	ESE	Total																																																																												
U23MCFY2	Indian Constitution						2	0	0	0	100	NA	100																																																																												
Course Objective	The main objective of this course is to: <ul style="list-style-type: none"> <li>To know about the basic structure of Indian constitution.</li> <li>To know about our Central government Executive system of India</li> <li>To know about our State government Executive system of India</li> <li>To learn the Election system, Amendments and Emergency Provisions given by the constitution.</li> <li>To know about the Special Constitutional Provisions in India</li> </ul>																																																																																								
	Course Outcome	<ul style="list-style-type: none"> <li>At the end of the course, the student should be able to,</li> </ul>										Knowledge level																																																																													
<ul style="list-style-type: none"> <li>Understand the functions of the Indian government</li> </ul>										K1																																																																															
<ul style="list-style-type: none"> <li>Know about our Central Government, political structure &amp; codes, procedures</li> </ul>										K1																																																																															
<ul style="list-style-type: none"> <li>Understand our State Executive &amp; Elections system of India.</li> </ul>										K1																																																																															
<ul style="list-style-type: none"> <li>Remember the Election system, Amendments and Emergency Provisions given by the constitution.</li> </ul>										K2																																																																															
<ul style="list-style-type: none"> <li>Understand our Special Constitutional Provisions in India</li> </ul>										K2																																																																															
Pre-requisites-																																																																																									
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<b>Content of the syllabus</b>																																																																																									
<b>Unit – I</b>		<b>INTRODUCTION</b>								Periods	<b>6</b>																																																																														
Historical Background – Constituent Assembly of India – Fundamental Rights – Citizenship – Constitutional Remedies for citizens																																																																																									

<b>Unit - II</b>	<b>STRUCTURE AND FUNCTION OF CENTRAL</b>	Periods	<b>6</b>
Union Government – Structures of the Union Government and Functions – President – VicePresident – Prime Minister – Cabinet – Parliament – Supreme Court of India			
<b>Unit – III</b>	<b>STRUCTURE AND FUCTION OF STATE</b>	Periods	<b>6</b>
State Government – Structure and Functions – Governor – Chief Minister – Cabinet – StateLegislature – Judicial System in States – High Courts and other Subordinate Courts			
<b>Unit - IV</b>	<b>ELECTION PROVISIONS, EMERGENCY PROVISIONS, AMENDMENT OF THE CONSTITUTION</b>	Periods	<b>6</b>
Election Commission of India-composition, powers and functions and electoral process. Types of emergency-grounds, procedure, duration and effects. Amendment of the constitution- meaning, procedure and limitations.			
<b>Unit – V</b>	<b>SPECIAL CONSTITUTIONAL PROVISIONS</b>	Periods	<b>6</b>
Directive Principles of State Policy: Importance and its relevance. Special Constitutional Provisions for Schedule Castes, Schedule Tribes & Other Backward Classes, Women & Children.			
<b>Total Periods</b>			<b>30</b>
<b>Text Books</b>			
1.	Durga Das Basu, “Introduction to the Constitution of India “, Prentice Hall of India, NewDelhi		
<b>References</b>			
1.	R.C.Agarwal, (1997) “Indian Political System”, S.Chand and Company, New Delhi		
2.	Indian polity, M.Laksmikanth,Tatamchrawhill publications		
<b>E-Resources</b>			
1.	<a href="https://mhrd.gov.in/">https://mhrd.gov.in/</a>		
2.	<a href="https://niti.gov.in/content/niti-aayog-library">https://niti.gov.in/content/niti-aayog-library</a>		
3.	www.drishtias.com/		