



VIVEKANANDHA
COLLEGE OF ENGINEERING FOR WOMEN

(An Autonomous Institution Affiliated to Anna University-Chennai
Approved by AICTE – Accredited by NAAC and ISO 9001:2015 Certified)
Elayampalayam , Tiruchengode – 637 205, Namakkal District, Tamilnadu.



CURRICULUM & SYLLABI – 2023

FOR

UNDER GRADUATE(UG)

B.TECH. – INFORMATION TECHNOLOGY

REGULATION 2023

(After 18th BoS)

CHOICE BASED CREDIT SYSTEM

Revision - 1

**(Applicable to the students admitted from the academic year
2025-2026 onwards)**



**VIVEKANANDHA COLLEGE OF ENGINEERING FOR
WOMEN
(Autonomous)**



B.TECH. INFORMATION 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

Providing quality education to transform students into technically competent skilled women to excel in IT profession, innovation and entrepreneurship

DEPARTMENT MISSION

- To empower knowledge on cutting-edge technologies in the field of Information Technology to develop innovative solutions for real-world problems
- To create a platform for innovation, research and new technology development
- To inculcate ethical practices, life-long learning and sense of societal responsibilities to support the career and personal development of the learner

Signature of the BoS Chairman

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1: Graduates will have knowledge in various programming languages and continuous up-gradation in emerging IT technologies.

PEO 2: Graduates will be able to analyze and find solutions for current industrial needs.

PEO 3: Graduates will contribute to the society by their ethical behavior and effective teamwork

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1	Optimal Solution : Graduates will be able to develop computer applications for the real life problem using suitable programming platform
PSO2	Successful Career : Graduates will be able to think innovatively and work on multi-disciplinary areas

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



4. Health and safety, and the cultural, societal, and environmental considerations
5. **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.
6. **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.
7. **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.
8. **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.
9. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
10. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
11. **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.
12. **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.
13. **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											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
I	√	√	√		√	√		√	√			
II		√		√			√	√	√	√		
III		√	√		√		√		√	√	√	√

CURRICULUM BREAKDOWN STRUCTURE (Applicable to the Students admitted from the Academic Year 2025 - 2026)										
Summary of Credit Distribution										
Category	Semester								Total No. of Credits	Curriculum Content (% of total number of credits of the program)
	SEM1	SEM 2	SEM3	SEM4	SEM5	SEM6	SEM7	SEM8		
HSMC	4	4	-	-	-	-	-	-	8	5.0%
BSC	8	8	4	4	-	-	-	-	24	14.9%
ESC	7	8	-	-	-	-	-	-	15	9.3%
PCC	-	-	14	14	15	16	7	-	66	40.9%
PEC	-	-	-	-	3	3	9	-	15	9.3%
OEC	-	-	-	-	3	3	3	-	9	5.6%
EEC	1	-	2	2	1	1	3	10	20	12.4%
MC	-	-	-	-	-	1	-	-	1	0.6%
CTC	-	-	-	1	1	1	-	-	3	1.9%
Semester wise total	20	20	20	21	23	25	22	10	161	100%



	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B. Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY			Semester	I				
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
THEORY									
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 ^{\$}	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
THEORY INTEGRATED WITH PRACTICAL									
U23GE101	Engineering Graphics ^{\$}	ESC	2	0	3	3	50	50	100
PRACTICAL									
U23PH102	Physics Laboratory ^{\$}	BSC	0	0	3	1	60	40	100
U23CS102	Programming for Problem Solving Laboratory*	ESC	0	0	3	1	60	40	100
MANDATORY COURSES									
-	Induction Programme*	3 Weeks				0	-	-	-
U23MCFY1	Environmental Science and Engineering ^{\$}	MC	2	0	0	0	100	-	100
Total						19	470	430	900

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.

*Common for all branches

^{\$} Common for AI & DS, CSE & IT

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205									
	Programme	B. Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY			Semester		II				
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)										
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks			
			L	T	P		C	C A	ESE	Total
THEORY										
U23MA202	Complex Analysis and Ordinary Differential Equations *	BSC	3	1	0	4	40	60	100	
U23CH201	Engineering Chemistry \$	BSC	3	0	0	3	40	60	100	
U23EE201	Basic Electrical and Electronics Engineering #	ESC	3	0	0	3	40	60	100	
U23TA202	தமிழரும் தொழில்நுட்பமும் / Tamil and Technology *	HSMC	1	0	0	1	40	60	100	
THEORY INTEGRATED WITH PRACTICAL										
U23CS204	Object Oriented Programming @	ESC	3	0	2	4	50	50	100	
U23EN202	Professional Communication *	HSMC	2	0	3	3	50	50	100	
PRACTICAL INTEGRATED WITH THEORY										
U23GE102	Design Thinking \$	EEC	1	0	2	1	50	50	100	
PRACTICAL										
U23CH202	Chemistry Laboratory \$	BSC	0	0	3	1	60	40	100	
U23GE204	Engineering Practices Laboratory \$	ESC	0	0	3	1	60	40	100	
MANDATORY COURSES										
U23MCFY2	Indian Constitution and Universal Human values\$	MC	2	0	0	0	100	-	100	
Total						21	530	470	1000	




BSC -Basic Science Courses, ESC- Engineering Science Courses, MC - Mandatory courses, HSMC-Humanities and Social Sciences including Management courses, CA- Continuous Assessment, ESE - End Semester Examination.

*Common for all branches

\$ Common for AI & DS, CSE, IT & ME – CSE (Integrated)

#Common for AI & DS, AI & ML, CSE, IT, BT, CIVIL, AGRI & ME – CSE (Integrated)

@Common for AI & DS, AI & ML, CSE, IT & ME – CSE (Integrated)



	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205				 				
Programme	B.E. / B. Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY			Semester	III				
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)									
Course Code	Course Name	Category	Periods/Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
THEORY									
U23MA304	Discrete Mathematics ^{\$}	BSC	3	1	0	4	40	60	100
U23IT301	Digital Systems Design	PCC	3	0	0	3	40	60	100
U23CS305	Computer Organization and Architecture ^{\$}	PCC	3	0	0	3	40	60	100
U23IT302	Data Structures [#]	PCC	3	0	0	3	40	60	100
U23CTCP1	Verbal, Quantitative Aptitude and Reasoning - I	EEC	2	0	0	1	40	60	100
THEORY INTEGRATED WITH PRACTICAL									
U23CS306	Python Programming and Frameworks [*]	PCC	3	0	2	4	50	50	100
PRACTICAL									
U23IT303	Data Structures Laboratory [#]	PCC	0	0	2	1	60	40	100
U23CTCP2	Personality Development	EEC	1	0	2	1	60	40	100
Total Credits						20	370	430	800

BSC-Basic Science Courses, ESC-Engineering Science Courses, MC-Mandatory Courses, HSMC- Humanities and Social Sciences including Management courses, CA-Continuous Assessment, ESE - End Semester Examination.

[#]Common for, CSE, EEE, ECE, IT, BME & AIDS

^{\$} Common CSE , IT , CST & AIDS



* Common CSE , IT , CST

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B.E. / B. Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY			Semester	IV				
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)									
Course Code	Course Name	Category	Periods/Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U23MA405	Probability and Statistics ^{\$}	BSC	3	1	0	4	40	60	100
U23IT405	Agile Software Engineering	PCC	3	0	0	3	40	60	100
U23IT407	Database Systems	PCC	3	0	0	3	40	60	100
U23CS408	Design and Analysis of Algorithms*	PCC	3	0	0	3	40	60	100
	Additional Language	EEC	3	0	0	2	40	60	100
THEORY INTEGRATED WITH PRACTICAL									
U23CT407	Operating Systems ^{\$}	PCC	3	0	2	4	50	50	100
PRACTICAL									
U23IT408	Database Systems Laboratory	PCC	0	0	2	1	60	40	100
CAREER TRACK COURSES									
	Career Track Course – I	CTC	2/0	0	0/2	1	40/60	60 / 40	100
Total Credits						21	350 / 370	450 / 430	800

CA - Continuous Assessment, ESE - End Semester Examination, BSC - Basic Science Courses, PCC – Professional Core Courses, EEC- Employability Enhancement Courses, CTC – Career Track Course

^{\$} Common for CSE, IT , CST & AIDS



* Common for CSE, IT

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205									
Programme	B.E. /B. Tech.	Programme Code	104	Regulation	2023					
Department	INFORMATION TECHNOLOGY			Semester	V					
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)										
Course Code	Course Name	Category	Periods/Week			Credit	Maximum Marks			
			L	T	P	C	CA	ESE	Total	
THEORY										
U23IT511	Automata Theory and Compiler Design	PCC	3	1	0	4	40	60	100	
U23IT512	Artificial Intelligence *	PCC	3	0	0	3	40	60	100	
U23CS514	Microprocessor and Microcontroller*	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	
THEORY INTEGRATED WITH PRACTICAL										
U23CS512	Data Communication and Networks *	PCC	3	0	0	4	40	60	100	
PRACTICAL										
U23CS516	Microprocessor and Microcontroller laboratory*	PCC	0	0	2	1	60	40	100	
U23IT513	Mini Project - I	EEC	0	0	2	1	100	-	100	
CAREER TRACK COURSES										
-	Career Track Course - II	CTC	2/0	0	0/2	1	40/ 60	60/ 40	100	
Total						23	440/ 460	460/ 440	900	

CA - Continuous Assessment, ESE - End Semester Examination, PCC – Professional Core Courses, PEC – Professional Elective Courses, OEC – Open Elective Courses, EEC- Employability Enhancement Courses, CTC – Career Track Course

\$ Common for CSE & IT




* Common for CSE & IT

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B.E. / B.Tech.	Programme Code	104	Regulation		2023			
Department	INFORMATION TECHNOLOGY		Semester			VI			
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)									
Course Code	Course Name	Category	Periods/Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U23IT614	Internet Programming	PCC	3	0	0	3	40	60	100
U23IT615	Advanced Java Programming	PCC	3	0	1	4	40	60	100
U23CT616	Internet of Things*	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
THEORY INTERGRATED WITH PRACTICAL									
U23IT616	Machine Learning Essentials #	PCC	3	0	2	4	50	50	100
PRACTICAL									
U23IT617	Internet Programming Laboratory	PCC	0	0	2	1	60	40	100
U23CT620	Internet of Things Laboratory*	PCC	0	0	2	1	60	40	100
U23IT618	Mini Project - II	EEC	0	0	2	1	100	-	100
CAREER TRACK COURSES									
-	Career Track Course -III	CTC	2	0	0/2	1	40/ 60	60/ 40	100
MANDATORY COURSE									
U23IT619	Comprehensive Examination	MC	2	0	0	1	100	-	100
Total						25	610 /630	490/ 470	1100




CA - Continuous Assessment, ESE - End Semester Examination, PCC – Professional Core Courses, PEC – Professional Elective Courses, OEC – Open Elective Courses, MC- Mandatory courses, EEC- Employability Enhancement Courses, CTC –Career Track Course

Common to CSE and IT

* Common to CSE , IT & CST

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode– 637205				 19J 8081 2010 				
Programme	B.E. / B.Tech.	Programme Code	104	Regulation		2023			
Department	INFORMATION TECHNOLOGY		Semester		VII				
CURRICULUM (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
THEORY									
U23IT720	Cryptography and Network Security	PCC	3	0	0	3	40	60	100
U23IT721	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
-	Professional Elective - V	PEC	3	0	0	3	40	60	100
-	Open Elective - III	OEC	3	0	0	3	40	60	100
PRACTICAL									
U23IT722	Security Laboratory	PCC	0	0	2	1	60	40	100
U23IT723	Internship and Project Phase – I	EEC	0	0	6	3	60	40	100
Total						22	340	460	800

CA - Continuous Assessment, ESE - End Semester Examination, PCC – Professional Core Courses, PEC – Professional Elective Courses, OEC – Open Elective Courses, EEC - Employability Enhancement Courses

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode– 637205				 ISO 9001:2015 				
Programme	B.E. / B.Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY			Semester	VIII				
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)									
Course Code	Course Name	Category	Periods/Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
PRACTICAL									
U23IT821	Project Phase - II	EEC	0	0	20	10	60	40	100
Total						10	60	40	100

Cumulative Credits: 161

CA - Continuous Assessment, ESE - End Semester Examination, EEC- Employability Enhancement Courses.

Type of Courses

PCC	:	Professional Core Courses
PEC	:	Professional Elective Courses
OEC	:	Open Elective Courses
EEC	:	Employability Enhancement Course
MC	:	Mandatory Courses
HSMC	:	Humanities, Sciences and Management Courses
ESC	:	Engineering Sciences Courses
BSC	:	Basic Sciences Courses
CTC	:	Career Track Courses

Additional Language Courses										
Sem	Course Code	Course Name	Category	Periods/Week			Credit	Maximum Marks		
				L	T	P		C	CA	ESE
IV	U23ADL01	French	EEC	2	0	0	1	100	-	100
IV	U23ADL02	German	EEC	2	0	0	1	100	-	100
IV	U23ADL03	Japanese	EEC	2	0	0	1	100	-	100

Career Track Courses										
Sem	Course Code	Course Name	Category	Periods/Week			Credit	Maximum Marks		
				L	T	P		C	CA	ESE
Track 1 - Entrepreneurship										
IV	U23CTCE1	Entrepreneurial Mindset and Business Model Canvas	CTC	-	-	2	1	60	40	100
V	U23CTCE2	Product Innovation, Commercialization and Finance	CTC	2	-	-	1	40	60	100
VI	U23CTCE3	Intellectual Property Rights	CTC	2	-	-	1	40	60	100
Track 2 - Competitive Examination										
IV	U23CTCP3	Verbal , Quantitative Aptitude and Reasoning -II	CTC	2	-	-	1	40	60	100
V	U23CTCG1	History & Culture of India and Indian Geography	CTC	2	-	-	1	40	60	100
VI	U23CTCG2	Indian economy and Freedom struggle in India & Tamil Nadu	CTC	2	-	-	1	40	60	100
Track 3 - Higher Studies										
IV	U23CTCP3	Verbal, Quantitative Aptitude and Reasoning -II	CTC	2	-	-	1	40	60	100
V	U23CTCH1	Higher Studies in Abroad & India	CTC	2	-	-	1	40	60	100
VI	U23CTCH2	Social Networking for Higher Studies	CTC	2	-	-	1	40	60	100
Track 4 - Placement										
IV	U23CTCP3	Verbal , Quantitative Aptitude and Reasoning -II	CTC	2	-	-	1	40	60	100
V	U23CTCP4	Leveraging Arithmetic and Codes Snippet	CTC	2	-	-	1	40	60	100
VI	U23CTCP5	Integrated Reasoning and Pseudo Code	CTC	2	-	-	1	40	60	100



PROFESSIONAL ELECTIVE COURSES: VERTICALS

Vertical I Data Science	Vertical II Artificial Intelligence and Machine Learning	Vertical III Cyber Security	Vertical IV IoT & Cloud	Vertical V Creative Media	Vertical VI Emerging Technologies
Data Visualization	Computer Vision	Information Security	Cloud Computing	Pattern Recognition	Robotic Process Automation
Data Warehousing and Data Mining	Knowledge Engineering	Cyber Security	Distributed Systems	Image Processing	Quantum Computing
Big Data Analytics	Natural Language Processing	Web Application Attacks	Smart Sensor Technologies	Multimedia and Animation	Cognitive Science
Exploratory Data Analytics	Neuro fuzzy and Genetic Programming	Cyber Law and Ethics	Software Defined Networks	Game Theory	3D Printing and Design
Predictive Analytics	Knowledge based Decision Support Systems	Blockchain Technology	Parallel Programming	Digital Marketing	Generative AI
Image and Video Analytics	AI for Industrial applications	Biometric System	Virtualization	AR and VR	Prompt Engineering
Recommender Systems	Healthcare Analysis	Ethical Hacking	Edge and Fog Computing	Video Creation and Editing	MERN Stack Development
Storage Technologies	Design of AI Products	Security and Privacy in cloud	Amazon Web Services	Multimedia Data Compression and Storage	UI / UX Design
Data Science	Deep Learning	Cyber Forensics and Incident Response	Industry 4.0	Visual Effects	Devops



Registration of Professional Elective Courses from Verticals: Professional Elective Courses are listed in groups called verticals that represent a particular area of specialization / diversified group. Students are permitted to choose all the Professional Electives from a particular vertical or from different verticals. Further, only one Professional Elective course shall be chosen in a semester horizontally (row-wise). However, two courses are permitted from the same row, provided one course is enrolled in Semester V to VIII. The registration of courses for B.E./B.Tech (Honours) or Minor degree shall be done from Semester V to VIII. The procedure for registration of courses explained above shall be followed for the courses of B.E/B.Tech (Honours) or Minor degree also.

PROFESSIONAL ELECTIVE COURSES



VERTICAL I : Data Science

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205									
Programme	B.Tech.	Programme Code	104	Regulation		2023				
Department	INFORMATION TECHNOLOGY			Semester		-				
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)										
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks			
			L	T	P		C	CA	ESE	Total
THEORY										
U23ITV11	Data Visualization	PEC	3	0	0	3	40	60	100	
U23CTV11	Data Warehousing and Data Mining	PEC	3	0	0	3	40	60	100	
U23CTV12	Big Data Analytics	PEC	3	0	0	3	40	60	100	
U23CTV13	Exploratory Data Analytics	PEC	3	0	0	3	40	60	100	
U23CTV15	Predictive Analytics	PEC	3	0	0	3	40	60	100	
U23CTV16	Image and Video Analytics	PEC	3	0	0	3	40	60	100	
U23CTV17	Recommender Systems	PEC	3	0	0	3	40	60	100	
U23CTV18	Storage Technologies	PEC	3	0	0	3	40	60	100	
U23ITV12	Data Science	PEC	3	0	0	3	40	60	100	



VERTICAL II : Artificial Intelligence and Machine Learning

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205									
Programme	B.Tech.	Programme Code	104	Regulation	2023					
Department	INFORMATION TECHNOLOGY			Semester			-			
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)										
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks			
			L	T	P		C	CA	ESE	Total
THEORY										
U23CTV21	Computer Vision	PEC	3	0	0	3	40	60	100	
U23CTV22	Knowledge Engineering	PEC	3	0	0	3	40	60	100	
U23CTV23	Natural Language Processing	PEC	3	0	0	3	40	60	100	
U23CTV25	Neuro fuzzy and Genetic Programming	PEC	3	0	0	3	40	60	100	
U23CTV26	Knowledge based Decision Support Systems	PEC	3	0	0	3	40	60	100	
U23CTV27	AI for Industrial applications	PEC	3	0	0	3	40	60	100	
U23CTV28	Healthcare Analysis	PEC	3	0	0	3	40	60	100	
U23CTV29	Design of AI Products	PEC	3	0	0	3	40	60	100	
U23ITV21	Deep Learning	PEC	3	0	0	3	40	60	100	



VERTICAL III : Cyber Security

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B.Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY			Semester	-				
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
THEORY									
U23CSV31	Information Security	PEC	3	0	0	3	40	60	100
U23CSV32	Cyber Security	PEC	3	0	0	3	40	60	100
U23ITV31	Web Application Attacks	PEC	3	0	0	3	40	60	100
U23CSV34	Cyber Law and Ethics	PEC	3	0	0	3	40	60	100
U23CSV35	Blockchain Technology	PEC	3	0	0	3	40	60	100
U23ITV32	Biometric System	PEC	3	0	0	3	40	60	100
U23CSV37	Ethical Hacking	PEC	3	0	0	3	40	60	100
U23CSV38	Security and Privacy in cloud	PEC	3	0	0	3	40	60	100
U23ITV33	Cyber Forensics and Incident Response	PEC	3	0	0	3	40	60	100



VERTICAL IV : IoT & Cloud

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B.Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY			Semester		-			
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
THEORY									
U23ITV41	Cloud Computing	PEC	3	0	0	3	40	60	100
U23ITV42	Distributed Systems	PEC	3	0	0	3	40	60	100
U23ITV43	Smart Sensor Technologies	PEC	3	0	0	3	40	60	100
U23ITV44	Software Defined Networks	PEC	3	0	0	3	40	60	100
U23ITV45	Parallel Programming	PEC	3	0	0	3	40	60	100
U23ITV46	Virtualization	PEC	3	0	0	3	40	60	100
U23ITV47	Edge and Fog Computing	PEC	3	0	0	3	40	60	100
U23ITV48	Amazon Web Services	PEC	3	0	0	3	40	60	100
U23ITV49	Industry 4.0	PEC	3	0	0	3	40	60	100

VERTICAL V : Creative Media

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B.Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY		Semester		-				
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
THEORY									
U23ITV51	Pattern Recognition	PEC	3	0	0	3	40	60	100
U23ITV52	Image Processing	PEC	3	0	0	3	40	60	100
U23ITV53	Multimedia and Animation	PEC	3	0	0	3	40	60	100
U23ITV54	Game Theory	PEC	3	0	0	3	40	60	100
U23ITV55	Digital Marketing	PEC	3	0	0	3	40	60	100
U23ITV56	AR and VR	PEC	3	0	0	3	40	60	100
U23ITV57	Video Creation and Editing	PEC	3	0	0	3	40	60	100
U23ITV58	Multimedia Data Compression and Storage	PEC	3	0	0	3	40	60	100
U23ITV59	Visual Effects	PEC	3	0	0	3	40	60	100

VERTICAL VI : Emerging Technologies

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B.Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY		Semester		-				
CURRICULUM (Applicable to the students admitted from the academic year 2025-2026 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U23CSV61	Robotic Process Automation	PEC	3	0	0	3	40	60	100
U23CSV62	Quantum Computing	PEC	3	0	0	3	40	60	100
U23CSV63	Cognitive Science	PEC	3	0	0	3	40	60	100
U23CSV64	3D Printing and Design	PEC	3	0	0	3	40	60	100
U23CSV65	Generative AI	PEC	3	0	0	3	40	60	100
U23ITV61	Prompt Engineering	PEC	2	0	2	3	40	60	100
U23ITV67	MERN Stack Development	PEC	3	0	0	3	40	60	100
U23ITV61	UI / UX Design	PEC	3	0	0	3	40	60	100
U23CTV69	Devops	PEC	3	0	0	3	40	60	100





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DEPARTMENT OF INFORMATION TECHNOLOGY
MINOR DEGREE - IoT & Cloud

Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
THEORY									
U23ITV41	Cloud Computing	PEC	3	0	0	3	40	60	100
U23ITV42	Distributed Systems	PEC	3	0	0	3	40	60	100
U23ITV43	Smart Sensor Technologies	PEC	3	0	0	3	40	60	100
U23ITV44	Software Defined Networks	PEC	3	0	0	3	40	60	100
U23ITV45	Parallel Programming	PEC	3	0	0	3	40	60	100
U23ITV46	Virtualization	PEC	3	0	0	3	40	60	100
U23ITV47	Edge and Fog Computing	PEC	3	0	0	3	40	60	100
U23ITV48	Amazon Web Services	PEC	3	0	0	3	40	60	100
U23ITV49	Industry 4.0	PEC	3	0	0	3	40	60	100

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B.E. / B.Tech.	Programme Code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY			Semester	-				
CURRICULUM (Applicable to the students admitted from the academic year 2025- 2026 onwards)									
LIST OF OPEN ELECTIVES									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P		C	CA	ESE
THEORY									
U23ITOE1	IT Essentials	OEC	3	0	0	3	40	60	100
U23ITOE2	Machine Learning	OEC	3	0	0	3	40	60	100
U23ITOE3	Data Science and Analytics	OEC	3	0	0	3	40	60	100
U23ITOE4	Cyber Threats Intelligence	OEC	3	0	0	3	40	60	100
U23ITOE5	Offensive Security Essentials	OEC	3	0	0	3	40	60	100
U23ITOE6	Object Oriented Programming	OEC	3	0	0	3	40	60	100
U23ITOE7	Creative UX/UI Design	OEC	3	0	0	3	40	60	100

SEMESTER - I



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
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Programme	B.TECH	Programme Code	104	Regulation	2023			
Department	INFORMATION TECHNOLOGY			Semester	I			
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U23MA101	Matrices and Calculus	3	1	0	4	40	60	100
Course Objective	The Main Objective of the course is							
	<ul style="list-style-type: none"> To develop the use of matrix algebra techniques that is needed by engineers for practical applications. To familiarize the students with differential calculus. To familiarize the student with functions of several variables. This is needed in many branches of engineering. To make the students understand various techniques of integration. To acquaint the student with mathematical tools needed in evaluating multiple integrals and their applications. 							
	At the end of the course the students will be able to						Knowledge level	
	CO1: Use the matrix algebra methods for solving practical problems.						K3	
	CO2: Apply differential calculus tools in solving various application problems.						K4	
CO3: Able to use differential calculus ideas on several variable functions.						K5		
CO4: Apply different methods of integration in solving practical problems.						K5		
CO5: Apply multiple integral ideas in solving areas, volumes and other practical problems.						K3		
Pre-requisites	-							



CO / PO Mapping													CO/PSO Mapping	
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
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	PSO 1	PSO 2
CO 1	3	2	2	1									2	
CO 2	3	3	2	1									2	
CO 3	3	1	2	1									2	
CO 4	3	2	2	1									2	
CO 5	3	1	1	1									2	

Course Assessment Methods



Direct
1. Continuous Assessment Test I, II & III
2. Assignment.
3. End-Semester examinations
Indirect

1. Course - end survey



Content of the syllabus			
Unit – I	MATRICES	Periods	9+3
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.			
Unit - II	DIFFERENTIAL CALCULUS	Periods	9+3
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.			
Unit – III	FUNCTIONS OF SEVERAL VARIABLES	Periods	9+3
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.			
Unit - IV	INTEGRAL CALCULUS	Periods	9+3
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 $\int_0^{\frac{\pi}{2}} \cos^n x dx$, $\int_0^{\frac{\pi}{2}} \sin^n x dx$.			
Unit - V	MUTIPLE INTEGRALS	Periods	9+3
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.			
Total Periods			45+15=60
Text Books			
1.	Stewart, J. Calculus: Early Transcendentals (8 th Edition), Cengage Learning, 2015.		
2.	Grewal B.S., “Higher Engineering Mathematics”, Khanna Publishers, New Delhi, 43rd Edition, 2014.		
References			
1.	Reyszig E, Advanced Engineering Mathematics (10 th Edition), John Wiley (2015).		
2.	Ali. 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)		
E-Resources			
1.	https://freevideolectures.com > All Courses > Calculus > UCLA		
2.	www.learnerstv.com /Free-engineering-Video-lectures		
3.	www.nptel.ac.in		

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205													
Programme	B.Tech.	Programme Code			104	Regulation		2023						
Department	INFORMATION TECHNOLOGY				Semester		I							
Course Code	Course Name		Periods Per Week			Credit	Maximum Marks							
			L	T	P		C	CA	ESE	Total				
U23EN101	English for Communication		3	0	0	3	40	60	100					
Course Objective	<p>The main objective of this course is to:</p> <ul style="list-style-type: none"> • Improve the communicative ability of learners. • Develop learners read widely in order to practice writing. • Enrich vocabulary and strengthen grammatical understanding. • Assist students in the development of intellectual flexibility, creativity, and cultural literacy so that they may engage in life-long learning. • Learn to apply the language features of academic and professional writing and speaking. 													
Course Outcome	At the end of the course, the student should be able to,								Knowledge Level					
	CO1: Use appropriate vocabulary in a professional context.								K1					
	CO2: Write appropriately based on the knowledge gained through reading of a variety of materials.								K1					
	CO3: Use grammatically correct language.								K2					
	CO4: Read and infer meanings of technical texts.								K2					
CO5: Comprehend and retain understanding of context and syntax through reading.								K3						
CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
Cos	Programme Outcomes (POs)											CO/PSO Mapping		
	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						2			3	3		3		1
CO 2						2			3	3		3		1
CO 3						2			3	3		3		1
CO 4						2			3	3		3		1
CO 5						2			3	3		3		1
Pre-requisites	Nil													
Course Assessment Methods														
Direct														
<ol style="list-style-type: none"> 1. Continuous Assessment Test I, II & III 2. Assignment 3. End-Semester examinations 														
Indirect														
<ol style="list-style-type: none"> 1. Course - end survey 														

Content of the syllabus			
Unit – I		Periods	9
Listening -Introduction to Different Types of Listening, Listening to Casual Conversations, Speaking -Introduction to develop the Art of Speaking, Giving Self Introduction, Reading –Understanding the Basics of Reading Skills, Reading Instructions and Technical Manuals, Writing - Introduction to writing strategies, Writing Definitions, Focus on Language - -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).			
Unit – II		Periods	9
Listening - Listening to lectures, listening to description of equipment, Speaking - Strategies for Developing Conversational Skills, Short Conversations through Role Play Activities, Reading – Reading Comprehension, Reading e-mails, Reading Headlines, Predicting the Content, Writing - Paragraph writing, Essay writing, Note making, Writing Descriptions, Focus on Language –Collocations, One word substitution, Subject - verb agreement			
Unit – III		Periods	9
Listening - Listening to different kinds of interviews (Face - to - face, radio, TV and telephone interviews), Speaking -Describing an Object, Asking Questions, Participating in Discussions Reading – Intensive reading, Reading passages for gist. Writing - Writing short& lengthy e-mails with emphasis on Brevity, Clarity, Coherence and Cohesion), Focus on Language –Sequential Connectives, Impersonal Passive			
Unit – IV		Periods	9
Listening -Note Taking, Speaking - Improving Fluency through Narration. Reading –Reading passages for specific information- Phone messages, Reading and Transferring Information. Writing - Effective writing strategies, Informal writing, Writing a Memo, Focus on Language – Cause and Effect, Conditional Statements (if - clauses and types), Usage of Modal Verbs.			
Unit – V		Periods	9
Listening - Listening to understand Modulation, Listening to Welcome Speeches, Speaking - Delivering Welcome Address, Understanding Segmental and Supra-segmental Features-Practicing Stress, Pause and Intonation, Reading – Reading for a purpose, Reading Business Documents, Interpreting Charts and Graphs. Writing - Describing a Process. Focus on Language -Synonyms and Antonyms, Common Errors in English.			
Total Periods			45
Text Books			
1.	Faculty from the Department of English, English for Communication, Cengage Learning India Pvt. Ltd., 2025.		
References			
1.	Dr. Padma Ravindran, Poorvadevi, M. Y. Abdur Razack- English for life, English for work, students Book, Ebek language laboratory pvt ltd, 2021.		
2.	Dutt Rajeevan, Prakash. A Course in Communication Skill (Anna University, Coimbatore edition): Cambridge University Press India Pvt.Ltd, 2020.		
3.	S.P. Dhanavel, English and Communication Skills for Students of Science and Engineering, Orient Blackswan Pvt, Ltd, 2020.		
4.	Technical English – I & II, Sona iversity, Sona College of Technology, Salem, First Edition, 2022.		
5.	Meenakshmi Raman and Sangeeta Sharma- ‘Technical communication English Skills for Engineers; oxford University Press, 2024.		
E-Resources			
1.	http://www.sparknotes.com/lit/the-alchemist/summary.html		
2.	https://www.stephencovey.com/7habits/7habits.php		
3.	http://en.wikipedia.org/wiki/The_Seven_Habits_of_Highly_Effective_People		

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Programme	B.Tech.		Programme Code				104		Regulation		2023			
Department	Information Technology						Semester		I					
Course Code	Course Name		Periods Per Week			Credit	Maximum Marks							
			L	T	P	C	CA	ESE	Total					
U23PH101	ENGINEERING PHYSICS		3	0	0	3	40	60	100					
Course Objective	The student should be made to, <ul style="list-style-type: none"> • understand the basic concepts of properties of matter • gain knowledge about the conduction properties of metals • identify the different types of crystal structures and crystal growth techniques. Study the production and applications of ultrasonics. • correlate better understanding the carrier concentration and its variations with temperature in a semiconductor. Study the properties of modern engineering materials and its uses • categorize the types of laser and fiber optics 													
Course Outcome	the end of the course, the student will be able to										nowledge Level			
	• understand the elastic properties of the materials										K2			
	• gain knowledge about the conduction properties of metals										K3			
	• determine packing factor for various unit cells and understand different types of crystal imperfections and learn the engineering, medical applications.										K2			
	• discuss the basic idea of semiconducting materials and realize the function of modern engineering materials										K4			
• learn the optical properties of materials and its uses										K3				
Pre-requisites	---													
CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
Programme Outcomes (POs)												CO/PSO Mapping		
COs													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	3	1	2									2
CO 2	3	2	3	3	1									
CO 3	3	3		3	1									2
CO 4	3		2	1	1								3	2
CO 5	3			1	2	2								2
Course Assessment Methods														
Direct														
1. Continuous Assessment Test I, II & III 2. Assignments and Mind map 3. End-Semester examinations														
Indirect														
Course - end survey														

Content of the syllabus			
Unit – I	PROPERTIES OF MATTER	Periods	9
<p>Elasticity: Types of moduli of elasticity - Poisson's ratio - Stress - Strain Diagram – uses - Hooke's law. Young's modulus: Uniform bending (qualitative) Experimental determination by non-uniform bending - Twisting couple on a wire – Application: I shape girders, Torsional pendulum.</p> <p>Viscosity: Co-efficient of viscosity - Poiseuilles' formula - Experimental determination – uses.</p>			
Unit - II	ELECTRICAL PROPERTIES OF METALS	Periods	9
<p>Classical theory: Classical free electron theory of metals- Expressions for electrical conductivity and Thermal Conductivity of metals – Wiedemann-Franz law (Qualitative) - Success and failures.</p> <p>Quantum theory: de Broglie's hypothesis - Schrodinger's time independent and time dependent wave equations - Fermi – Dirac Statistics - Density of energy states (Qualitative).</p>			
Unit – III	CRYSTAL PHYSICS AND ULTRASONICS	Periods	9
<p>Crystallography: Unit cell - Crystal systems - Bravais lattices- Lattice planes - Miller indices - Inter-planar spacing in cubic lattice- Calculation of number of atoms per unit cell- Atomic radius – Coordination number- Packing Factor for HCP structures - Crystal defects – point and line defects (qualitative).</p> <p>Ultrasonics: Introduction - Properties and Generation of Ultrasonics – Magnetostriction and Piezoelectric Oscillator methods – Applications: Sound Navigation and Ranging (SONAR), Non – Destructive Testing (NDT) and Sonogram.</p>			
Unit - IV	SEMICONDUCTING & MODERN ENGINEERING MATERIALS	Periods	9
<p>Semiconductors: Elemental and Compound semiconductors - Intrinsic carrier concentration – Density of electrons and holes - Band gap determination. Extrinsic semiconductor types, donor and acceptor level. Application: Construction and working of LED.</p> <p>Metallic glasses: preparation, properties and applications - Shape memory alloys (SMA): Characteristics and applications of NiTi alloy.</p>			
Unit – V	LASER AND FIBER OPTICS	Periods	9
<p>Laser: 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>Optical fiber: 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, Displacement sensor.</p>			
Total Periods			45
Text Books			
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.A.Panneerselvam and Dr.P.Mani, "Engineering Physics", Dhanam publisher, Chennai – 600 042. (2025)		
References			
1.	B.K. Pandey, S. Chaturvedi. "Engineering Physics", 1 st Edition, Cengage Learning India Pvt Ltd, (2012).		
2.	David Halliday, Robert Resnick Jearl Walker, Fundamentals Of Physics Extended 8/Ed 8th Edition, , Wiley India Pvt Ltd, 2008.		
3.	Lawrence H.Vanvlack, "Elements of materials Science Engineering, 6 th 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		
E-Resources			
1.	www.e-booksdirectory.com		
2.	Home.iitk.ac.in		
3.	physics.cu.ac.bd		

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Programme	B.E. / B.Tech.	Programme Code				Regulation	2023							
Department	Common to All Branches				Semester		I							
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks								
		L	T	P		C	CA	ESE	Total					
U23CS101	Programming for Problem Solving	3	0	0	3	40	60	100						
Course Objective	The main objective of this course is to: <ul style="list-style-type: none"> Learn the fundamentals of computers, languages, number systems and acquire problem solving skills in C Programming 													
Course Outcome	At the end of the course, the student should be able to,							Knowledge Level						
	CO1: Examine number systems and to apply problem solving techniques							K3						
	CO2: Learn the basics of C programming with branching and looping statements							K2						
	CO3: Experiment the C programs using Arrays and Pointers for simple applications							K3						
	CO4: Solve C programs with the Functions and Strings							K3						
CO5: Apply Structures, Union and File concepts to solve simple real world problems							K3							
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	2	1	1	2							2	3	3
CO 2	2	1	1		2							2	2	2
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
Course Assessment Methods														
Direct														
1. Continuous Assessment Test I, II & III 2. Assignment / Quiz / Seminar 3. End-Semester examination														
Indirect														
1. Course - end survey														
Content of the syllabus														
Unit – I	INTRODUCTION TO PROBLEM SOLVING						Periods	9						
Basic organization of Computer - Programming languages - Compilers – Interpreter - Flowchart – Pseudocode – Algorithm.														
Number Systems – Decimal, Binary, Octal and Hexadecimal conversions.														

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



**VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN**

(Autonomous Institution, Affiliated to Anna University, Chennai)

Elayampalayam, Tiruchengode – 637 205





Programme	B.E/B.Tech.	Programme code	104	Regulation	2023				
Department	INFORMATION TECHNOLOGY			Semester			I		
Course code	Course name	Periods per week			Credit	Maximum Marks			
		L	T	P	C	CA	ESE	Total	
U23TA101	Heritage of Tamils / தமிழர் மரபு	1	0	0	1	40	60	100	
Content of the syllabus									
அலகு 1	மொழி மற்றும் இலக்கியம்				Periods	3			
இந்தியமொழிக் குடும்பங்கள் – திராவிட மொழிகள் – தமிழ் ஒரு செம்மொழி - தமிழ் செவ்விலக்கியங்கள் – சங்க இலக்கியத்தின் சமயச் சார்பற்றத்தன்மை – சங்க இலக்கியத்தில் பகிர்தல் அறம் – திருக்குறளில் மேலாண்மைக் கருத்துக்கள் – தமிழ்க் காப்பியங்கள் – தமிழகத்தில் சமண பௌத்த சமயங்களின் தாக்கம் – பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள் – சிற்றிலக்கியங்கள் – தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி – தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசனின் பங்களிப்பு.									
அலகு 2	மரபு – பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை – சிற்பக் கலை				Periods	3			
நடுகல் முதல் நவீன சிற்பங்கள் வரை – ஐம்பொன் சிலைகள் – பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள், பொம்மைகள் – தேர் செய்யும் கலை – சுடுமண் சிற்பங்கள் – நாட்டுப்புற தெய்வங்கள் – குமரி முனையில் திருவள்ளூர் சிலை – இசைக்கருவிகள் – மிருதங்கம், பறை, யாழ், வீணை, நாத்தஸ்வரம் – தமிழர்களின் பொருளாதார வாழ்வில் கோவில்களின் பங்கு.									
அலகு 3	நாட்டுப்புறக் கலைகள் மற்றும் வீரவிளையாட்டுக்கள்				Periods	3			
தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஓயிலாட்டம், தோல்பாவைக்கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுக்கள்.									
அலகு 4	தமிழர்களின் திணைக் கோட்பாடுகள்				Periods	3			
தமிழகத்தின் தாவரங்களும் விலங்குகளும் – தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள் – தமிழர்கள் போற்றிய அறக்கோட்பாடுகள் – சங்க காலத்தில் தமிழகத்தில் எழுத்தறிவு, கல்வியறிவு – சங்க கால நகரங்களும் துறைமுகங்களும் – சங்க காலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி – கடல் கடந்த நாடுகளில் சோழர்களின் வெற்றி.									
அலகு 5	இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்கு				Periods	3			
இந்திய விடுதலைப் போரில் தமிழர்களின் பங்கு – இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் – சுயமரியாதை இயக்கம் – இந்திய மருத்துவத்தில் சித்த மருத்துவத்தின் பங்கு – கல்வெட்டுகள், கையெழுத்துப்படிக்கள் – தமிழ்ப் புத்தகங்களின் அச்ச வரலாறு.									
						Total Periods	15		



	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205							
Programme	B.E/B.Tech.	Programme code	104	Regulation	2023			
Department	INFORMATION TECHNOLOGY		Semester		I			
Course code	Course name	Periods per week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U23TA101	Heritage of Tamils / தமிழர் மரபு	1	0	0	1	40	60	100
Content of the syllabus								
UNIT I	LANGUAGE AND LITERATURE				Periods	3		
Language Families in India – Dravidian Languages-Tamilasa Classical Language- Classical Literature inTamil- Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature-Management Principles in Thirukural –Tamil Epics and Impact of Buddhism & Jainism inTamil Land-Bakthi Literature Azhwars and Nayanmars –Forms of minor Poetry – Development of Modem literature in Tamil-Contribution of Bharathiyar and Bharathidhasan.								
UNIT II	HERITAGE-ROCK ART PAINTINGS TO MODERN ART-SCULPTURE				Periods	3		
Hero stone to modern sculpture -Bronzeicons-Tribesand their handicrafts-Artoftemplecar making—Massive Terracotta sculptures Village deities, Thiruvalluvar Statueat Kanyakumari,Making of musical instruments-Mridhangam,Parai Veenai, Yazhand Nadhaswaram –Role of Temple sin Social and Economic Life of Tamils.								
UNIT III	FOLK AND MARTIAL ARTS				Periods	3		
Therukoothu,Karagattam,VilluPattu,KaniyanKoothu,Oyillattam,Leatherpuppetry,Silambattam,Valari,Tigerdance-Sportsand Games of Tamils.								
UNIT IV	THINAI CONCEPT OF TAMILS				Periods	3		
Flora and Fauna of Tamils & Ahamand Puram Concept from Tholkappiyam and Sangam Literature- Aram Concept of Tamils-Educationand Literacy during Sangam Age- Ancient Cities and Port so Sangam Age- Export and Import during Sangam Age-Overseas Conques to Cholas.								
UNIT V	CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE				Periods	3		
Contribution of amils to Indian Freedom Struggle-TheCultural Influence of Tamils over theother parts of India.- Self- Respect Movement- Role of Siddha Medicine in Indigenous Systems of Medicine-Inscriptions &Manuscripts –Print History of Tamil Books.								
					Total Periods	15		

TEXT-CUM-REFERENCE BOOKS



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

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Programme	B.Tech.		Programme Code			104		Regulation			2023												
Department	Information Technology						Semester			I													
Course Code	Course Name					Periods Per Week			Credit		Maximum Marks												
						L	T	P	C	CA	ESE	Total											
U23GE101	Engineering Graphics					2	0	3	3	50	50	100											
Course Objective	The main objective of this course is to: <ul style="list-style-type: none"> • 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. • Project the drawing of various solids. • Sketch sectioned views of solids. • Draw the development of surfaces. • Draw the isometric and orthographic projections for any given object to the required standard. 																						
	Course Outcomes <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">At the end of the course, the student should be able to</td> <td style="width: 20%; text-align: center;">Knowledge Level</td> </tr> <tr> <td>CO1: Construct plane curves and develop projection of points , lines and plane surfaces</td> <td style="text-align: center;">K2</td> </tr> <tr> <td>CO2: Construct projection of solids with various conditions.</td> <td style="text-align: center;">K4</td> </tr> <tr> <td>CO3: Design the section of solids and analyze the true shape of the section</td> <td style="text-align: center;">K3</td> </tr> <tr> <td>CO4: Design and develop the different solid surfaces.</td> <td style="text-align: center;">K2</td> </tr> <tr> <td>CO5: Construct isometric and orthographic projection of different solids.</td> <td style="text-align: center;">K2</td> </tr> </table>												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.
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.	K2																						
Pre - requisites	Nil																						
CO / PO Mapping													CO/PSO Mapping										
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak																							
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	PSO 1	PSO 2									
CO 1	3	3	3	3	3	-	-	-	-	-	-	-	3	-									
CO 2	3	3	2	2	2	-	-	-	-	-	-	-	2	2									
CO 3	3	2	2	2	3	-	-	-	-	-	-	-	2	-									
CO 4	3	2	3	3	2	-	-	-	-	-	-	-	2	2									
CO 5	3	3	2	3	3	-	-	-	-	-	-	-	2	-									



Content of the Syllabus			
Concepts & Conventions (Not for Examination)	Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.	Periods	1
Unit – I	PROJECTION OF POINTS, LINES AND PLANE SURFACES	Periods	3+8
Introduction to Plane curves, Orthographic projection – principles – projection of points, straight lines (only first angle projections) and plane surfaces (polygonal and circular).			
Unit - II	PROJECTION OF SOLIDS	Periods	3+8
Projections of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane.			
Unit - III	SECTION OF SOLIDS	Periods	3+8
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.			
Unit - IV	DEVELOPMENT OF SURFACES	Periods	3+8
Development of lateral surfaces of simple solids like prisms, pyramids, cylinders and cones – development of simple truncated solids involving prisms, pyramids, cylinders and cones.			
Unit - V	ISOMETRIC PROJECTIONS, ORTHOGRAPHIC VIEWS FROM PICTORIAL VIEWS	Periods	5+10
Isometric Projection and Introduction to AutoCAD / Solid Edge: Principles of isometric projection - Isometric scale -Isometric projections of simple solids like prisms, pyramids, cylinders and cones & orthographic views from pictorial views.			
Demonstration only:			
Computer Aided Drafting (Auto CAD / Solid Edge): Introduction to drafting packages and demonstration of their use.			
Total Periods			60
Text Book:			
1.	Basant Agrawal and C.M Agrawal ,“Engineering Drawing ”,Tata McGraw Hill , 2019		
2.	Jain and Gautam ,“Engineering Graphics & Design ”,Khanna Publishing House, 2020		
Reference Book :			
1.	Dr.P.Kannan and Dr.J.Bensam Raj, “Engineering Graphics”, JBR Tri Sea Publishers Pvt. Ltd, 2024.		
2.	K.V Natarajan, "Engineering Drawing and Graphics", M/s. N.Dhanalakshmi, Chennai, 2020.		
3.	K.Venugopal and V. Prabhu Raja, “Engineering Graphics” New Age International Publishers, 2016.		
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, 2014		
e-RESOURCES:			
1.	http://nptel.ac.in/courses/105104148 , “Engineering Graphics” - Dr. Nihar Ranjan Patra , IIT Kanpur		
2.	http://cfd.annauniv.edu/webcontent.htm , “Engineering Graphics” - Dr.Velamurali		
3.	http://link.springer.com/ “Engineering Graphics”-Springer Nature.		

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Programme	B.Tech.	Programme Code			104	Regulation	2023							
Department	Information Technology					Semester	I							
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks								
		L	T	P	C	CA	ESE	Total						
U23PH102	PHYSICS LABORATORY	0	0	3	1	60	40	100						
Course Objective	<ul style="list-style-type: none"> • Understand elastic behavior of Materials • Predict viscous force in liquids. • Gain knowledge in measuring the lowest thickness materials • Identify wavelengths of prominent lines using polychromatic lamp • Observe heat conduction in bad conductor • Understand the principle of interferometer • Learn about the characteristics of Lasers 													
Course Outcome	At the end of the course, the student will be able to						Knowledge Level							
	CO1: Measure the young's modulus of the materials, Rigidity modulus – Torsion pendulum						K3							
	CO2: Calculate Coefficient of viscosity of liquid and thickness of thin wire using Air wedge						K3							
	CO3: Observe and measure the different wavelengths of mercury Spectrum and dispersive power of a prism						K3							
	CO4: Illustrate the conductivity of bad conductors. To know how to determine the velocity of ultrasonic waves in liquid						K3							
	CO5: Understand the importance of laser beam compared to ordinary light						K2							
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	1											2	
CO 2	3	3	1	2	2								2	
CO 3	3	2			2								3	
CO 4	3	3		1									1	
CO 5	3	1	1		1								2	
Course Assessment Methods														
Direct														
1. Prelab and post lab test														
2. Execution of experiment and Viva-Voce														
3. End-Semester examinations														
Indirect														
Course - end survey														

Content of the syllabus		
PHYSICS LABORATORY		
S.No.	Experiments	CO
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
Total Periods		30
Lab Manual		
1.	R. Jayaraman, Engineering Physics Laboratory Manual, Pearson Pub, Edition-2021.	
2.	A.K. Katiyar & C.K. Pandey Engineering Physics: Theory and Practical, Wiley Pub, 2nd Edition.	
3.	Dr.P.Mani, "Physics laboratory manual", Dhanam publisher, Chennai – 600 042. (2024)	
4.	Dr.G.Senthil Kumar, "Physics laboratory manual", VRB Publishers Private Limited, Chennai. 2024.	

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Programme	B.E /B.Tech.			Programme Code				Regulation		2023				
Department	Common to all the branches						Semester		I					
Course Code	Course Name			Periods Per Week			Credit	Maximum Marks						
				L	T	P	C	CA	ES E	Total				
U23CS102	Programming for Problem Solving Laboratory			0	0	2	1	60	40	100				
Course Objective	The main objective of the course is to <ul style="list-style-type: none"> Develop simple C programs to illustrate the applications of User Defined and Derived Data Types such as Arrays, Pointers, Structures, and Functions. 													
Course Outcome	At the end of the course, the student should be able to,										K Level			
	CO1: Develop C programs for computer based solution of simple real world problems using Conditional and Looping statements										K3			
	CO2: Implement simple C Programs using Strings and Arrays										K3			
	CO3: Implement C program for simple applications using Pointers										K3			
	CO4: Write C programs that perform operations on File										K4			
	CO5: Demonstrate C Programs using Structures										K3			
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	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
Course Assessment Methods														
Direct														
1. Pre lab and post lab test														
2. End-Semester examination														
Indirect														
1. Course - end survey														
List of Experiments													CO's	
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.													CO2	
Note:														

<p>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.</p> <p>Sample Input xyz sample Output xyz, xzy, yxz, yzx, zxy, zyx</p> <p>Sample Output : All the possible permutations for string "XYZ" will be "XYZ", "XZY", "YXZ", "YZX", "ZXY" and "ZYX".</p>	
<p>7. Find the Smallest and Largest Element in an Array</p> <p>Method 1: Traverse the array iteratively and keep track of the smallest and largest element until the end of the array.</p> <p>Method 2: Traverse the array recursively and keep track of the smallest and largest element until the end of the array.</p> <p>Method 3: Sort the array using STL and return the first element as the smallest element and the last element as the largest element.</p> <p>For example, consider the array. arr = {1, 2, 3, 4, 5}</p> <p>Sample output: Smallest element: 1 ; Largest element: 5</p>	CO2
<p>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. $LCM\ of\ 3\ and\ 5 = 3 \times 5 = 15$</p> <p>Sample output: Multiples of 15 below 100 are 15, 30, 45, 60, 75 and 90.</p>	CO3
<p>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.</p> <p>Example Source file I love programming. Working with files in C programming is fun. I am learning C programming at VCEW.</p> <p>Sample output Total characters = 100 Total words = 18 Total lines = 3</p>	CO4
<p>10. Write a C program to implement Student database using Structure</p> <p>Sample output: Enter details of student: Name :abi RollNo:101 Percentage :89.7</p> <p>Entered details: Name: abi RollNo: 101 Percentage: 89.70</p>	CO5
Total Periods	45
Tools Required	
Codetandra / HackerRank / HackerEarth / Any online Problem Solving Platforms	
E-Resources	
1.	https://www.programiz.com/c-programming
2.	https://www.cprogramming.com/
3.	https://beginnersbook.com/2015/02/simple-c-programs/

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205													
Programme	B.TECH	Programme Code				104	Regulation			2023				
Department	Information Technology					Semester			I					
Course Code	Course Name		Periods Per Week			Credit	Maximum Marks							
			L	T	P		C	CA	ESE	Total				
U23MCFY1	Environmental Science and Engineering		2	0	0	0	100	0	100					
Course Objective	The main objective of this course is to: <ul style="list-style-type: none"> • Familiarize basics of ecosystem and creating environmental awareness. • Congregate about environmental pollution. • Contrast on solid waste and social issues. • Acquire knowledge in environmental legislation and protection. Summarize population growth, human rights and Environment													
Course Outcome	At the end of the course, the student should be able to,										Knowledge Level			
	CO1: Acquire knowledge about Eco-system, Natural resources and Bio-diversity.										K1			
	CO2: Be aware of Environmental Pollution and its control.										K3			
	CO3: Infer and express Solid waste management and Social issues.										K3			
	CO4: Acquire Knowledge about Environmental legislation and protection.										K3			
CO5: Awareness about population growth, human rights and Environment										K2				
CO / PO Mapping												CO/PSO Mapping		
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
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	PSO2
CO 1	1	2	2			2	3				2		2	
CO 2	3	2	2		1	2	3				1	3	3	
CO 3	3	2	2		1	3	3				1	2	3	
CO 4	1	1	1			2	3				1	2	2	
CO 5	1	2	1			2	2				1	3	1	
Pre-requisites	NIL													
Course Assessment Methods														
Direct														
1. Continuous Assessment Test I, II & III														
2. Assignment														
Indirect														
1. Course - end survey														
Content of the syllabus														
Unit – I	INTRODUCTION TO ENVIRONMENTAL SCIENCE AND ENGINEERING						Periods			6				
Nature and scope of environmental education- natural resources – (forest, water, food,& land resources) problems and remedial measures. Ecosystem-Structure, characteristics and functions of ecosystem . Biodiversity – definition – conservation of biodiversity (in-situ and Ex-situ)-environmental awareness and sustainable development.														



Unit – II	ENVIRONMENTAL POLLUTION AND ITS CONTROL	Periods	6
Water pollution-causes, effects and control measures of water pollution- waste water treatment process (secondary-BOD,COD) . Air Pollution – types of air pollutants-CO ₂ , SO ₂ , NO ₂ , PAN-sources- control measures (electro static precipitator, bag house filter, wet scrubber and cyclone separator).			
Unit – III	SOCIAL ISSUES AND SUSTAINABILITY	Periods	6
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.			
Unit – IV	SUSTAINABILITY PRACTICES AND ENVIRONMENTAL LEGISLATION	Periods	6
Zero waste and R-concept-circular economy, material life cycle assessment- energy efficiency and management-environmental legislation-air act, water act-wildlife protection act-environmental protection act.			
Unit – V	Human population and the environment	Periods	6
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 (GIS), Effects of Narcotic Drugs in human health and its social impact, Environmental impact Analysis (EIA) and human health.			
Total Periods			30
Text Books			
1.	Dr.S.Mageswari, Dr.G.Vijayakumar, A.Preethi-“Environment Science and Engineering” RK publication. Second Edition-2023		
2.	Gilbert.M.Masters-“Environmental Science”-Pearson education. Edition-2-2013		
3.	Dr.S. Vairam - “Environment Science and Engineering” Gems publication. Edition 2018		
References			
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 coope, “Environmental Science”-Jaico Publ, House Edition-4-2007		
E-Resources			
1.	https://libraries.ou.edu/		
2.	https://libguides.reading.ac.uk/		
3.	https://www.loc.gov/ , https://rdl.lib.uconn.edu/		

SEMESTER - II





Programme	B.TECH	Programme Code	104	Regulation	2023									
Department	INFORMATION TECHNOLOGY			Semester	II									
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks								
		L	T	P	C	CA	ESE	Total						
U23MA202	Complex Analysis and Ordinary Differential Equations	3	1	0	4	40	60	100						
Course Objective	<p>The Main Objective of the course is to</p> <ul style="list-style-type: none"> Understand the Analytic functions and Bilinear transformations. Proficiently understand the Complex Integration. Demonstrate Vector Differentiation and Integration. Know about the Ordinary Differential Equations. Identify the Laplace Transform of Derivatives and Integrals. 													
Course Outcome	At the end of the course, the student should be able to,						Knowledge level							
	CO1: Analyze the construction of analytic functions.						K4							
	CO2: Understand the concepts of cauchy's integral theorem and residue theorem in evaluation of complex integrals.						K3							
	CO3: Explore the concepts of Green's , Stoke's and Gauss Divergence theorems in real life problems.						K5							
	CO4: Understand the concepts of solving second order differential equations.						K5							
CO5: Apply the concepts of Laplace transform in solving ODE.						K3								
Pre-requisites	-													
CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
COs	Programme Outcomes (POs)												CO/PSO Mapping	
	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	
CO 2	3	2	1	1									2	
CO 3	3	2	1	1									2	
CO 4	3	2	1	1									2	
CO 5	3	2	1	1									2	
Course Assessment Methods														
Direct														
1. Continuous Assessment Test I, II & III														
2. Assignment.														
3. End-Semester examinations														
Indirect														
1. Course - end survey														
Content of the syllabus														
Unit – I	ANALYTIC FUNCTIONS										Periods	9+3		
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.														

Unit - II	COMPLEX INTEGRATION	Periods	9+3
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.			
Unit – III	VECTOR DIFFERENTIATION & INTEGRATION	Periods	9+3
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).			
Unit - IV	ORDINARY DIFFERENTIAL EQUATIONS	Periods	9+3
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.			
Unit – V	LAPLACE TRANSFORMS	Periods	9+3
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.			
Total Periods			45+15=60
Text Books			
1.	Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 44 th Edition, 2020.		
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.		
References			
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)		
E-Resources			
1.	https://en.wikipedia.org › wiki › Ordinary_differential_equation		
2.	www.learnerstv.com/Free-engineering-Video-lectures		
3.	www.nptel.ac.in		



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Programme	B.Tech	Programme Code				104	Regulation		2023					
Department	Information 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"> Recognize the basic technology requirements in water treatment Gain knowledge in basics and preparations, properties and applications of Polymers. Enrich the Knowledge of the students with the basics of Nano materials, their properties and applications. Familiarize about the Non renewable, renewable energy and different types of storage devices in the engineering application. Gain knowledge in destruction and protection of metals for engineering applications.													
Course Outcome	The students who complete this course successfully are expected to:										Knowledge Level			
	CO1: Implement innovative solutions in wastewater treatment process.										K4			
	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.										K4			
	CO5: Categorize the metal corrosion in different environment and find out appropriate control techniques to avoid corrosion										K3			
CO / PO Mapping												CO/PSO Mapping		
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
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	3	3	2	1	2	2					1	1
CO 2	3	3	2	2	2		2	2					2	2
CO 3	3	3	2	2	3	2	1	2					2	2
CO 4	3	3	3	2	2	1	1	3					3	3
CO 5	3	3	3	3	2	1	2	2					2	2
Pre-requisites	Nil													
Course Assessment Methods														
Direct														
1. Continuous Assessment Test I, II & III 2. Assignment 3. End-Semester examinations														
Indirect														
1. Course - end survey														

Content of the syllabus			
Unit - I	WATER TECHNOLOGY	Periods	9
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, 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, Electrodialysis. Brackish water –water purification by reverse osmosis.			
Unit - II	POLYMER CHEMISTRY	Periods	9
Introduction - occurrence, definitions – functionality - degree of polymerization- classification of polymers – structure (linear, branched & network polymer structure) block, random & graft copolymers, tacticity, Tg (Factors influencing 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, nylon6, nylon 66, Poly Urethane, poly isoprene and Vulcanization of rubber, TEFLON ,PET, and Bakelite			
Unit - III	NANO CHEMISTRY	Periods	9
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.			
Unit - IV	ENERGY RESOURCES AND STORAGE DEVICES	Periods	9
Non renewable 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-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 ₂ -O ₂ fuel cell-applications.			
Unit - V	CORROSION AND ITS CONTROL	Periods	9
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), and electro less plating (Ni).			
Total Periods			45
Text Books			
1.	Dr.S.Mageswari, Dr.K.Balachandran, Dr.G.Vijayakumar, “Engineering Chemistry” Tata Mc Graw Hill Pvt. Ltd., First Edition-2024.		
2.	O.G.Palanna, “Engineering Chemistry” Tata Mc Graw Hill Pvt. Ltd., Second Edition -2017		
References			
1.	P. C. Jain and Monica Jain, “Engineering Chemistry”, 17th Edition, DhanpatRai Publishing Company Pvt. Ltd., 2018.		
2.	Arun Bahl, B.S. Bahl, G.D. Tuli, “Essentials of Physical Chemistry” Published by S. Chand & Company Ltd., 2014		
3.	Sashi Chawla, Dhanpat Rai & Co. Pvt. Ltd., “Engineering Chemistry” Fifth Edition - 2017.		
4.	Dr.S.Vairam, Dr.Suba Ramesh, “Engineering Chemistry” First Edition, Wiley Publication, Reprint-2016		
E-Resources			
1.	https://www.who.int/water_sanitation_health/dwq/arsenicun6.pdf		
2.	https://www.schandpublishing.com/books/tech-professional/applied-science/a-textbook-polymer-chemistry/9788121941129/#.XdZ214MzY2w		
3.	https://www.elsevier.com/books/nanochemistry/klabunde/978-0-444-59397-9		

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205													
Programme	B.E./B.Tech	Programme Code			104	Regulation		2023						
Department	Information Technology				Semester		II							
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks								
		L	T	P	C	CA	ESE	Total						
U23EE201	Basic Electrical and Electronics Engineering	3	0	0	3	40	60	100						
Course Objective	<p>The students should have made to</p> <ul style="list-style-type: none"> • Introduce the fundamental concepts of electric circuits and power systems. • Provide knowledge on the working principles and applications of electrical machines. • Familiarize students with domestic wiring systems, safety measures, and lighting equipment. • Explain the operation and applications of basic semiconductor devices. • Impart basic knowledge of digital electronics and logic circuits. 													
Course Outcome	At the end of the course, the student should be able to,							Knowledge Level						
	CO1: Understand basic concepts of DC and AC circuits, waveforms, and power systems.							K2						
	CO2: Explain construction and operation of DC machines, transformers, and induction motors.							K2						
	CO3: Demonstrate wiring systems, safety measures, and illumination techniques.							K2						
	CO4: Describe characteristics and applications of semiconductor devices.							K3						
CO5: Apply digital logic fundamentals to design combinational and sequential circuits.							K3							
Pre-requisites	Basic concepts and understanding of magnetic fields													
CO / PO Mapping												CO/PSO Mapping		
(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
CO 1	3	2	2	1	1	-	-	1	-	-	-	3	3	-
CO 2	3	2	2	1	-	-	-	1	-	-	-	3	3	-
CO 3	2	2	1	1	-	-	-	1	2	2	2	3	3	-
CO 4	3	2	2	1	-	-	-	1	-	-	-	3	3	-
CO 5	3	2	2	1	2	-	-	1	-	-	-	3	3	-
Course Assessment Methods														
Direct														
<ol style="list-style-type: none"> 1. Continuous Assessment Test I, II & III 2. Assignment 3. End-Semester examinations 														
Indirect														
<ol style="list-style-type: none"> 1. Course –end Survey 														

Content of the syllabus			
Unit – I	INTRODUCTION OF ELECTRICAL CIRCUITS	Periods	9
Definition of Voltage, Current, Power, Energy, Power factor, Circuit parameters, Ohm's law, Kirchhoff's law, Concept of DC circuits. Introduction to AC Circuits and Parameters: Waveforms, Average value, RMS Value, Real power, Reactive power and Apparent power, Power factor. Introduction to Single and three phase systems - types of three phase connections.			
Unit - II	ELECTRICAL MACHINES AND ITS APPLICATIONS	Periods	9
Review of Laws (Faraday's laws of electromagnetic induction - Lens law - Fleming's left hand rule and Right hand rule). Construction and Working principle- DC Generators, EMF equation, Applications. Working Principle of DC motors, Types and Applications. Construction, Working principle and Applications of Single phase Transformer and Single phase Induction Motor.			
Unit – III	WIRING AND ILLUMINATION	Periods	9
Types of wiring-staircase and corridor wiring - wiring accessories. Different types of safety measures - Earthing. The Laws of Illumination- Different types of electrical lamps.			
Unit - IV	SEMICONDUCTOR DEVICES & APPLIATIONS	Periods	9
Review of PN junction diodes - Zener diodes - characteristics. Transistors: PNP and NPN transistors - Theory of operation – Basics of semiconductor devices: FET - SCR - V-I characteristics – Applications: UPS – SMPS.			
Unit – V	DIGITAL FUNDAMENTALS	Periods	9
Number systems - Boolean laws – De-Morgan's Theorem - Logic gates – Universal Gates - Implementation of Boolean Expression using Gates - SOP and POS forms. Combinational Circuits – Adder and Subtractor, Sequential Circuits – Introduction to Flip Flops, Shift Registers and Counters.			
Total Periods			45
Text Books			
1.	S.K.Bhattacharya, —Basic Electrical and Electronics Engineering, Pearson, 2017		
2.	D.P. Kotharti and I.J Nagarath, —Basic Electrical and Electronics Engineering, McGraw Hill, Third Edition, 2020.		
References			
1.	S.B. Lal Seksena and Kaustuv Dasgupta, —Fundamentals 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.	M. Morris Mano - Digital Logic and Computer Design, Pearson Education India, 2017.		
E-Resources			
1.	https://nptel.ac.in/courses		
2.	https://www.electrical4u.com/electrical-engineering-articles/illumination-engineering/		
3.	https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-002-circuits-and-electronics-spring-2007/lecture-notes		
4.	https://www.google.co.in/books/edition/_/4nJROSC7iK8C?hl=en&gbpv=1		

 VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205											
Programme	B.E/B.Tech.	Programme code	104	Regulation	2023						
Department	INFORMATION TECHNOLOGY			Semester	II						
Course code	Course name	Periods per week			Credit	Maximum Marks					
		L	T	P	C	CA	ESE	Total			
U23TA202	தமிழரும் தொழில்நுட்பமும்/ TAMILS AND TECHNOLOGY	1	0	0	1	40	60	100			
Content of the syllabus											
அலகு 1	நெசவு மற்றும் பானைத்தொழில்நுட்பம்				Periods	3					
சங்ககாலத்தில் நெசவுத்தொழில் - பானைத்தொழில்நுட்பம் கருப்புசிவப்புபாண்டங்கள் பாண்டங்களில் கீறல் குறியீடுகள்.											
அலகு 2	வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்				Periods	3					
சங்ககாலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்ககாலத்தில் வீட்டுப்பொருட்களில் வடிவமைப்பு- சங்ககாலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் - சிலப்பதிகாரத்தில் மேடைஅமைப்பு பற்றிய விவரங்கள் - மாமல்லபுரச்சிற்பங்களும் , கோவில்களும் - சோழர்காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத்தலங்கள் - நாயக்கர்காலக்கோயில்கள் - மாதிரிகட்டமைப்புகள் பற்றி அறிதல், மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலைநாயக்கர் மஹால் - செட்டிநாட்டு வீடுகள் - பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ-சாரோசெனிக் கட்டிடக்கலை.											
அலகு 3	உற்பத்தித் தொழில்நுட்பம்				Periods	3					
கப்பல்கட்டும்கலை - உலோகவியல் - இரும்புத்தொழிற்சாலை - இரும்பை உருக்குதல்,எஃகு - வரலாற்றுச் சான்றுகளாக - செம்பு மற்றும் தங்க நாணயங்கள் - நாணயங்கள் அச்சடித்தல் - மணிஉருவாக்கும் தொழிற்சாலைகள் - கல்மணிகள், கண்ணாடிமணிகள் - சுடுமண்மணிகள் - சங்குமணிகள் - எலும்புத்துண்டுகள் - தொல்லியல்சான்றுகள் - சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.											
அலகு 4	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில்நுட்பம்				Periods	3					
அணை, ஏரி, குளங்கள்,மதகு - சோழர்காலக் குழுழித்தாம்பின் முக்கியத்துவம் - கால்நடை பராமரிப்பு - கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் - வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் - கடல்சார்அறிவு - மீன்வளம் - முத்து மற்றும் முத்துக்குளித்தல் - பெருங்கடல் குறித்த பண்டையஅறிவு - அறிவு சார் சமூகம்.											
அலகு 5	அறிவியல் தமிழ் மற்றும் கணினித்தமிழ்				Periods	3					
அறிவியல் தமிழின் வளர்ச்சி - கணினித்தமிழ் வளர்ச்சி - தமிழ் நூல்களை மின்பதிப்பு செய்தல் - தமிழ் மின்பொருட்கள் உருவாக்கம் - தமிழ் இணையக்கல்விக்கழகம் - தமிழ் மின்நூலகம் - இணையத்தில் தமிழ் அகராதிகள் - சொற்க்குவைத்திட்டம்.											
					Total Periods	15					

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								
Programme	B.E/B.Tech.	Programme code		104	Regulation		2023		
Department	INFORMATION TECHNOLOGY			Semester			II		
Course code	Course name	Periods per week			Credit	Maximum Marks			
		L	T	P	C	CA	ESE	Total	
U23TA202	TAMILS AND TECHNOLOGY	1	0	0	1	40	60	100	
Content of the syllabus									
UNIT I	WEAVING AND CERAMIC TECHNOLOGY				Periods		3		
Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) –Graffiti on Potteries									
UNIT II	DESIGN AND CONSTRUCTION TECHNOLOGY				Periods		3		
Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- ThirumalaiNayakarMahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.									
UNIT III	MANUFACTURING TECHNOLOGY				Periods		3		
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.									
UNIT IV	AGRICULTURE AND IRRIGATION TECHNOLOG				Periods		3		
Dam, Tank, ponds, Sluice, Significance of KumizhiThoompu 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.									
UNIT V	SCIENTIFIC TAMIL & TAMIL COMPUTING				Periods		3		
Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries – Sorkuvai Project.									
						Total Periods		15	

TEXT-CUM-REFERENCE BOOKS

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



VIVEKANANDHACOLLEGE OF ENGINEERING FOR WOMEN


(Autonomous Institution Affiliated to Anna University, Chennai)

Elayampalayam, Tiruchengode- 637205





Programme	B.Tech.	Programme code	104	Regulation	2023																																																																																																																													
Department	INFORMATION TECHNOLOGY			Semester	II																																																																																																																													
Course Code	Course name	Periods per week			Credit	Maximum Marks																																																																																																																												
U23CS204	Object Oriented Programming	L	T	P	C	CA	ESE	Total																																																																																																																										
		3	0	2	4	50	50	100																																																																																																																										
Course Objective	The student should be made to,																																																																																																																																	
	<ul style="list-style-type: none"> Introduce the fundamental concepts of Object-Oriented Programming (OOP) and their implementation using Java. Develop the ability to design and implement class hierarchies, inheritance, and polymorphism. To apply structured exception handling, perform file input/output operations, and implement modular programming using packages and interfaces in Java.. Provide hands-on experience in multithreaded programming and synchronization mechanisms. Familiarize students with event handling, AWT components, and GUI design in Java applications 																																																																																																																																	
Course Outcome	At the end of the course, the student should be able to,							KL																																																																																																																										
	CO1: Explain the principles of object-oriented programming such as abstraction, encapsulation, and inheritance							K2																																																																																																																										
	CO2: Apply Java programming concepts to define classes, objects, constructors, and methods							K3																																																																																																																										
	CO3: Develop Java applications using inheritance, interfaces, and packages							K3																																																																																																																										
	CO4: Construct multithreaded programs and manage inter-thread communication and synchronization							K4																																																																																																																										
	CO5: Design basic graphical user interfaces using AWT and handle events using event listeners							K4																																																																																																																										
Pre requisites	--																																																																																																																																	
<table border="1"> <thead> <tr> <th colspan="12">CO /PO Mapping (3/2/1 indicates strength of correlation) 3-Strong,2-Medium,1 -Weak</th> <th colspan="2">CO/PSO Mapping</th> </tr> <tr> <th rowspan="2">COs</th> <th colspan="12">Programme Outcomes(POs)</th> <th colspan="2">PSOs</th> </tr> <tr> <th>PO 1</th> <th>PO 2</th> <th>PO 3</th> <th>PO 4</th> <th>PO 5</th> <th>PO 6</th> <th>PO 7</th> <th>PO 8</th> <th>PO 9</th> <th>PO 10</th> <th>PO 11</th> <th>PO 12</th> <th>PSO1</th> <th>PSO2</th> </tr> </thead> <tbody> <tr> <td>CO 1</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td>2</td> <td></td> <td></td> <td>3</td> <td>2</td> </tr> <tr> <td>CO 2</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td>2</td> <td></td> <td></td> <td>3</td> <td>2</td> </tr> <tr> <td>CO 3</td> <td>2</td> <td>3</td> <td>2</td> <td>3</td> <td>3</td> <td></td> <td></td> <td></td> <td>2</td> <td>2</td> <td></td> <td></td> <td>3</td> <td>3</td> </tr> <tr> <td>CO 4</td> <td>3</td> <td>2</td> <td>2</td> <td>3</td> <td>3</td> <td></td> <td></td> <td></td> <td>2</td> <td>2</td> <td></td> <td></td> <td>3</td> <td>3</td> </tr> <tr> <td>CO 5</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> <td></td> <td></td> <td></td> <td>1</td> <td>2</td> <td></td> <td></td> <td>3</td> <td>3</td> </tr> </tbody> </table>													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	PSO2	CO 1	3	3	3	3	3					2			3	2	CO 2	3	2	2	2	2					2			3	2	CO 3	2	3	2	3	3				2	2			3	3	CO 4	3	2	2	3	3				2	2			3	3	CO 5	3	2	2	2	3				1	2			3	3
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	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	PSO2																																																																																																																				
CO 1	3	3	3	3	3					2			3	2																																																																																																																				
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CO 3	2	3	2	3	3				2	2			3	3																																																																																																																				
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CO 5	3	2	2	2	3				1	2			3	3																																																																																																																				
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1. Continuous Assessment Test I, II&III																																																																																																																																		
2. Assignments / Seminar/Quiz																																																																																																																																		
3. End-Semester examination																																																																																																																																		
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1. Course -end survey																																																																																																																																		



Content of the syllabus			
Unit– I	INTRODUCTION TO OOP AND JAVA FUNDAMENTALS	Periods	9
Object Oriented Programming - objects and classes - Abstraction - Encapsulation- Inheritance - Polymorphism- OOP in Java – Characteristics of Java - Fundamental Programming Structures in Java – Defining classes in Java – constructors, methods -access specifiers - static members - Data Types, Control Flow, Arrays-Strings: Basic String class, methods and String Buffer Class..			
Unit-II	INHERITANCE AND PACKAGES	Periods	9
Inheritance Basics – Multilevel Hierarchy – Constructors – Method Overriding -Using super – Dynamic Method Dispatch –Using final – Abstract Classes – Packages – Importing Packages – Interfaces.			
Unit – III	EXCEPTION HANDLING AND I/O	Periods	9
Exceptions - exception hierarchy - throwing and catching exceptions – built-in exceptions. Input / Output Basics – Streams – Byte streams and Character streams – Reading and Writing Console – Reading and Writing Files			
Unit– IV	MULTITHREADING PROGRAMMING	Periods	9
Java Thread Model Introduction, Multi-threading and multitasking, thread life cycle, creating threads, synchronizing threads, Inter-thread communication, daemon threads, thread groups, Wrappers – Auto boxing.			
Unit– V	EVENT HANDLING	Periods	9
Event Basics – Handling Key and Mouse Events-Event Handling – Mechanisms -- Event Classes – Action Event - Action Listener. AWT Classes - Window Fundamentals - Frame Windows – AWT Controls – Layout Managers.			
Total Periods			45
Suggested List of Experiments			CO's
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
Lecture 45: Practical 30; Total: 75			
References			
1.	Reema Thareja, Object Oriented Programming with C++ , Third Edition, Oxford University Press, New Delhi,2018 (UNIT 1)		
2.	Herbert Schildt, —Java: The Complete Referencel, 12th Edition, McGraw Hill Education, New Delhi, 2022.(UNIT 2 to 5)		
3.	Buyya Rajkumar, ThamaraiSelvi S. and Xingchen Chu, —Object Oriented Programming with Java Essentials and Applications, 1st Edition, McGraw Hill, New Delhi, 2009.		
4.	Cay S. Horstmann, —Core Java: Volume I Fundamentals , 11th Edition, Addison Wesley, New Delhi, 2019.		
5.	Deitel Paul and Deitel Harvey, —Java How to Program , 11th Edition, Pearson Education, New Delhi, 2018.		
E-Resources			
1.	www.nptel.ac.in		
2.	https://www.javatpoint.com/cpp-oops-concepts		

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205													
Programme	B.Tech.	Programme Code			104	Regulation	2023							
Department	INFORMATION TECHNOLOGY				Semester		II							
Course Code	Course Name			Periods Per Week			Credit	Maximum Marks						
				L	T	P		C	CA	ESE	Total			
U23EN202	Professional Communication			3	0	2	3	50	50	100				
Course Objective	The main objective of this course is to:													
	<ul style="list-style-type: none"> • Provide suitable reading & writing tasks to develop communicative ability for academic and professional progress • Inculcate reading to make learners proficient in the chosen professional writing contexts. • Develop learners' vocabulary and grammar to supplement their language use at professional contexts • Assist students to imbibe intellectual flexibility, creativity, and cultural literacy to support in life-long learning. • Apply the language features of academic and professional writing and speaking 													
	At the end of the course, the student should be able to,									Knowledge Level				
	CO1: Gain sufficient command over language to speak at an academic or professional context.									K1				
	CO2: Excel in writing Professional texts through similar reading.									K1				
CO3: Use language at length at technical and professional situations with enriched vocabulary and grammatical knowledge.									K2					
CO4: Gather, understand, evaluate and synthesize information from a variety of written and electronic sources ethically.									K2					
CO5: Acquire proficiency in oral communication and writing skills.									K3					
CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
Cos	Programme Outcomes (POs)										CO/PSO Mapping			
	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						2			3	3		3		1
CO 2						2			3	3		3		1
CO 3						2			3	3		3		1
CO 4						2			3	3		3		1
CO 5						2			3	3		3		1
Pre-requisites	Nil													
Course Assessment Methods														
Direct														
<ol style="list-style-type: none"> 1. Continuous Assessment Test I & II 2. Continuous Assessment Test III in the Communication Skills Lab 3. Assignments 4. End-Semester examinations 														
Indirect														
<ol style="list-style-type: none"> 1. Course - end survey 														

Content of the syllabus			
Unit – I		Periods	15
Listening- Listening for Cultural Awareness, Listening to Professional Conversations, Talks, Interviews and Lectures Speaking- Developing Confidence, Discussion at a Corporate Context. Reading– Inferential Reading, Reading Short Messages and Technical Articles, Writing- Introduction to Letter Writing, Writing Formal and Informal Letters, Thanking Letters, Letters Calling for Quotations, Letters Placing an Order, Seeking clarification, Letters of Complaint. Focus on Language– Adjectives and Degrees of Comparisons			
Unit – II		Periods	15
Listening- Listening to specific information relating to technical content, Listening for statistical information Speaking- Expressing opinions, Formal Discussions, Describing Role Play in Business Context and Consolidating Ideas. Reading– Reading Technical Articles in Journals and Comparing Articles. Writing- Letter seeking permission to undergo practical training and to undertake project work. Focus on Language– Simple, compound and complex sentences and Transformation of Sentences.			
Unit – III		Periods	15
Listening- Listening to understand the overall meaning, Listening to Interviews and Presentations. Speaking- Giving Instructions, Showing Directions and Rephrasing Instructions. Reading– Skimming and Scanning, Reading Job Advertisements. Writing- Applying for a Job, Writing a CV, Interview Strategies. Group Discussion: Introduction – Topic Analysis – Thematic Expressions-Objective and content of discussion.			
Unit – IV		Periods	15
Listening- Listening and retrieving Information. Speaking- Developing fluency and Coherence, Accent Neutralization, Voice Modulation, and Intonation, Improving Voice Quality. Reading– Reading and understanding Advertisements. Writing- Letters to the Editor, Letter of Complaint, Various kinds of Reports, Permission to go for Industrial visits. Presentation skills: 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
Listening- Listening to Fragmented Texts and Filling in the Blanks. Speaking- Mind Mapping, Developing Coherence and Self-Expression, Paralinguistic and Extra linguistic Features (body language), Reading– Predicting content, Interpreting Reports. Writing- Writing Proposals, Agenda, Minutes of the Meeting. Soft Skills: 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.			
Total Periods			75
Text Books			
1.	Dr. S. R. Kannan, Sumant. S, Pereira Joyce, Professional Communication, Vijay Nicole Imprints Pvt. Ltd., 2023.		
References			
1.	Norman Whitby - Business Benchmark Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2022.		
2.	Dutt, Rajeevan, Prakash, A Course in Communication Skills (Anna University, Coimbatore edition) :. Cambridge University Press India Pvt. Ltd., 2020.		
3.	Meenakshi Raman and Sangeeta Sharma-'Technical Communication English Skills for Engineers'; Oxford University Press, 2024.		
4.	S.P. Dhanavel, English and Communication Skills for Students of Science and Engineering, Orient Blackswan Pvt, Ltd, 2020.		
5.	Technical English – I & II, Sonaversity, Sona College of Technology, Salem, First Edition, 2022.		
E-Resources			
1.	http://www.kalevleetar.com/Publish/Book_Review_Who_Moved_My_Cheese.pdf		
2.	http://www.bookbrowse.com/reviews/index.cfm/book_number/304/who-moved-my-cheese		
3.	http://www.imdb.com/title/tt0482629/plotsummary		

		VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205												
Programme	B.TECH.	Programme code	104	Regulation						2023				
Department	Information Technology			Semester							II			
Course Code	Course name			Periods per week		Credit	Maximum Marks							
U23GE102	Design Thinking			L	T	P	C	CA	ESE	Total				
				1	0	2	1	50	50	100				
Course Objective	The student should be made to, <ul style="list-style-type: none"> Familiarize with design thinking concepts and principles Practice the methods, processes and tools of design thinking. Apply the design thinking approach and have ability to model real world situations. 													
Course Outcome	At the end of the course, the student should be able to,										KL			
	CO1: Understand and apply the concept of team building activity										K2			
	CO2: Understand Design Thinking and apply the design thinking approach to empathize situations in real world										K3			
	CO3: Identify various methods of empathy and define the problem										K3			
	CO4: Develop creative ideas through design thinking										K4			
	CO5: Understand benefits of learning through observation, experience and application										K4			
Pre-requisites	-													
CO / PO Mapping														
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak														
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	PSO 1	PSO 2
CO 1	2	3	3	3	3	2	2	3	3	3	2	2	3	3
CO 2	3	3	3	3	3	3	3	3	3	3	3	3	2	2
CO 3	3	3	1	2	2	2	2	1	2	1			2	2
CO 4	3	3	3	3	3	2	2	2	2	2	2	1	2	2
CO 5	3	3	3	3	1	2	2	2	1	2	2	1	2	2
Course Assessment Methods														
Direct														
1. Continuous Assessment Test through activities, assignment & Quiz														
2. Models (Chart/paper/3D)														
3. Prototype & Presentation														
Indirect														
1. Course - end survey														



Content of the Syllabus		
SESSION-I	Periods	6
Introduction – Team Building - Types – 4 C’s of Team Building – Levels of Team Building – Benefits of Team Work – Team Building Activity.		
SESSION - II	Periods	9
Introduction to Design Thinking – Purpose of Design Thinking – Design Thinking Framework, Empathy and related case studies		
SESSION - III	Periods	6
Define: Examine and Reflect on the problem.		
SESSION - IV	Periods	12
Generating Ideas – Identifying ideas – Bundling the ideas and create concepts – Rapid Prototyping – Idea Refinement.		
SESSION - V	Periods	12
Importance & testing the design with people - Retest and redefine results		
Total Periods		45
Textbooks		
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 nd 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.	
References		
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	
E-Resources		
1.	https://www.collectivecampus.io/blog/6-resources-to-help-you-learn-design-thinking	
2.	https://thisisdesignthinking.net/on-design-thinking/design-thinking-resources/	
3.	http://hs.griet.ac.in/pdf/studymaterialsgr20/Design%20Thinking%20Lab%202020-21.pdf	
4.	https://www.mindtools.com/brainstm.html	
5.	https://www.quicksprout.com/. /how-to-reverse-engineer-your-competit	
6.	https://www.youtube.com/watch?v=2mjSDIBaUIM	
7.	thevirtualinstructor.com/foreshortening.html	
Activity Based Learning/Practical Based Learning		
http://dschool.stanford.edu/dgift/		
Online Course		
1	https://onlinecourses.nptel.ac.in/noc19_mg60/preview	
2	https://www.ibm.com/design/thinking/page/badges/core-skills	

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205													
Programme	B.Tech		Programme Code				104		Regulation		2023			
Department	Information Technology					Semester			II					
Course Code	Course Name					Periods Per Week			Credit	Maximum Marks				
						L	T	P		C	CA	ESE	Total	
U23CH202	CHEMISTRY LABORATORY					0	0	2	1	60	40	100		
Course Objective	The main objective of this course is to: <ul style="list-style-type: none"> • Gather basic simple acid-base reactions and study the mechanism of acid mixture with base. • Learn pH and potential of hydrogen in a sample solution. • Study the redox reaction through potential difference. • Infer iron forms complex with thiocyanate. • Gather knowledge on hardness producing salts and removal of hardness through estimation. • Collect data required for dissolved oxygen present in water sample. • Understand alkalinity and available chlorine present in water sample. 													
Course Outcome	The students who complete this course successfully are expected to:										Knowledge Level			
	CO1: Infer knowledge on neutralization reaction between acid, acid mixture with base and identify the concentrations.										K3			
	CO2: Identify the concentration of sample using pH.										K3			
	CO3: Spot the concentration of sample solution through redox reaction by potentiometric method										K4			
	CO4: Estimate Iron by complexation reaction spectrometric ally.										K4			
CO5: 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												CO/PSO Mapping		
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
COs	Programme Outcomes (POs)												PSOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO8	PO 9	PO 10	PO 11	PO12	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
Pre-requisites	Nil													
Course Assessment Methods														
Direct														
1. Pre lab and Post lab Test 2. Execution of Experiment and Viva-voce														

3. End semester examination		
Indirect		
Course - end survey		
Content of the syllabus		
S.No	Name of the Experiment	Course Outcome
1.	Estimation of HCl using NaOH by Conductometric titration	CO1
2.	Estimation of Mixture of acid [standard HCl unknown CH ₃ COOH] 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
Total Periods		30
Lab Manuals suggested:		
1	Chemistry laboratory I & II by Dr. A. Ravikrishnan, Sri Krishna Pub, Revised Edition-2017	
2	Chemistry laboratory Manual by Dr. V. Veeraiyan, VRB Publishers Pvt. Ltd., Revised Edition-2017	

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Programme	B.Tech	Programme Code			104	Regulation		2023							
Department	Information Technology					Semester		I							
Course Code	Course Name	Periods Per Week			Credit			Maximum Marks							
		L	T	P	C	CA	ESE	Total							
U23GE204	Engineering Practices Laboratory	0	0	3	1	60	40	100							
Course Objective	The main objective of this course is to: The students should made to														
	<ol style="list-style-type: none"> To impart practical knowledge in fundamental mechanical engineering operations including welding, basic machining and sheet metal work to enhance student's competencies in manufacturing and fabrication techniques. To provide hands-on experience in basic civil engineering practices specifically plumbing and carpentry in order to develop foundational skills in fabrication and assembly. To introduce modern manufacturing tools such as 3D printing, CO₂ laser cutting, and wood routing machines and understand their applications. Learn the assembling and dismantling methodology of home appliances. Learn the resistor value identification through colors coated on resistor. Learn the basics of signal generation in CRO. Learn the soldering techniques in PCB board for designing the projects. 														
Course Outcomes	At the end of the course, the student should be able to,							Knowledge Level							
	CO1: Execute fundamental welding, basic machining and sheet metal operations for simple fabrication tasks.							K3							
	CO2: Perform basic plumbing and carpentry operations using tools and fittings with safety and accuracy.							K3							
	CO3: Understand the basics of house wiring techniques and the measurements of basic electrical quantities.							K2							
	CO4: Understand the resistor value identification through colors coated on resistor.							K2							
CO5: Understand the soldering techniques in PCB board for designing the projects.							K2								
Pre -requisites	Nil														
COs	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak												CO/PSO Mapping		
	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	PSO 1	PSO 2
	CO 1	3	2	3	2	2	-	-	-	2	-	-	-	2	2
	CO 2	3	2	3	2	2	-	-	-	2	-	-	-	3	2
	CO 3	3	2	2	3	2	2	-	-	2	-	-	-	2	-
CO 4	3	2	2	3	2	2	-	-	2	-	-	-	2	-	
CO 5	3	2	3	3	2	2	-	-	2	-	-	-	3	3	
Course Assessment Methods															
Direct															
1.Pre lab and Post lab test															

2.Record mark	
3.End- Semester Examinations	
Indirect	
1.Course –End survey	
Content of the Syllabus	
<u>GROUP A</u> (MECHANICAL & CIVIL ENGINEERING)	
<u>MECHANICAL ENGINEERING PRACTICE:</u>	COs
1.Welding: 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
2.Basic Machining: a) To perform simple facing & turning operation. b) To perform of step turning operation.	CO1
3.Sheet Metal: a) To make a rectangular tray from the given sheet metal. b) To make a basket from the given sheet metal.	CO1
<u>CIVIL ENGINEERING PRACTICE:</u>	COs
4.Plumbing: 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
5.Carpentry: a) To make a Cross Lap Joint from the given work piece. b) Preparation of ‘ T’ Lap Joint from the given work piece.	CO2
6. Study Experiments: a) Study of 3D Printing machine and its applications. b) Study of CO ₂ Laser engraving & cutting machine and its applications. c) Study of Wood routing machine and its applications.	CO1
<u>GROUP B</u> (ELECTRICAL & ELECTRONICS ENGINEERING)	
<u>ELECTRICAL ENGINEERING PRACTICE :</u>	
1. a) Residential house wiring b) Stair case wiring	CO3
2. LED lamp assembly and Dismantling	CO3
3. Measurement of Power, Energy & Power Factor by connecting single phase energy meter.	CO3
<u>ELECTRONICS ENGINEERING PRACTICE :</u>	
1. Measurement of Resistor value using color – coding and Multimeter.	CO4
2. Study of various waveforms by using CRO and Function Generator.	CO4
3. Verification of Logic gates AND, OR, NOR, NAND and NOT.	CO4
4. Soldering Practice – Components Devices and Circuits – Using general purpose PCB.	CO5
Total Periods	45
Reference Book :	
1.	Dr.P.Kannan, Mr.T.Satheeskumar & Mr.U.M.Saravanan, “Engineering Practices Laboratory” Manual. Pearson Education, 2025.
2.	Mr.T.Jeyapooan, Mr.M.Saravana Pandian, “Engineering Practices Lab” Manual, Vikas Publishing House Pvt Ltd, 2017.

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205													
Programme	B.Tech.	Programme Code					104	Regulation			2023			
Department	Information Technology					Semester			II					
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks								
		L	T	P		C	CA	ESE	Total					
U23MCFY2	Indian Constitution and Universal Human values	2	0	0	0	100	NA	100						
Course Objective	<p>The main objective of this course is:</p> <ul style="list-style-type: none"> To know about the basic structure of Indian constitution. To know about our Central government Executive system of India To know about our State government Executive system of India To learn the Election system, Amendments and Emergency Provisions given by the constitution. To know about the Special Constitutional Provisions in India 													
Course Outcome	At the end of the course, the student should be able to,										Knowledge level			
	<ul style="list-style-type: none"> Understand the functions of the Indian government 										K1			
	<ul style="list-style-type: none"> Know about our Central Government, political structure & codes, procedures 										K1			
	<ul style="list-style-type: none"> Understand our State Executive & Elections system of India. 										K1			
	<ul style="list-style-type: none"> Remember the Election system, Amendments and Emergency Provisions given by the constitution. 										K2			
<ul style="list-style-type: none"> Understand our Special Constitutional Provisions in India 										K2				
Pre-requisites	---													
CO / PO Mapping													CO/PSO Mapping	
(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
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	PSO 1	PSO 2
CO 1					3		3	2						
CO 2					3		3	3						
CO 3					3		3	2						
CO 4					3		3	3						
CO 5					3		3	3						
Course Assessment Methods														
Direct														
1. Continuous Assessment Test I, II & III 2. Assignment														
Indirect														
1. Course - end survey														

Content of the syllabus			
Unit – I	INTRODUCTION	Periods	6
Historical Background – Constituent Assembly of India – Fundamental Rights – Citizenship – Constitutional Remedies for citizens			
Unit - II	STRUCTURE AND FUNCTION OF CENTRAL	Periods	6
Union Government – Structures of the Union Government and Functions – President – Vice President – Prime Minister – Cabinet – Parliament – Supreme Court of India			
Unit – III	STRUCTURE AND FUNCTION OF STATE	Periods	6
State Government – Structure and Functions – Governor – Chief Minister – Cabinet – State Legislature – Judicial System in States – High Courts and other Subordinate Courts			
Unit - IV	UNIVERSAL HUMAN VALUES	Periods	6
Course Introduction - Need, Basic Guidelines, Content and Process for Value Education. Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human Aspirations			
Unit – V	UNIVERSAL HUMAN VALUES - PROFESSIONAL ETHICS	Periods	6
Understanding Harmony in the Human Being - Harmony in Myself and society. Understanding Harmony in the Family - Human Relationship. Understanding Harmony in the Nature and Existence - Whole existence as Co-existence. Implications of the above Holistic Understanding of Harmony on Professional Ethics			
Total Periods			30
Text Books			
1.	Durga Das Basu, “Introduction to the Constitution of India “, Prentice Hall of India, New Delhi.		
2.	The Constitution of India (Coat Pocket Edition) by Gopal Sankaranarayanan - 17th Edition. (2024)		
References			
1.	R.C.Agarwal, (1997) “Indian Political System”, S.Chand and Company, New Delhi.		
2.	M.Laksmikanth, Indian polity, Tata mchraw hill publications.		
E-Resources			
1.	https://mhrd.gov.in/		
2.	https://niti.gov.in/content/niti-aayog-library		
3.	www.drishtiiias.com/		