KNOWLEDGE INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

Approved by AICTE, Affiliated to Anna University, Chennai.
Accredited by NBA (CSE, ECE, EEE & MECH), Accredited by NAAC with "A" Grade KIOT Campus, Kakapalayam (PO), Salem – 637 504, Tamil Nadu, India.

B.E. / B.Tech. Regulations 2023

B.E. – Computer Science and Engineering

Semester - IV

Curriculum and Syllabi

(For the Students Admitted from the Academic Year 2023-24 Onwards)

Version: 1.1	**Date:** 15.12.2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

KNOWLEDGE INSTITUTE OF TECHNOLOGY(AUTONOMOUS), SALEM -637504

Approved by AICTE, Affiliated to Anna University,
Accredited by NAAC and NBA (B.E.:Mech., ECE, EEE & CSE)

Website: www.kiot.ac.in

TABLE OF CONTENTS

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

KNOWLEDGE INSTITUTE OF TECHNOLOGY(AUTONOMOUS), SALEM -637504

Approved by A.I.C.T.E, affiliated to Anna University,

Accredited by NAAC-and NBA-(B.E.-Mech., ECE, EEE & CSE)

Website: www.kiot.ac.in

TABLE OF CONTENTS

S.NO	CONTENTS	PAGE NO.
1	INSTITUTE AND DEPARTMENT VISION AND MISSION	1
2	PEOs, POs, PSOs	1-2
3	BLOOM'S TAXONOMY LEVELS AND ACTION VERBS	3-4
4	CURRICULUM STRUCTURE FROM I TO VIII SEMESTER	5-21
5	SYLLABUS - SEMESTER IV	22-77

	KNOWLEDGE INSTITUTE OF TECHNOLOGY(AUTONOMOUS), SALEM -637504
	Approved by AICTE, Affiliated to Anna University, Accredited by NAAC and NBA (B.E.:Mech., ECE, EEE & CSE)
	Website: www.kiot.ac.in

B.E. / B.Tech. REGULATIONS 2023 (R 2023)
CHOICE BASED CREDIT SYSTEM AND OUTCOME BASED EDUCATION

B.E. COMPUTER SCIENCE AND ENGINEERING

VISION OF THE INSTITUTE
To be a world class institution to impart value and need based professional education to the aspiring youth and carving them into disciplined world class professional who have the quest for excellence, achievement orientation and social responsibilities.

MISSION OF THE INSTITUTE	
A	To promote academic growth by offering state-of-art undergraduate, postgraduate and doctoral programs and to generate new knowledge by engaging in cutting – edge research
B	To nurture talent, innovation, entrepreneurship, all-round personality and value system among the students and to foster competitiveness among students
C	To undertake collaborative projects which offer opportunities for long-term interaction with academia and industry
D	To pursue global standards of excellence in all our endeavors namely teaching, research, consultancy, continuing education and support functions
VISION OF THE DEPARTMENT	
To develop Computer Science engineers and skilled software professionals who can meet evolving industry demands and global challenges along with strong social values.	
MISSION OF THE DEPARTMENT	
M1	To provide **need-based technical education** through appropriate infrastructure, effective teaching and research.
M2	To meet industry requirements through **collaborative projects** on emerging technologies.
M3	To develop Computer Science and Engineering graduates with ethical values, social responsibility, **entrepreneurship skills, leadership and teamwork**.
PROGRAM EDUCATIONAL OBJECTIVES (PEOs)	
PEO 1	To enable graduates to pursue Higher Education and Research or have a successful career in industries associated with Computer Science and Engineering, or as Entrepreneurs.
PEO 2	To ensure that graduates will have the ability and attitude to adapt to emerging technological changes.
PEO 3	To acquire leadership skills to perform professional activities with social consciousness. adaptability and lifelong learning

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

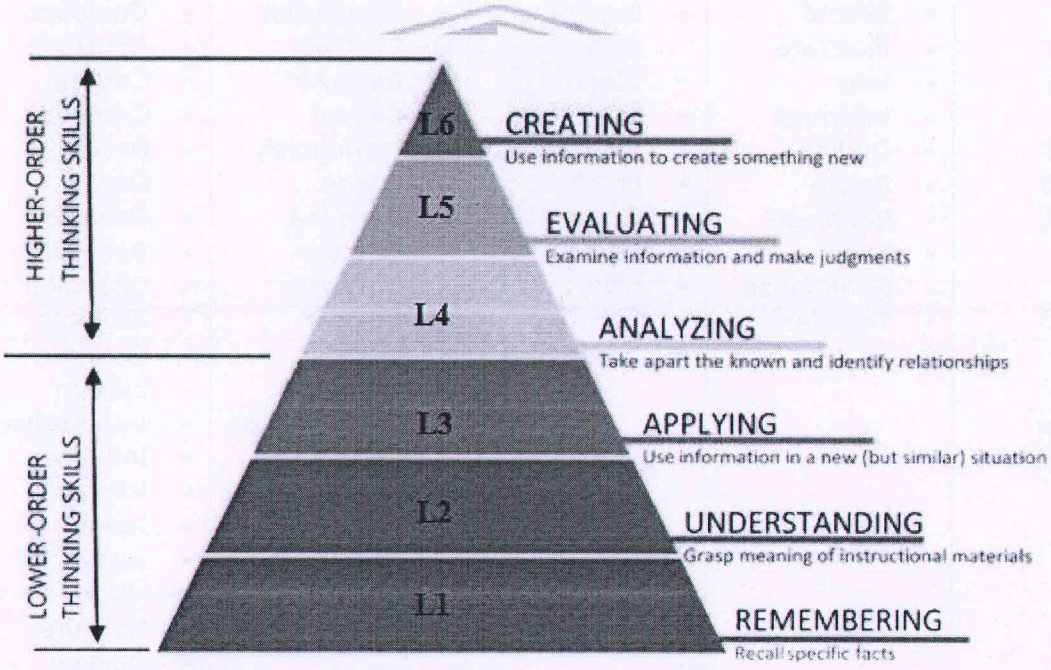
PROGRAM OUTCOMES (POs)	
Engineering Graduates will be able to:	
PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**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.
PO5	**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.
PO6	**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.
PO7	**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.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**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.
PO11	**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.
PO12	**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.
Program Specific Outcomes (PSOs)	
After the successful completion of B.E. Programme in Computer Science and Engineering, the graduates will able to	
PSO 1	Analyse large volume of data and make business decisions to improve efficiency with different algorithms and tools.
PSO 2	Have the capacity to develop web and mobile applications for real time scenarios.
PSO 3	Provide automation and smart solutions in various forms to the society with Internet of Things.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

BLOOM'S TAXONOMY LEVELS AND ACTION VERBS

(A) BLOOM'S TAXONOMY LEVELS (BTL):

Bloom's Taxonomy (BT) is based on the belief that learners must first acquire basic foundational knowledge about a subject before progressing to more complex types of thinking, such as analysis and evaluation. Bloom's Taxonomy levels help faculty to guide students through the learning process, from fundamental remembering and understanding to more complex evaluating and creating.



At KIOT, Curriculum Design, Delivery and Assessment (CDDA) are carried out based on the Blooms' Taxonomy Levels (BTL). Its organized set of objectives helps teachers to plan and deliver appropriate instruction, design valid assessment tasks and schemes, and ensure that instruction and assessment are aligned with the objectives.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

(B) BLOOM'S TAXONOMY ACTION VERBS

I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.	Demonstrate understanding of facts and ideas by organizing, comparing, interpreting, giving descriptions, and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing new Solutions.
• Choose • Define • Find • How • Label • List • Match • Name • Omit • Recall • Relate • Select • Show • Spell • Tell • What • When • Where • Which • Who • Why	• Classify • Compare • Contrast • Demonstrate • Explain • Extend • Illustrate • Infer • Interpret • Outline • Relate • Rephrase • Show • Summarize • Translate	• Apply • Build • Choose • Construct • Develop • Experiment with • Identify • Interview • Make use of • Model • Organize • Plan • Select • Solve • Utilize	• Analyze • Assume • Categorize • Classify • Compare • Conclusion • Contrast • Discover • Dissect • Distinguish • Divide • Examine • Function • Inference • Inspect • List • Motive • Relationships • Simplify • Survey • Take part in • Test for • Theme	• Agree • Appraise • Assess • Award • Choose • Compare • Conclude • Criteria • Criticize • Decide • Deduct • Defend • Determine • Disprove • Estimate • Evaluate • Explain • Importance • Influence • Interpret • Judge • Justify • Mark • Measure • Opinion • Perceive • Prioritize • Prove • Rate • Recommend • Rule on • Select • Support • Value	• Adapt • Build • Change • Choose • Combine • Compile • Compose • Construct • Create • Delete • Design • Develop • Discuss • Elaborate • Estimate • Formulate • Happen • Imagine • Improve • Invent • Make up • Maximize • Minimize • Modify • Original • Originate • Plan • Predict • Propose • Solution • Solve • Suppose • Test • Theory

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

KNOWLEDGE INSTITUTE OF TECHNOLOGY (AUTONOMOUS), SALEM - 637504												
B.E. COMPUTER SCIENCE AND ENGINEERING											Version: 1.4	
Courses of Study and Scheme of Assessment (Regulations 2023)											Date: 15.12.25	
Sl. No.	Course Code	Course Title	Periods / Week						Maximum Marks			
			CAT	CP	L	T	P	C	IA	ESE	Total	
SEMESTER I												
1	BE23IP001	Induction Programme	IP	80	60	-	20	NC	-	-	-	
	THEORY											
2	BE23EN101	Communicative English - I	HS	2	1	1	0	2	40	60	100	
3	BE23MA201	Calculus for Engineers	BS	3	2	1	0	3	40	60	100	
4	BE23PH201	Basics and Applied Physics	BS	3	3	0	0	3	40	60	100	
5	BE23CY201	Engineering Chemistry	BS	3	3	0	0	3	40	60	100	
6	BE23GE301	Overview of Engineering and Technology	ES	3	3	0	0	3	40	60	100	
7	BE23MC901	தமிழர் மரபு / Heritage of Tamils	MC	1	1	0	0	1	40	60	100	
	THEORY CUM PRACTICAL											
8	BE23GE307	Problem Solving using C Programming	ES	5	3	0	2	4	50	50	100	
	PRACTICAL											
9	BE23BS201	Physics and Chemistry Laboratory	BS	4	0	0	4	2	60	40	100	
10	BE23GE305	Engineering Practices Laboratory	ES	4	0	0	4	2	60	40	100	
	EMPLOYABILITY ENHANCEMENT											
11	BE23PT801	Human Excellence and Value Education - I	EEC	2	1	0	1	NC	100	-	100	
Total				**30**	**17**	**2**	**11**	**23**	**510**	**490**	**1000**	
SEMESTER II												
	THEORY											
1	BE23EN102	Communicative English – II	HS	2	1	1	0	2	40	60	100	
2	BE23MA202	Vector Calculus and Numerical Methods	BS	3	2	1	0	3	40	60	100	
3	BE23GE304	Engineering Graphics and Network Drawings	ES	5	1	0	4	3	40	60	100	
4	BE23CS401	Digital Principles and Computer Organization	PC	3	3	0	0	3	40	60	100	
5	BE23MC902	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	MC	1	1	0	0	1	40	60	100	
6	BE23MC903	Universal Human Values and Ethics	MC	3	2	1	0	3	40	60	100	
	THEORY CUM PRACTICAL											
7	BE23GE310	Object Oriented Programming using C++	ES	5	3	0	2	4	50	50	100	
	PRACTICAL											
8	BE23GE311	Design Thinking	ES	4	0	0	4	2	100	-	100	
	EMPLOYABILITY ENHANCEMENT											
9	BE23PT802	Human Excellence and Value Education – II	EEC	2	1	0	1	NC	100	-	100	
10	BE23PT804	Engineering Clinic – I	EEC	2	0	0	2	1	100	-	100	
11	BE23PT806	Aptitude Skills – I	EEC	1	0	0	1	0.5	100	-	100	
Total				**31**	**14**	**3**	**14**	**22.5**	**690**	**410**	**1100**	

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

KNOWLEDGE INSTITUTE OF TECHNOLOGY (AUTONOMOUS), SALEM – 637504											
B.E. COMPUTER SCIENCE AND ENGINEERING											
Courses of Study and Scheme of Assessment (Regulations 2023)											
Sl. No.	Course Code	Course Title	Periods / Week						Maximum Marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
SEMESTER III											
	THEORY										
1	BE23MA203	Discrete Mathematics	BS	3	2	1	0	3	40	60	100
	THEORY CUM PRACTICAL										
2	BE23CS402	Computer Networks	PC	5	2	1	2	4	50	50	100
3	BE23CS403	Python for Data Science	PC	5	2	1	2	4	50	50	100
4	BE23CS404	Data Structures and Algorithms	PC	5	2	1	2	4	50	50	100
5	BE23CS405	Database Management System	PC	5	2	1	2	4	50	50	100
6	BE23CS406	Operating Systems	PC	5	2	1	2	4	50	50	100
	PRACTICAL										
7	BE23EN103	Professional Communication Laboratory – I	HS	2	0	0	2	1	60	40	100
	EMPLOYABILITY ENHANCEMENT										
8	BE23PT805	Engineering Clinic – II	EEC	2	0	0	2	1	100	-	100
9	BE23PT807	Aptitude Skills – II	EEC	1	0	0	1	0.5	100	-	100
Total				**33**	**12**	**6**	**15**	**25.5**	**550**	**350**	**900**
SEMESTER IV											
	THEORY										
1	BE23MA206	Mathematics for Business Analytics	BS	3	2	1	0	3	40	60	100
2	BE23CS407	Design and Analysis of Algorithms	PC	3	2	1	0	3	40	60	100
3	BE23CS408	Microprocessor and Microcontroller	PC	3	2	1	0	3	40	60	100
4	BE23MC904	Environmental Science and Sustainability	MC	2	2	0	0	NC	100	-	100
	THEORY CUM PRACTICAL										
5	BE23CS315	Java Programming	ES	5	2	1	2	4	50	50	100
6	BE23CS409	Foundations of Artificial Intelligence and Machine Learning	PC	5	2	1	2	4	50	50	100
7	BE23XX5XX	Professional Elective – I	PE	4	2	0	2	3	50	50	100
	PRACTICAL										
8	BE23EN104	Professional Communication Laboratory – II	HS	2	0	0	2	1	60	40	100
	EMPLOYABILITY ENHANCEMENT										
9	BE23PT808	Aptitude Skills – III	EEC	1	0	0	1	0.5	100	-	100
Total				**28**	**14**	**5**	**9**	**21.5**	**530**	**370**	**900**

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

KNOWLEDGE INSTITUTE OF TECHNOLOGY (AUTONOMOUS), SALEM – 637504												
B.E. COMPUTER SCIENCE AND ENGINEERING												
Courses of Study and Scheme of Assessment (Regulations 2023)												
Sl. No.	Course Code	Course Title	Periods / Week						Maximum Marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
SEMESTER V												
	THEORY											
1	BE23XX6XX	Open Elective - I**	OE	3	2	1	0	3	40	60	100
2	BE23AC905	Indian Constitution	AC	2	2	0	0	NC	100	-	100
3	BE23MC906	Entrepreneurship and Start-ups	PW	3	2	1	0	NC	100	-	100
	THEORY CUM PRACTICAL										
4	BE23CS410	C# and Dot NET	PC	5	2	1	2	4	50	50	100
5	BE23CS411	Object Oriented Software Engineering	PC	5	2	1	2	4	50	50	100
6	BE23CS412	Embedded Systems and IoT	PC	5	2	1	2	4	50	50	100
7	BE23XX5XX	Professional Elective – II	PE	4	2	0	2	3	50	50	100
8	BE23XX5XX	Professional Elective – III	PE	4	2	0	2	3	50	50	100
	PRACTICAL										
9	BE23PW701	Make-A-Product – Phase I*	PW	1	0	0	1	NC	-	-	-
	EMPLOYABILITY ENHANCEMENT										
10	BE23PT809	Aptitude Skills – IV	EEC	1	0	0	1	0.5	100	-	100
11	BE23PT810	Coding Skills – I	EEC	2	0	0	2	1	100	-	100
12	BE23PT812	Technical Comprehension and Mock Interview – I	EEC	1	0	0	1	0.5	100	-	100
Total				**36**	**16**	**5**	**15**	**23**	**790**	**310**	**1100**
SEMESTER VI												
	THEORY										
1	BE23CS413	Mobile Application Design and Development	PC	3	2	1	0	3	40	60	100
2	BE23CS414	Automata Theory and Compiler Design	PC	3	2	1	0	3	40	60	100
3	BE23XX6XX	Open Elective – II**	OE	3	2	1	0	3	40	60	100
4	BE23MC907	Disaster Management and Preparedness	MC	2	2	0	0	NC	100	-	100
	THEORY CUM PRACTICAL										
5	BE23CS415	Cryptography and Cybersecurity	PC	5	2	1	2	4	50	50	100
6	BE23XX5XX	Professional Elective – IV	PE	4	2	0	2	3	50	50	100
7	BE23XX5XX	Professional Elective – V	PE	4	2	0	2	3	50	50	100
	PRACTICAL										
8	BE23PW702	Make-A-Product – Phase II	PW	2	0	0	2	1	100	-	100

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

KNOWLEDGE INSTITUTE OF TECHNOLOGY (AUTONOMOUS), SALEM – 637504												
B.E. COMPUTER SCIENCE AND ENGINEERING												
Courses of Study and Scheme of Assessment (Regulations 2023)												
Sl. No.	Course Code	Course Title	Periods / Week						Maximum Marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
	EMPLOYABILITY ENHANCEMENT											
9	BE23PT803	Human Excellence and Value Education – III	EEC	2	1	0	1	NC	100	-	100
10	BE23PT811	Coding Skills – II	EEC	2	0	0	2	1	100	-	100
11	BE23PT813	Technical Comprehension and Mock Interview – II	EEC	1	0	0	1	0.5	100	-	100
Total				**31**	**15**	**4**	**12**	**21.5**	**770**	**330**	**1100**
	SEMESTER VII											
	THEORY											
1	BE23HS105	Project Management and Finance	HS	3	2	1	0	3	40	60	100
2	BE23XX6XX	Open Elective – III**	OE	3	2	1	0	3	40	60	100
	THEORY CUM PRACTICAL											
3	BE23CS416	Data Warehousing and Data Mining	PC	5	2	1	2	4	50	50	100
4	BE23XX5XX	Professional Elective – VI	PE	4	2	0	2	3	50	50	100
	PRACTICAL											
5	BE23CS702	Project Work – Phase I	PW	2	0	0	2	1	100	-	100
	EMPLOYABILITY ENHANCEMENT											
6	BE23PT814	Industrial Training/ Entrepreneurship/ Undergraduate Research Activity/ Company Certification	EEC	6	0	0	6	3	100	-	100
Total				**23**	**8**	**3**	**12**	**17**	**380**	**220**	**600**
SEMESTER VIII												
	PRACTICAL											
1	BE23CS703	Project Work – Phase II	PW	18	0	0	18	9	60	40	100
Total				**18**	**0**	**0**	**18**	**9**	**60**	**40**	**100**
			Total Number of Credits: 163								

*The course will be considered for grading in semester VI only.

**Student shall choose a course from the list of open electives offered by other departments or from emerging technology verticals including online courses with prior approval.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

SEMESTER-WISE CREDITS DISTRIBUTION

SUMMARY											
Sl. No.	Course Category	Credits per Semester								Credits	Credit %
		I	II	III	IV	V	VI	VII	VIII		
1	HS	2	2	1	1	-	-	3	-	9	6
2	BS	11	3	3	3	-	-	-	-	20	12
3	ES	9	9	-	4	-	-	-	-	22	13
4	PC	-	3	20	10	12	10	4	-	59	36
5	PE	-	-	-	3	6	6	3	-	18	11
6	OE	-	-	-	-	3	3	3	-	9	6
7	PW	-	-	-	-	✓	1	1	9	11	7
8	EEC	✓	1.5	1.5	0.5	2	1.5	3	-	10	6
9	MC/NC/AC	1	4	-	✓	✓	✓	-	-	5	3
	Total	**23**	**22.5**	**25.5**	**21.5**	**23**	**21.5**	**17**	**9**	**163**	**100**

CAT	Category of Course	IP	Induction Programme	OE	Open Elective Courses
CP	Contact Period	HS	Humanities, Social Sciences and Management Courses	PW	Project Work Courses
L	Lecture Period	BS	Basic Science Courses	EEC	Employability Enhancement Courses
T	Tutorial Period	ES	Engineering Science Courses	MC/ NC/ AC	Mandatory Courses/Non-Credit Courses/Audit Courses
P	Laboratory Period	PC	Professional Core Courses	IA	Internal Assessment
C	Credits	PE	Professional Elective Courses	ESE	End Semester Examination

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

PROFESSIONAL ELECTIVE COURSES: VERTICALS

Professional Elective	VERTICAL - 1 Java Full Stack	VERTICAL - 2 Agile Methodology with DevOps Programming	VERTICAL - 3 Cybersecurity	VERTICAL - 4 Data Analytics and AI	VERTICAL - 5 Transformative AI and Business Analytics	VERTICAL - 6 Business Process Automation	VERTICAL - 7 Java Automation	VERTICAL - 8 Integrated Software System Design	VERTICAL - 9 CRM with Business Intelligence	VERTICAL - 10 IT Infrastructure Management	Diversified Courses
1	Fundamentals of Web Development	Cloud Fundamentals and DevOps	Foundations of Cybersecurity	Foundations of Data Engineering	Recommender System	Fundamentals of IT Service Management	Fundamentals of Web Development	Web Development Foundations	Customer Relationship Management System Administration	IT Infrastructure Fundamentals	Knowledge Engineering
2	Frontend Technologies	Agile with DevOps fundamentals and usage	Static Malware Analysis	Advanced Machine Learning	Advanced Machine Learning	Custom Application Development	Testing Fundamentals and Manual Testing	System Design	Customer Relationship Management System Development	IT Automation using Python for Infra	Data Exploration and Visualization
3	Java 8 and Advanced Java Features	Agile based Project Automation with DevOps	Dynamic Malware Analysis	Exploratory Data Analytics and Visualization	JAVA Script	IT Service Management Practices	Automation Testing with Selenium	Competitive Coding	API Integration Platform	Server Administration	Foundations of Digital and Social Media Marketing
4	Backend Development with Java	DevOps container services	Fundamentals of Malware Reverse Engineering	Deep Learning Techniques	Computer Vision	IT Operation Management	Advanced Testing with TestNG and CI/CD	Frontend Design and Development	Business Intelligence and Analytics	Storage and Backup Technologies Program	Fundamentals of Robotic Process Automation
5	Full Stack Development and Deployment	CI and CD (Continuous Integration and Continuous Development)	Malware Injection and Evasion Techniques	Natural Language Processing	Natural Language Processing	Automation for Digital Creators	Tools for Automated Testing	Backend Engineering and Deployment Practices	Artificial Intelligence in Data Modeling	Cloud Infrastructure Essentials	Cloud Computing
6	DevOps and Cloud Basics	Introduction to Azure and AWS DevOps	Android Malware Analysis	Large Language Models and AI agents	Large Language Models and AI Agents	IT Asset Management	Performance and Database Testing	AI and ML Foundations with Prompt Engineering and RAG Systems	Intelligent System Development	IT Service Management and Infra Operations	Cloud Services Management

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

7	Quality Engineering and Full Stack Integration	IT World Essentials	Windows Operating System Security	AI for IoT	AI for IoT	Customer Workflow	API Testing and Automation	-	Data Visualization Techniques	Information Storage and Management	Foundations of Recommender Systems
8	Secure Rest API Development	Critical and Design Thinking Skills	Windows Threats and Defense Techniques	Intelligent Process Automation	Intelligent Process Automation	Employee Workflow	Testing using AI and ML Tools	-	Enterprise Resource Planning	Security Governance, Risk and Compliance	Fundamentals of Blockchain

Registration of Professional Elective Courses from Verticals:

Professional Elective Courses will be registered during semesters IV, V, VI and VII depending on the programme of study. These courses are organized into verticals, each represents a specific area of specialization / diversified group. Students are permitted to choose all the Professional Electives from a single vertical or select from multiple verticals, provided the necessary prerequisites for each course are satisfied.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

PROFESSIONAL ELECTIVE COURSES: VERTICALS

VERTICAL 1: JAVA FULL STACK

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23CS501	Fundamentals of Web Development	PE	4	2	0	2	3	50	50	100
2	BE23CS502	Frontend Technologies	PE	4	2	0	2	3	50	50	100
3	BE23CS503	Java 8 and Advanced Java Features	PE	4	2	0	2	3	50	50	100
4	BE23CS504	Backend Development with Java	PE	4	2	0	2	3	50	50	100
5	BE23CS505	Full Stack Development and Deployment	PE	4	2	0	2	3	50	50	100
6	BE23CS506	DevOps and Cloud Basics	PE	4	2	0	2	3	50	50	100
7	BE23CS507	Quality Engineering and Full Stack Integration	PE	4	2	0	2	3	50	50	100
8	BE23CS508	Secure Rest API Development	PE	4	2	0	2	3	50	50	100

VERTICAL 2: AGILE METHODOLOGY WITH DEVOPS PROGRAMMING

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23CS511	Cloud Fundamentals and DevOps	PE	4	2	0	2	3	50	50	100
2	BE23CS512	Agile with DevOps Fundamentals and Usage	PE	4	2	0	2	3	50	50	100
3	BE23CS513	Agile based Project Automation with DevOps	PE	4	2	0	2	3	50	50	100
4	BE23CS514	DevOps Container Services	PE	4	2	0	2	3	50	50	100
5	BE23CS515	CI and CD (Continuous Integration and Continuous Development)	PE	4	2	0	2	3	50	50	100
6	BE23CS516	Introduction to Azure and AWS DevOps	PE	4	2	0	2	3	50	50	100
7	BE23CS517	IT World Essentials	PE	4	2	0	2	3	50	50	100
8	BE23CS518	Critical and Design Thinking Skills	PE	4	2	0	2	3	50	50	100

VERTICAL 3: CYBERSECURITY

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23IT521	Foundations of Cybersecurity	PE	4	2	0	2	3	50	50	100
2	BE23IT522	Static Malware Analysis	PE	4	2	0	2	3	50	50	100
3	BE23IT523	Dynamic Malware Analysis	PE	4	2	0	2	3	50	50	100
4	BE23IT524	Fundamentals of Malware Reverse Engineering	PE	4	2	0	2	3	50	50	100
5	BE23IT525	Malware Injection and Evasion Techniques	PE	4	2	0	2	3	50	50	100

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

6	BE23IT526	Android Malware Analysis	PE	4	2	0	2	3	50	50	100
7	BE23IT527	Windows Operating System Security	PE	4	2	0	2	3	50	50	100
8	BE23IT528	Windows Threats and Defense Techniques	PE	4	2	0	2	3	50	50	100

VERTICAL 4: DATA ANALYTICS AND AI

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23AD531	Foundations of Data Engineering	PE	4	2	0	2	3	50	50	100
2	BE23AD532	Advanced Machine Learning	PE	4	2	0	2	3	50	50	100
3	BE23AD533	Exploratory Data Analytics and Visualization	PE	4	2	0	2	3	50	50	100
4	BE23AD534	Deep Learning Techniques	PE	4	2	0	2	3	50	50	100
5	BE23AD535	Natural Language Processing	PE	4	2	0	2	3	50	50	100
6	BE23AD536	Large Language Models and AI agents	PE	4	2	0	2	3	50	50	100
7	BE23AD537	AI for IoT	PE	4	2	0	2	3	50	50	100
8	BE23AD538	Intelligent Process Automation	PE	4	2	0	2	3	50	50	100

VERTICAL 5: TRANSFORMATIVE AI AND BUSINESS ANALYTICS

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23AD541	Recommender System	PE	4	2	0	2	3	50	50	100
2	BE23AD532	Advanced Machine Learning	PE	4	2	0	2	3	50	50	100
3	BE23AD542	JAVA Script	PE	4	2	0	2	3	50	50	100
4	BE23AD543	Computer Vision	PE	4	2	0	2	3	50	50	100
5	BE23AD535	Natural Language Processing	PE	4	2	0	2	3	50	50	100
6	BE23AD536	Large Language Models and AI agents	PE	4	2	0	2	3	50	50	100
7	BE23AD537	AI for IoT	PE	4	2	0	2	3	50	50	100
8	BE23AD538	Intelligent Process Automation	PE	4	2	0	2	3	50	50	100

VERTICAL 6: BUSINESS PROCESS AUTOMATION

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23CB551	Fundamentals of IT Service Management	PE	4	2	0	2	3	50	50	100
2	BE23CB552	Custom Application Development	PE	4	2	0	2	3	50	50	100
3	BE23CB553	IT Service Management Practices	PE	4	2	0	2	3	50	50	100
4	BE23CB554	IT Operation Management	PE	4	2	0	2	3	50	50	100
5	BE23CB555	Automation for Digital Creators	PE	4	2	0	2	3	50	50	100

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

6	BE23CB556	IT Asset Management	PE	4	2	0	2	3	50	50	100
7	BE23CB557	Customer Workflow	PE	4	2	0	2	3	50	50	100
8	BE23CB558	Employee Workflow	PE	4	2	0	2	3	50	50	100

VERTICAL 7: JAVA AUTOMATION

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23CS501	Fundamentals of Web Development	PE	4	2	0	2	3	50	50	100
2	BE23CS521	Testing Fundamentals and Manual Testing	PE	4	2	0	2	3	50	50	100
3	BE23CS522	Automation Testing with Selenium	PE	4	2	0	2	3	50	50	100
4	BE23CS523	Advanced Testing with TestNG and CI/CD	PE	4	2	0	2	3	50	50	100
5	BE23CS524	Tools for Automated Testing	PE	4	2	0	2	3	50	50	100
6	BE23CS525	Performance and Database Testing	PE	4	2	0	2	3	50	50	100
7	BE23CS526	API Testing and Automation	PE	4	2	0	2	3	50	50	100
8	BE23CS527	Testing using AI and ML Tools	PE	4	2	0	2	3	50	50	100

VERTICAL 8: INTEGRATED SOFTWARE SYSTEM DESIGN

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23CS541	Web Development Foundations	PE	4	2	0	2	3	50	50	100
2	BE23CS542	System Design	PE	4	2	0	2	3	50	50	100
3	BE23CS543	Competitive Coding	PE	4	2	0	2	3	50	50	100
4	BE23CS544	Frontend Design and Development	PE	4	2	0	2	3	50	50	100
5	BE23CS545	Backend Engineering and Deployment Practices	PE	4	2	0	2	3	50	50	100
6	BE23CS546	AI and ML Foundations with Prompt Engineering and RAG Systems	PE	4	2	0	2	3	50	50	100

VERTICAL 9: CRM WITH BUSINESS INTELLIGENCE

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23CB561	Customer Relationship Management System Administration	PE	4	2	0	2	3	50	50	100
2	BE23CB562	Customer Relationship Management System Development	PE	4	2	0	2	3	50	50	100
3	BE23CB563	API Integration Platform	PE	4	2	0	2	3	50	50	100
4	BE23CB564	Business Intelligence and Analytics	PE	4	2	0	2	3	50	50	100
5	BE23CB565	Artificial Intelligence in Data Modeling	PE	4	2	0	2	3	50	50	100
6	BE23CB566	Intelligent System Development	PE	4	2	0	2	3	50	50	100

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

7	BE23CB567	Data Visualization Techniques	PE	4	2	0	2	3	50	50	100
8	BE23CB568	Enterprise Resource Planning	PE	4	2	0	2	3	50	50	100

VERTICAL 10: IT INFRASTRUCTURE MANAGEMENT

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23AD551	IT Infrastructure Fundamentals	PE	4	2	0	2	3	50	50	100
2	BE23AD552	IT Automation using Python for Infra	PE	4	2	0	2	3	50	50	100
3	BE23AD553	Server Administration	PE	4	2	0	2	3	50	50	100
4	BE23AD554	Storage and Backup Technologies Program	PE	4	2	0	2	3	50	50	100
5	BE23AD555	Cloud Infrastructure Essentials	PE	4	2	0	2	3	50	50	100
6	BE23AD556	IT Service Management & Infra Operations	PE	4	2	0	2	3	50	50	100
7	BE23AD557	Information Storage and Management	PE	4	2	0	2	3	50	50	100
8	BE23AD558	Security Governance, Risk and Compliance	PE	4	2	0	2	3	50	50	100

DIVERSIFIED COURSES

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23CS531	Knowledge Engineering	PE	4	2	0	2	3	50	50	100
2	BE23CS532	Data Exploration and Visualization	PE	4	2	0	2	3	50	50	100
3	BE23CS533	Foundations of Digital and Social Media Marketing	PE	4	2	0	2	3	50	50	100
4	BE23CS534	Fundamentals of Robotic Process Automation	PE	4	2	0	2	3	50	50	100
5	BE23CS535	Cloud Computing	PE	4	2	0	2	3	50	50	100
6	BE23CS536	Cloud Services Management	PE	4	2	0	2	3	50	50	100
7	BE23CS537	Foundations of Recommender Systems	PE	4	2	0	2	3	50	50	100
8	BE23CS538	Fundamentals of Blockchain	PE	4	2	0	2	3	50	50	100

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

OPEN ELECTIVES

Students shall choose the open elective courses from the list of open electives either in category A or category B such that the course contents are not similar to any other course contents/title under other course categories.

CATEGORY A : OPEN CATEGORY

OPEN ELECTIVE-I (5th Semester)

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23ME601	Sustainability Engineering	OE	3	2	1	0	3	40	60	100
2	BE23EE601	Solar PV Systems	OE	3	2	1	0	3	40	60	100
3	BE23EC601	IoT and Applications	OE	3	2	1	0	3	40	60	100
4	BE23CS601	Robotic Process Automation	OE	3	2	1	0	3	40	60	100
5	BE23AD601	Data Analytics	OE	3	2	1	0	3	40	60	100
6	BE23PT651	Japanese Language – Level 1	OE	3	2	1	0	3	100	-	100

OPEN ELECTIVE-II (6th Semester)

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23EE602	Electric Vehicle Technology	OE	3	2	1	0	3	40	60	100
2	BE23EC602	Consumer Electronics	OE	3	2	1	0	3	40	60	100
3	BE23CB601	Mobile App Development	OE	3	2	1	0	3	40	60	100
4	BE23CS602	Data Visualization	OE	3	2	1	0	3	40	60	100
5	BE23CE601	Smart Buildings	OE	3	2	1	0	3	40	60	100
6	BE23PT652	Japanese Language – Level 2	OE	3	2	1	0	3	100	-	100

OPEN ELECTIVE-III (7th Semester)

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23ME602	Occupational Health and Safety	OE	3	2	1	0	3	40	60	100
2	BE23EE603	Drone Technology	OE	3	2	1	0	3	40	60	100
3	BE23EC603	Wearable Devices	OE	3	2	1	0	3	40	60	100
4	BE23IT601	Augmented Reality / Virtual Reality	OE	3	2	1	0	3	40	60	100
5	BE23CS603	Digital Marketing	OE	3	2	1	0	3	40	60	100
6	BE23PT653	Japanese Language – Level 3	OE	3	2	1	0	3	100	-	100

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

CATEGORY B: EMERGING TECHNOLOGY VERTICALS

OPEN ELECTIVE-I, II, III

Students are permitted to choose all the open electives from a particular emerging technology vertical or from different verticals such that the course contents are not similar to any other course contents / title under other course categories.

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
	EmT Vertical: Sensors & IoT (For students of Mechanical, CSE, CIVIL, IT, CSBS, AI&DS department)										
1	BE23EC611	Introduction to Sensors and IoT	OE	3	2	1	0	3	40	60	100
2	BE23EC612	IoT System Development and Integration	OE	3	2	1	0	3	40	60	100
3	BE23EC613	Industrial Internet of Things	OE	3	2	1	0	3	40	60	100
	EmT Vertical: Renewable Energy Technologies (For students of ECE, CSE, CIVIL, IT, CSBS, AI&DS department)										
4	BE23ME611	Solar and Wind Energy Systems	OE	3	2	1	0	3	40	60	100
5	BE23ME612	Biomass and Hydro Energy Systems	OE	3	2	1	0	3	40	60	100
6	BE23ME613	Hydrogen and Hybrid Energy Systems	OE	3	2	1	0	3	40	60	100
	EmT Vertical: Frontend Technologies (For students of Mechanical, ECE, EEE, CIVIL department)										
7	BE23CS611	Foundation of Web Development	OE	3	2	1	0	3	40	60	100
8	BE23CS612	Frontend Development	OE	3	2	1	0	3	40	60	100
9	BE23CS613	Backend Development	OE	3	2	1	0	3	40	60	100
	EmT Vertical: CRM Fundamentals (For students of Mechanical, ECE, EEE, CIVIL department)										
10	BE23CB611	CRM Foundations and Tools	OE	3	2	1	0	3	40	60	100
11	BE23CB612	CRM Administration	OE	3	2	1	0	3	40	60	100
12	BE23CB613	CRM Development and Automation	OE	3	2	1	0	3	40	60	100

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

Enrollment for B.E. / B. Tech. (Honours) / Minor degree (Optional)

A student can also optionally register for additional courses (18 credits) on any one of the specialization offered by various departments and become eligible for the award of B.E./B.Tech. (Honours)/Minor degree.

For B.E. / B. Tech. (Honours), a student shall register for the additional courses (18 credits) from semester V onwards. These courses shall be from the same vertical or from a combination of different verticals of the same programme of study only.

For minor degree, a student shall register for the additional courses (18 credits) from semester V onwards. These courses have to be in a particular vertical for Minor degree offered by any one of the other programmes.

Complete details are available in clause 4.19 of Regulations 2023.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

VERTICALS FOR MINOR DEGREE

Minor degree	Vertical-1	Vertical-2	Vertical-3	Vertical-4
	Artificial Intelligence & Machine Learning	**Data Analytics**	**Internet of Things**	**Automotive Electronics**
Offering departments	**AI&DS / CSBS**	**CSE / IT**	**ECE / EEE**	**EEE / ECE**
Offered to	**All B.E. (Mechanical, ECE, EEE and Civil) Programs**	**All B.E. (Mechanical, ECE, EEE and Civil) Programs**	**All B.E./B.Tech. programs except ECE and EEE**	**All B.E./B.Tech. programs except ECE**
Course 1	Fundamentals of Artificial Intelligence	Data Science Fundamentals	Fundamentals of IoT Systems	Fundamentals of Automotive Electronics
Course 2	Introduction to Machine Learning	AI & ML Fundamentals	Smart Sensor Networks and Data Acquisition	Sensors and Actuators
Course 3	Deep Learning and Neural Networks	Exploratory Data Analytics	Wireless Communication for IoT	Embedded Systems Design
Course 4	Introduction to Data Analytics	Visualization Techniques	IoT Edge Computing and Device Programming	Automotive Infotronics
Course 5	Fundamentals of Data Warehousing and Mining	Fundamentals of Data Warehousing and Mining	IoT Middleware and Interoperability	Vehicle Networking and Diagnostics
Course 6	Ethics in AI	Ethics in AI	IoT Systems Design and Deployment	ADAS and Connected Vehicle Technologies

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

VERTICALS FOR MINOR DEGREE

VERTICAL 1: ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23AD571M	Fundamentals of Artificial Intelligence	MI	4	2	0	2	3	50	50	100
2	BE23AD572M	Introduction to Machine Learning	MI	4	2	0	2	3	50	50	100
3	BE23AD573M	Deep Learning and Neural Networks	MI	4	2	0	2	3	50	50	100
4	BE23AD574M	Introduction to Data Analytics	MI	4	2	0	2	3	50	50	100
5	BE23CS565M	Fundamentals of Data Warehousing and Mining	MI	4	2	0	2	3	50	50	100
6	BE23AD575M	Ethics in AI	MI	4	2	0	2	3	50	50	100

VERTICAL 2: DATA ANALYTICS

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23CS561M	Data Science Fundamentals	MI	4	2	0	2	3	50	50	100
2	BE23CS562M	AI & ML Fundamentals	MI	4	2	0	2	3	50	50	100
3	BE23CS563M	Exploratory Data Analytics	MI	4	2	0	2	3	50	50	100
4	BE23CS564M	Visualization Techniques	MI	4	2	0	2	3	50	50	100
5	BE23CS565M	Fundamentals of Data Warehousing and Mining	MI	4	2	0	2	3	50	50	100
6	BE23AD575M	Ethics in AI	MI	4	2	0	2	3	50	50	100

VERTICAL 3: INTERNET OF THINGS

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23EC541M	Fundamentals of IoT Systems	MI	3	2	1	0	3	40	60	100
2	BE23EC542M	Smart Sensor Networks and Data Acquisition	MI	3	2	1	0	3	40	60	100
3	BE23EC543M	Wireless Communication for IoT	MI	3	2	1	0	3	40	60	100
4	BE23EC544M	IoT Edge Computing and Device Programming	MI	3	2	1	0	3	40	60	100
5	BE23EC545M	IoT Middleware and Interoperability	MI	3	2	1	0	3	40	60	100
6	BE23EC546M	IoT Systems Design and Deployment	MI	3	2	1	0	3	40	60	100

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

Chairperson
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

VERTICAL 4: AUTOMOTIVE ELECTRONICS

Sl. No	Course Code	Course Title	Periods / Week						Maximum marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
1	BE23EE541M	Fundamentals of Automotive Electronics	MI	3	2	1	0	3	40	60	100
2	BE23EE542M	Sensors and Actuators	MI	3	2	1	0	3	40	60	100
3	BE23EE543M	Embedded Systems Design	MI	3	2	1	0	3	40	60	100
4	BE23EE544M	Automotive Infotronics	MI	3	2	1	0	3	40	60	100
5	BE23EE545M	Vehicle Networking and Diagnostics	MI	3	2	1	0	3	40	60	100
6	BE23EE546M	ADAS and Connected Vehicle Technologies	MI	3	2	1	0	3	40	60	100

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

BE23MA206	MATHEMATICS FOR BUSINESS ANALYTICS	CP	L	T	P	C
		3	2	1	0	3
Programme & Branch	COMMON TO ALL B.E. / B.TECH. BRANCHES	Version: 1.0				

Use of Calculator - fx991ms and Statistical Table are Permitted

Course Objectives:

1.	To classify the data and learn the basic concepts of Probability.
2.	To understand the concepts of Probability distributions.
3.	To study the various statistical techniques for decision making.
4.	To classify the design of experiments in solving Engineering problem.
5.	To introduce basic concepts of correlation and regression for data analysis.

	INTRODUCTION (Not for Examination)	**2**
Importance	Business analytics has become one of the most important skills that every student of management and engineering must acquire to become successful in the career. The analytics across industries for decision making, problem solving and for driving innovations make analytics an essential skill for every student from management and engineering disciplines.	
Real-life Example(s)	Amazon – festival offer, Flipkart – special offer (Data collection).	
Linkages	Basic arithmetic operations.	
UNIT–I	**FOUNDATION OF DATA SCIENCE**	**6+3**
	Introduction to Business Analytics – Measures of dispersion – Central tendency - Axioms of probability – Conditional probability – Baye's theorem .	
UNIT–II	**DISTRIBUTIONS**	**6+3**
	Discrete and continuous random variables - Types of Distributions – Discrete Distributions: Binomial, Poisson, Geometric – Continuous Distribution: Uniform, Exponential and Normal distributions .	
UNIT–III	**TESTING OF HYPOTHESIS**	**6+3**
	Essential of Testing of Hypothesis -Sampling distribution - Tests for single mean, proportion and difference of means (Large and small samples) – Tests for single variance and equality of variances – Chi Square test for goodness of fit – Independence of attributes .	
UNIT – IV	**DESIGN OF EXPERIMENTS**	**6+3**
	Introduction of Design of Experiments -One-way and two-way classifications - Completely randomized design – Randomized block design – Latin square design - 2^2 factorial designs .	

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 08/07/2024
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 06/07/2024

UNIT–V	CORRELATION AND REGRESSION	6+3
	Correlations – Pearson correlation coefficient - Spearman Rank Correlation – Regression Simple Linear Regression – SLR Models .	
	Total (LT)	**47 Periods**
	OPEN ENDED PROBLEMS / QUESTIONS	
	Course specific Open Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Apply the probability concepts in solving problems.	L3 – Apply
CO2	Solve the Probability distribution function in Engineering problems.	L3 – Apply
CO3	Identify the hypothesis-testing techniques to interpret results.	L3 - Apply
CO4	Apply the basic concepts of design of experiments in Engineering and Business.	L3 - Apply
CO5	Compute the correlation and regression in Engineering problems.	L3 - Apply
	TEXTBOOKS:	
1.	Dr.U.Dineshkumar IIM-B," Business Analytics", Second Edition, Wiley India Edition, 2022.	
2.	Douglasc. Montgomery, Georgec. Runger," Applied Statistics and Probability for Engineers", Seventh Edition, Wiley India Edition, 2018.	
	REFERENCE BOOKS:	
1.	J.K. Sharma," Business Statistics", 5th Edition, S. Chand, 2020.	
2.	Ken Black, Business Statistics for contemporary decision making, 5th Edition, Wiley India Edition, 2010.	
3.	T.Veerarajan, "Probability -Statistics and Random variables", Third Edition, Mc Graw Hill Education, 2017.	
	WEB REFERENCES:	

S.No.	Publisher	Website link	Type of Content
1.	Natural sciences publishing	https://www.naturalspublishing.com/show.asp?JorID=3&pgid=0	Journal

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 08/07/2024
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 06/07/2024

2.	Springer	https://link.springer.com/article/10.1038/s41562-023-01562-4	Journal

VIDEO REFERENCES:

S.No.	Video Details	Name of the Expert	Type of Content	Video Link
1.	NPTEL	Prof. Saji K Mathew - IIT Madras	Video	https://onlinecourses.nptel.ac.in/noc24_cs65/preview
2.	NPTEL	Prof. Rudra P Pradhan - IIT Kharagpur	**Video**	https://onlinecourses.nptel.ac.in/noc20_mg11/preview

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2													
CO2	3	2													
CO3	3	2													
CO4	3	2	2	2	1	1						1			
CO5	3	2			1										
Avg	**3.0**	**2.0**	**2.0**	**2.0**	**1.0**	**1.0**						**1.0**			

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 08/07/2024
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 06/07/2024

BE23CS407	DESIGN AND ANALYSIS OF ALGORITHMS	CP	L	T	P	C
		3	2	1	0	3
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT, CSBS and AI&DS) Branches	Version: 1.0				

Course Objectives:		
1.	To learn and understand the algorithm analysis techniques and complexity notations.	
2.	To analyze the efficiency of graph algorithms.	
3.	To learn and understand the different algorithm design techniques for effective problem solving in computing.	
4.	To solve problems using backtracking and branch & bound.	
5.	To understand the basic concepts of NP completeness, approximation algorithms and randomized algorithms.	
	INTRODUCTION (Not for Examination)	**2**
Importance	Problem Solving - Understanding Computational Limits - Comparative Analysis - Improved User Experience.	
Real-life Example(s)	Navigation Systems - E-commerce Recommendations - Google Search Engine - Social Media Feeds - Autonomous Vehicles - Financial Trading.	
Linkages	**Pre-requisite:** Data Structure and Algorithms. **Future courses:** Coding Skills – I, Coding Skills – II.	
UNIT–I	**INTRODUCTION TO ALGORITHM DESIGN**	**6+3**
	Algorithm analysis: Time and space complexity - Asymptotic Notations and its properties - Best case, Worst case and Average case analysis - **Recurrence relation:** Substitution method - **Searching:** Linear search, Binary search and Interpolation Search - **Pattern Search:** Naïve string-matching algorithm - Rabin Karp algorithm - Knuth Morris Pratt algorithm.	
UNIT–II	**GRAPH ALGORITHM**	**6+3**
	Graph algorithms: Representations of graphs - Graph traversal: DFS, BFS - **Minimum spanning tree:** Kruskal's and Prim's algorithm - **Shortest path:** Bellman Ford algorithm - Floyd Warshall algorithm. ***Experiential Learning:** Assign projects that require constructing and navigating graphs (e.g., network pathfinder simulations).	
UNIT–III	**ALGORITHM DESIGN TECHNIQUES**	**6+3**
	Divide and Conquer methodology: Finding maximum and minimum - Merge sort - **Dynamic programming:** Elements of dynamic programming - Multi stage graph - Optimal Binary Search Trees - **Greedy Technique:** Elements of the greedy strategy - Activity selection problem - Optimal Merge pattern - Huffman	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

	Trees.	
UNIT–IV	**BACKTRACKING AND BRANCH & BOUND**	**6+3**
	Backtracking: nQueens problem - Hamiltonian Circuit Problem - Subset Sum Problem - **Branch and Bound:** Solving 15 Puzzle problem - Assignment problem - Knapsack Problem - Travelling Salesman Problem (TSP). ***Experiential Learning:** Create physical or virtual board games simulating the n-Queens problem or Hamiltonian circuits where students play the role of decision-makers.	
UNIT–V	**APPROXIMATION AND RANDOMIZED ALGORITHMS**	**6+3**
	NP Complete and NP Hard Problems: Basic Concepts - Non-Deterministic Algorithms - Class of NP Complete and NP Hard - **Approximation Algorithms:** Travelling Salesman Problem (TSP) - **Randomized Algorithms:** Randomized Quick sort - Finding k^{th} smallest number.	
	Total (LT)	**47 Periods**
	*** INTERNAL EVALUATION ONLY**	
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Apply searching and pattern matching algorithms to solve practical data retrieval problems.	**L3 – Apply**
CO2	Apply graph algorithms to solve problems and analyze their efficiency.	**L3 – Apply**
CO3	Apply Greedy and Dynamic Programming concept to solve a given problem.	**L3 – Apply**
CO4	Apply Backtracking, Branch and Bound concept to solve a given problem.	**L3 – Apply**
CO5	Apply various performance analysis methods using nondeterministic algorithms.	**L3 – Apply**
	TEXTBOOKS:	
1.	S. Sridhar, "Design and Analysis of Algorithms", 2nd Edition, Oxford university press, 2024.	
2.	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, "Introduction to Algorithms", 4th Edition, MIT Press, Cambridge, 2022.	
	REFERENCE BOOKS:	

1.	By Sanjoy Dasgupta, Christos Papadimitriou, Umesh Vazirani, "Algorithms" 1st Edition, Mc Graw Hill, 2023.
2.	Sandeep Sen, Amit Kumar, "Design and Analysis of Algorithms: A Contemporary Perspective", 1st Edition, Cambridge Press, 2019
3.	Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Computer Algorithms/C++" Orient Blackswan, 2nd Edition, 2019.

WEB REFERENCES:

S.No	Publisher	Website link	Type of Content
1.	Geeksforgeeks	https://www.geeksforgeeks.org/designandanalysisofalgorithms/	Online Course
2.	Javatpoint	https://www.javatpoint.com/daatutorial	Online Course
3.	Open Course Ware	https://ocw.mit.edu/courses/6046jdesignandanalysisofalgorithmsspring2015/	Online Course

VIDEO REFERENCES:

S.No	Video Details	Name of the Expert	Type of Content	Video Link
1.	YouTube	Abdul Bari	Lecture	https://youtu.be/0IAPZzGSbME?si=GocZ502btgUeUg4O
2.	NPTEL	Prof. Madhavan Mukund	Lecture	https://onlinecourses.nptel.ac.in/noc19_cs47/preview
3.	YouTube	Jennys lectures CS	Lecture	https://youtu.be/9mjGoOBy8vs?si=t74rVXQE-aGBLEws
4.	YouTube	Dr. Mohammed Javed	Lecture	https://www.youtube.com/watch?v=3udyFh_Dbbc

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	1								1	3	2	1
CO2	3	3	2	2	3				2	2		1	3	2	1
CO3	3	3	2	2	3							1	3	2	1
CO4	3	3	2	2	3				2	2		1	3	2	1
CO5	3	2	2	2								1	3	2	1
Avg.	**3.0**	**2.6**	**1.8**	**1.8**	**3.0**				**2.0**	**2.0**		**1.0**	**3.0**	**2.0**	**1.0**

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

BE23CS408	MICROPROCESSOR AND MICROCONTROLLER	CP	L	T	P	C
		3	2	1	0	3
Programme & Branch	B.E. – COMPUTER SCIENCE ENGINEERING	Version: 1.0				

Course Objectives:		
1.	To provide an understanding of the fundamental components of microprocessors.	
2.	To explore the architecture and programming features of the 8086 microprocessor.	
3.	To familiarize students with memory and peripheral I/O interfacing of 8086 microprocessor.	
4.	To introduce the architecture and functional features of the 8051 microcontroller.	
5.	To develop programming skills for the 8051 microcontroller.	
	INTRODUCTION (Not for Examination)	**2**
Importance	It lays a strong foundation for understanding how computing systems work, bridges the gap between software and hardware, enabling the development of modern automation solutions. Evolution of Microprocessors: Analog computers: Analytical engine, Arithmetic machine; Digital Computers: Generation of computers, Vacuum tubes – Transistors – Logic gates – Integrated circuits: LSI, MSI, VLSI – CPU.	
Real-life Example(s)	Microprocessor: Overview of HP-pro tower 280 g9 desktop PC. Microcontroller: Printer – Data interface, receiving, storage, printing controls.	
Linkages	**Pre-requisite:** Digital principles and Computer Organization. **Future courses:** Embedded systems and IoT.	
UNIT–I	**BASICS OF COMPUTER ARCHITECTURE**	**6+3**
	Architecture: Harvard VS Von Neumann – Block diagram and components, Memory Hierarchy – Registers, Cache – Data storage and retrieval – Hardware software interaction: Assembler, Compiler, Operating System: DOS, BIOS – system boot process, Impact of hardware on speed and power consumption. ***Experiential Learning:** Demonstration: BIOS system boot process.	
UNIT–II	**THE 8086 MICROPROCESSOR**	**6+3**
	Introduction to 8086 – Microprocessor architecture – Addressing modes – Instruction set and assembler directives – Assembly language programming – Stacks – Procedures – Macros – Interrupts and interrupt service routines – Byte and String Manipulation.	
UNIT–III	**I/O INTERFACING**	**6+3**
	Parallel communication interface – Serial communication interface – D/A and A/D Interface – Timer – Interrupt controller – DMA	

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

	controller – **Case studies:** LED display, Alarm Controller.	
UNIT–IV	**THE 8051 MICROCONTROLLER**	**6+3**
	Architecture of 8051 – Special Function Registers (SFRs) – I/O Pins Ports and Circuits – Instruction set – Addressing modes – Interrupts – Assembly language programming.	
UNIT–V	**INTERFACING MICROCONTROLLER**	**6+3**
	Programming 8051 Timers – Serial Port Programming – **Case studies:** LCD & Keyboard Interfacing – ADC, DAC & Sensor Interfacing – External Memory Interface – Comparison of Microprocessor, Microcontroller, PIC and ARM processors.	
	Total (LT)	**47 Periods**
	*** INTERNAL EVALUATION ONLY**	
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Explain the fundamental components of microprocessors and the impact of various components of microprocessor performance.	**L2 - Understand**
CO2	Describe the architecture and programming features of 8086 microprocessor.	**L2 - Understand**
CO3	Distinguish the various memory and peripheral I/O interfaces used with 8086 microprocessor.	**L3 - Apply**
CO4	Illustrate the architecture and functionality of the 8051 microcontroller, including registers and ports.	**L2 - Understand**
CO5	Develop programs for 8051 microcontroller using timer, serial ports, interrupts and sensor interfaces.	**L3 - Apply**
	TEXTBOOKS:	
1.	Senthil Kumar, Saravanan, Jeevananthan and Shah, "Microprocessors and Interfacing", Oxford University Press, 2012.	
2.	Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, "The 8051 Microcontroller and Embedded Systems: Using Assembly and C", 2nd Edition, Pearson education, 2011.	
	REFERENCE BOOKS:	
1.	Doughlas V.Hall, "Microprocessors and Interfacing, Programming and Hardware", TMH, 2012.	
2.	A.K.Ray, K.M.Bhurchandi, "Advanced Microprocessors and Peripherals", 3rd edition, Tata McGrawHill, 2012.	
3.	Lalit Mali, "Computer hardware, Ubuntu Linux, Windows 10, Internet Introductions: Learn computer basic hardware" Notion Press Media, 2017.	

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

	WEB REFERENCES:		
S.No	**Publisher**	**Website link**	**Type of Content**
1.	NPTEL	https://drive.google.com/file/d/1EzG4dkKhQS88NNTHGvtiUb4wd1is64z6/view	Ebook - Material
2.	Robotic Electronics	https://roboticelectronics.in/tech-blog/8086-microprocessor/	Material

	VIDEO REFERENCES:			
S.No	**Video Details**	**Name of the Expert**	**Type of Content**	**Video Link**
1.	NPTEL	Shaik Rafi Ahmed	Lecture	https://youtube.com/playlist?list=PLwdnzlV3ogoXgNjr_oe5cWQIbf72ZY4Zf&si=q2p1OALjgS_LINii

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	2			1	1									2
CO2	3	2	1		1										2
CO3	3	2	1			1									2
CO4	3	2	1												2
CO5	3	2	1		1	1									2
Avg.	**3.0**	**2.0**	**1.0**		**1.0**	**1.0**									**2.0**

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

BE23MC904	ENVIRONMENTAL SCIENCE AND SUSTAINABILITY	CP	L	T	P	C
		2	2	0	0	NC
Programme & Branch	COMMON TO ALL B.E. / B.TECH. BRANCHES	Version: 1.1				

Course Objectives:

1.	To introduce the basic concepts of environment, ecosystems and biodiversity and emphasize on the biodiversity of India and its conservation.
2.	To impart knowledge on the causes, effects and control or prevention measures of environmental pollution.
3.	To facilitate the understanding of global and Indian scenario of energy resources, causes of their degradation and measures to preserve them.
4.	To familiarize the concept of sustainable development goals and appreciate the interdependence of economic and social aspects of sustainability, recognize and analyze climate changes, concept of carbon credit and the challenges of environmental management.
5.	To inculcate and embrace sustainability practices and develop a broader understanding on green materials, energy cycles and analyzes the role of sustainable urbanization.

	INTRODUCTION (Not for Examination)	**2**
Importance	Engineering students studying environmental science explore the significance of ecosystems, human-nature dynamics, and global environmental challenges like climate change and biodiversity loss. They also grasp concepts of sustainable management and socio-economic goals such as carbon emission reduction and equitable resource access.	
Real-life Example(s)	Sewage water treatment plant – Solar panel – Wildlife sanctuary	
Linkages	To all processes that generate pollution	
UNIT–I	**ENVIRONMENT AND BIODIVERSITY**	**6**
	Definition, scope and importance of environment – need for public awareness. Eco-system and Energy flow– ecological succession . Types of biodiversity: genetic, species and ecosystem diversity– values of biodiversity, India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ. Case study on Ecosystem at local level .	
UNIT–II	**ENVIRONMENTAL POLLUTION**	**6**
	Causes, Effects and Preventive measures of Water, Soil, Air and Noise Pollutions. Solid and Hazardous pollution management . Case studies on Occupational Health and Safety Management system (OHASMS) . Environmental protection, Environmental protection acts. Case study – Sources and remedy of water pollution, air pollution at industry level .	

w.e.f. 13/10/2025
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 11/10/2025

UNIT–III	**ENERGY SCENARIO OF WORLD AND INDIA**	**6**
	Presents sources and distributions , related energy issues , future growth aspects and anticipated energy consequences – Need to form on environment friendly and renewable sources their potential and impact – Hardness in execution . Case study on available new energy resources in India .	
UNIT–IV	**SUSTAINABILITY AND MANAGEMENT**	**6**
	Development, GDP, Sustainability- concept, needs and challenges - economic, social and aspects of sustainability-from unsustainability to sustainability -millennium development goals , and protocols - Sustainable Development Goals-targets, indicators and intervention areas Climate change - Environmental, social and governance report . Global, Regional and local environmental issues and possible solutions- Concept of Carbon Credit, Carbon Footprint . Case study – Environmental issues and possible solutions for climate change .	
UNIT–V	**SUSTAINABILITY PRACTICES**	**6**
	Zero waste and R concept , Circular economy , Material Life cycle assessment , Environmental Impact Assessment . Sustainable habitat: Green buildings, Green materials, Energy efficiency, Sustainable transports . Sustainable energy: Non-conventional Sources, Green Engineering - Sustainable urbanization Case study - Socio economical and technological change .	
	Total	**32 Periods**
	OPEN ENDED PROBLEMS / QUESTIONS	
	Course specific Open Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Understand the functions of environment, ecosystems and biodiversity and their conservation.	L2 – Understand
CO2	Measure causes of water, air, noise and soil pollutions and provide preventive solutions.	L2 – Understand
CO3	Understand the global and Indian scenario of energy resources and causes of their degradation.	L2 – Understand
CO4	Select suitable strategies for sustainable environment management.	L2 – Understand
CO5	Understand sustainability practices and green materials.	L2 – Understand

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

w.e.f. 13/10/2025
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 11/10/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

	TEXTBOOKS:	
1.	Sanjay Kumar Batra, Kanchan Batra, Harpreet Kaur "Environmental Studies", 7th Edition, Taxmann Publishers, 2024.	
2.	Benny Joseph, 'Environmental Studies', Tata McGraw-Hill, New Delhi, 2024.	
	REFERENCE BOOKS:	
1.	Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press, 2015.	
2.	ErachBharucha "Textbook of Environmental Studies for Undergraduate Courses" Orient Blackswan Pvt. Ltd. 2013.	
3.	R.K. Trivedi, 'Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards', Vol. I and II, Environ Media. 38, 2010.	
4.	Dharmendra S. Sengar, 'Environmental law', Prentice hall of India PVT. LTD, New Delhi, 2007	

WEB REFERENCES:

S.No.	Publisher	Website link	Type of Content
1.	National Bureau of Animal Genetic Resources, Haryana	https://nbagr.icar.gov.in/en/home/	Database and policies
2.	International Federation of the National Standardizing Associations	https://www.iso.org/standard/	Policies
3.	Ministry of Environment, Forest and Climate Change, Govt. of India	https://cpcb.nic.in/	Standards and Polices

VIDEO REFERENCES:

S.No.	Video Details	Name of the Expert	Type of Content	Video link
1.	NPTEL	Dr. Samik Chowdhury, Dr. Sudha Goel, IIT Kharagpur	Lecture	https://nptel.ac.in/courses/109105203
2.	NPTEL	Dr. Deepu Philip, Dr. Amandeep Singh, IIT Kanpur	Lecture	https://nptel.ac.in/courses/112104225
3.	YouTube	Prof. Prasenjit Mondal, IIT Roorkee	Discussion	https://www.youtube.com/watch?v=NRoFvz8Ugeo&list=PLLy_2iUCG87Cr__rs9sS1zSaR62imd0uB&index=1

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 13/10/2025
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 11/10/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

	ONLINE COURSES:	
1.	NPTEL Course on Environmental Science: https://onlinecourses.nptel.ac.in/noc23_hs155	
2.	NPTEL Course on Introduction to Environmental Engineering and Science - Fundamental and Sustainability Concepts: https://nptel.ac.in/courses/127105018	

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1				2	3					2			
CO2	3	2				3	3					2			
CO3	3		1			2	2					2			
CO4	3	2	1	1		2	2					2			
CO5	3	2	1			2	2					1			
Avg.	**3.0**	**2.0**	**1.0**	**1.0**		**2.0**	**2.4**					**1.8**			

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 13/10/2025
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 11/10/2025

BE23CS315	JAVA PROGRAMMING	CP	L	T	P	C
		5	2	1	2	4
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT, CSBS and AI&DS) Branches	Version: 1.0				

Course Objectives:		
1.	To understand the basic concepts of java programming.	
2.	To implement the concept of inheritance, packages and interfaces.	
3.	To understand the concept of exception handling and java thread.	
4.	To implement the concept of I/O in Java, including the concept of generic programming, string handling and collections.	
5.	To implement the concept of multithreading and JDBC.	
	INTRODUCTION (Not for Examination)	**2**
Importance	Platform Independence - Object-Oriented Programming - Enterprise Application - Android Application Development.	
Real-life Example(s)	Online banking system - Mobile applications - E-commerce websites.	
Linkages	**Pre-requisite:** C, C++, Python for Data Science, Data Structures and Algorithms, Database Management Systems. **Future courses:** Object-Oriented Software Engineering, Web Technology.	
UNIT–I	**INTRODUCTION TO JAVA, CLASSES AND OBJECTS**	**6+3**
	Introduction to Java – Overview of Java – Data Types, Variables and Arrays – Operators – Control Statements – **Classes:** Class Fundamentals – objects – Assigning Object Reference Variables – Methods – Constructors – this keyword – Garbage Collection – Stack Class. Overloading Methods – Objects as Parameters – Returning Objects – Recursion – Access Control – Static – final – Nested and Inner Classes – Command–Line Arguments –Variable Length Arguments – Getter and Setter Methods.	
UNIT–II	**INHERITANCE, PACKAGES AND INTERFACES**	**6+3**
	Inheritance: Basics – Super keyword - Multilevel Hierarchy – Method Overriding – Dynamic Method Dispatch – Abstract Classes – final with Inheritance. **Packages and Interfaces:** Packages – Packages and Member Access –Importing Packages – Interfaces - Default, static, private interface methods. Defining a Lambda Expression - Lambda Built-in Functional Interfaces - Lambda Operations.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

UNIT–III	**EXCEPTION HANDLING AND JAVA THREADING**	**6+3**
	Exception Handling: Exception Handling basics – Multiple catch Clauses – Nested try Statements – Java's Built-in Exceptions – User-defined Exception. **Java thread:** Java Thread Model – Creating a Thread and Multiple Threads – Priorities – Synchronization – Inter Thread Communication – Suspending – Resuming and Stopping Threads – Wrappers – Autoboxing. *** Project based Learning:** **Project Topic:** Online Banking System This project simulates an online banking system, incorporating exception handling and thread concepts.	
UNIT–IV	**I/O, GENERICS, STRING HANDLING AND COLLECTIONS**	**6+3**
	Input and Output: I/O Basics – Reading and Writing Console I/O – Reading and Writing Files - Using Stream API with NIO.2. **Generics:** Introduction – Parameters – General Form – Generic Methods - Constructors and Interfaces. **String Handling:** String methods, String Buffer methods, StringBuilder methods. **Collection frameworks:** Core Interfaces (List, Set, Map), Key Classes (Array List, HashSet, HashMap) – Operations (Add, Remove, Iterate, Sort, Search) – Utility Classes, Streams & Filters, Thread-Safe Collections (Concurrent HashMap). *** Project based Learning:** **Project Topic:** Online Banking System This project simulates a system for online banking resources like customer, accounts, and borrowing transactions, emphasizing efficient input/output operations, data manipulation, and type-safe programming.	
UNIT–V	**MULTITHREADING AND JDBC**	**6+3**
	Multithreading: Concurrency – worker threads using runnable and Callable – Using the java.util.concurrent collections – Fork – Join Framework – Parallel Streams – Database Applications with JDBC – JDBC API – JDBC driver – CRUD operations. *** Project based Learning:** **Project Topic:** Online Banking System This project will incorporate concurrency for processing multiple transactions and utilize JDBC for database operations to manage data such as transactions, account details, and loan details, etc.	
	Total (LT)	**47 Periods**
	*** INTERNAL EVALUATION ONLY**	

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

	LIST OF EXPERIMENTS:	
1.	Write a program to demonstrate constructor overloading by creating multiple constructors for a class Rectangle with different parameter combinations.	
2.	Write a program to demonstrate the use of lambda expressions to sort a list of integers in descending order.	
3.	Create a custom exception InvalidAgeException and use it in a program that checks whether a person's age is within a valid range.	
4.	Write a program that demonstrates thread synchronization by managing access to a shared resource (e.g., bank account balance).	
5.	Write a program that reads a text file and counts the number of words and lines in the file.	
6.	Create a generic method to swap two values of any data type and test it with Integer, String, and Double.	
7.	Write a program that demonstrates the use of String, String Buffer, and StringBuilder to manipulate a string, including reversing and appending text.	
8.	Write a program to perform CRUD (Create, Read, Update, Delete) operations on a database using JDBC.	
	Total (P)	**30 Periods**
	Total (LT+P)	**77 Periods**
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Impart understanding of basic programming concepts in Java language.	**L3 – Apply**
CO2	Apply code reusability through classes and encapsulation.	**L3 – Apply**
CO3	Solve problems using java collection framework and I/O classes in interface.	**L3 – Apply**
CO4	Integrate the learned and applied concepts into given java projects to produce real life solutions.	**L3 – Apply**
CO5	Develop efficient programs using multithreading and JDBC.	**L3 – Apply**
	TEXTBOOKS:	
1.	Cay S. Horstmann "Core Java: Volume I – Fundamentals", 12th Edition, Addison-Wesley Professional, 2021.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

	REFERENCE BOOKS:
1.	Herbert Schildt, "Java: The Complete Reference", 12th Edition, McGraw Hill, 2022.
2.	E. Balagursamy, "Programming with Java", 6th Edition, McGraw Hill Education, 2019.
3.	Deitel and Deitel, "Java How to Program", 11th Edition, Pearson, New Delhi, 2019.

	WEB REFERENCES:		
S.No	**Publisher**	**Website link**	**Type of Content**
1.	Web reference	https://webreference.com/ java/	Web Reference
2.	w3schools	https://www.w3schools.com /java/	Web Reference
3.	Web based programming	http://www.webbased programming.com/ Java-Developers-Reference/	Web Reference

	VIDEO REFERENCES:			
S.No	**Video Details**	**Name of the Expert**	**Type of Content**	**Video Link**
1.	NPTEL	Prof. Debasis Samanta IIT Kharagpur	Lecture	https://youtu.be/jdT2lEZJA?si=5NZZFjOcn1UCgSbj
2.	NPTEL	Prof. Debasis Samanta IIT Kharagpur	Lecture	https://youtu.be/ksxhzfD8kQ?si=4x6-z6zWxahTUeNP
3.	NPTEL	Prof. Debasis Samanta IIT Kharagpur	Lecture	https://www.youtube.com/playlist?list=PLfn3cNtmZdPOe3R_wO_h540QNfMkCQ0ho

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	1	1	1							2	2	1	
CO2	3	3	1	2	3							2	3	2	
CO3	3	3	1	1	1	1	1		1	1		2	2	3	
CO4	3	3	1	2	3	1	1		1	1		2	3	3	
CO5	3	3	1	2	3	1	1		1	1		3	2	3	
Avg.	**3.0**	**3.0**	**1.0**	**1.6**	**2.2**	**1.0**	**1.0**		**1.0**	**1.0**		**2.0**	**2.4**	**2.4**	

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

BE23CS409	FOUNDATIONS OF ARTIFICIAL INTELLGENCE AND MACHINE LEARNING	CP	L	T	P	C
		5	2	1	2	4
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT and CSBS) Branches	Version: 1.0				

Course Objectives:		
1.	To understand the fundamental concepts of Artificial Intelligence.	
2.	To demonstrate the AI techniques using Probabilistic Reasoning.	
3.	To learn the Machine Learning concepts and applications.	
4.	To implement Supervised Learning algorithms.	
5.	To experiment with the Ensemble techniques and instance-based learning.	
	INTRODUCTION (Not for Examination)	**2**
Importance	Foundations of AI and ML empower the creation of intelligent systems designed for automation and efficient problem-solving. By utilizing machine learning algorithms, these systems optimize performance in real-world applications such as healthcare, finance, and autonomous technologies. This subject enhances critical problem-solving abilities and provides data-driven decision-making across various industries.	
Real-life Example(s)	Self-Driving Car – Chabot for Customer Service – Email Spam Filter – Predictive Maintenance in Manufacturing – Stock Price Prediction.	
Linkages	**Pre-requisite:** Data Structures and Algorithms - Python for Data Science. **Future courses:** Business Analytics - Deep Learning.	
UNIT–I	**PROBLEM SOLVING**	**6+3**
	Introduction to AI – AI Applications – Problem Solving Agents – **Search Algorithms:** Informed Search Strategies – Uninformed Search Strategies – **Adversarial Search:** Alpha-Beta Pruning – **Constraint Satisfaction Problems (CSP):** Backtracking Search for CSP – Inference in CSP.	
UNIT–II	**KNOWLEDGE REPRESENTATION AND REASONING**	**6+3**
	KNOWLEDGE REPRESENTATION: First-order Logic – Propositional Logic – **Probabilistic Reasoning:** Bayes Rule – Bayesian Networks (BN) – Exact Inference in BN – Approximate Inference in BN.	
UNIT–III	**INTRODUCTION TO MACHINE LEARNING**	**6+3**
	INTRODUCTION TO MACHINE LEARNING: Fundamentals of ML: Definition and Significance – Differences between Artificial Intelligence(AI), Machine Learning(ML) and Deep Learning(DL) – Applications – **Types of Machine Learning:** Supervised Learning	

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

	– Unsupervised Learning – Reinforcement Learning – **Data Preprocessing and Feature Engineering** – **Mathematical Foundations for ML:** Probability and Statistics for ML Optimization Techniques (Gradient Descent, Stochastic Gradient Descent). ***Project based Learning:** **Project Topic: Data Preprocessing for Diabetes Prediction** Identify and select the relevant features that will be used for prediction.	
UNIT–IV	**SUPERVISED LEARNING**	**6+3**
	Supervised learning: Linear Regression Models – Least Squares, Single & Multiple Variables – Bayesian Linear Regression – Gradient Descent – **Linear Classification Models**: Discriminant Function – **Logistic regression**: Naive Bayes(Probabilistic Generative Model) Support Vector Machine (Maximum Margin Classifier) – Decision Tree – Random forests – **Model Evaluation Techniques:** Overfitting, Cross-validation, and Hyper parameter Tuning – Interpretability in Supervised Learning. ***Project based Learning:** **Project Topic: Diabetes Prediction Using Supervised Learning** This project focuses on predicting the likelihood of diabetes in patients using supervised learning techniques. Historical patient data, including features like age, BMI, glucose levels, and blood pressure will be used to train a model to classify individuals as diabetic or non-diabetic.	
UNIT–V	**ENSEMBLE TECHNIQUES AND UNSUPERVISED LEARNING**	**6+3**
	ENSEMBLE TECHNIQUES AND UNSUPERVISED LEARNING: Ensemble Learning: Voting – Bagging – Boosting – Stacking – **Unsupervised learning:** K-means Clustering – **Instance Based Learning:** K-Nearest Neighbors(KNN) – Gaussian Mixture Models and Expectation Maximization.	
	Total (LT)	**47 Periods**
	*** INTERNAL EVALUATION ONLY**	
	LIST OF EXPERIMENTS:	
1.	Implementation of Informed Search Algorithms (A*, memory-bounded A*).	
2.	Implement naïve Bayes Models.	
3.	Implement Bayesian Networks.	
4.	Build Regression Models.	
5.	Build Decision Trees and Random Forest.	

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

6.	Build SVM Models.	
7.	Implement Ensemble Techniques.	
8.	Implement Clustering Algorithms.	
	Total (P)	**30 Periods**
	Total (LT+P)	**77 Periods**
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Apply problem solving techniques.	**L3 – Apply**
CO2	Perform probabilistic reasoning under uncertainty	**L3 – Apply**
CO3	Apply the probability and statistics features of ML on real-time datasets.	**L3 – Apply**
CO4	Identify and utilize appropriate supervised machine learning techniques to solve domain-specific challenges.	**L3 – Apply**
CO5	Apply collaborative techniques to analyze and interpret unlabeled datasets effectively.	**L3 – Apply**
	TEXTBOOKS:	
1.	Stuart Russell and Peter Norvig, "Artificial Intelligence – A Modern Approach", 4th Edition, Pearson Education, 2021.	
2.	Ethem Alpaydin, "Introduction to Machine Learning", 4th Edition, MIT Press, 2020.	
	REFERENCE BOOKS:	
1.	Kevin Night, Elaine Rich, and Nair B., "Artificial Intelligence", McGraw Hill, 2008.	
2.	Patrick H. Winston, "Artificial Intelligence", 3rd Edition, Pearson Education, 2006.	
3.	Deepak Khemani, "Artificial Intelligence", Tata McGraw Hill Education, 2013 (http://nptel.ac.in/)	
	WEB REFERENCES:	

S.No	Publisher	Website link	Type of Content
1.	Geeks for geeks	https://www.geeksforgeeks.org/artificial-intelligence-an-introduction/	Web Reference
2.	Java point	https://www.javatpoint.com/machine-learning	Web Reference

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

	VIDEO REFERENCES:			
S.No	**Video Details**	**Name of the Expert**	**Type of Content**	**Video Link**
1.	NPTEL	Prof. Balaraman Ravindran	Lecture	https://onlinecourses.nptel.ac.in/noc23_cs18/preview
2.	NPTEL	Prof. Mausam	Lecture	https://onlinecourses.nptel.ac.in/noc22_cs56/preview

Mapping of COs with POs and PSOs															
COs	**POs**												**PSOs**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	1	1	1	2									3	3
CO2	3	3	2	2	3	2								3	3
CO3	3	3	3	2	3	1	2	2	2	2	2	1	2	3	3
CO4	3	3	3	3	3	1	2	2	2	2	2	2	2	3	3
CO5	3	3	3	2	3	1	1		2	2	2	2	2	3	3
Avg.	**3.0**	**2.6**	**2.4**	**2.0**	**2.8**	**1.3**	**1.7**	**2.0**	**2.0**	**2.0**	**2.0**	**1.7**	**2.0**	**3.0**	**3.0**
1–Low, 2 –Medium, 3–High.															

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

BE23EN104	PROFESSIONAL COMMUNICATION LABORATORY - II	CP	L	T	P	C
		2	0	0	2	1
Programme & Branch	COMMON TO ALL B.E. / B.TECH. BRANCHES EXCEPT B.Tech. CSBS	Version: 1.0				

Course Objectives:		
1.	To train the learners gain adequate command over communication.	
2.	To orient the learners grooming as a professional.	
3.	To develop analytical thinking skills for problem-solving in communicative contexts.	
4.	To prepare learners as employable graduates.	
5.	To make presentation in a formal context.	
	INTRODUCTION (Not for Examination)	**2**
Importance	• The course enhances learners' language competence. • It trains learners acquire career skills sought by industries for campus recruitment. • It improves communication skills in formal and informal situations.	
Real-life Example(s)	Job Application & Resume - writing minutes - role play - presentation - writing case study	
Linkages	Communicative English - I, Communicative English - II.	
	LIST OF EXPERIMENTS	**30**
1.	Oral and visual presentation	
2.	Interview skills	
3.	Drafting Job application & Resume	
4.	Mock Interview	
5.	Writing minutes	
6.	Speaking about the specifications of a product (E.g., Home appliances)	
7.	Persuasive Talk – Role play activity	
8.	Verbal analogies	
9.	Spotting errors	
10.	Writing a case study for a given problem	
	Total (P)	**32 Periods**

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 08/07/2024
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 06/07/2024

	Course Outcomes: Upon completion of this course the students will be able to:	BLOOM'S Taxonomy
CO1	Use language effectively for presentation.	L3 – Apply
CO2	Utilize writing skills for better communication.	L3 – Apply
CO3	Construct ideas in both formal and informal conversation.	L3 - Apply
CO4	Develop writing skills for presenting a reasonable report.	L3 - Apply
CO5	Express opinions assertively in group discussions.	L3 - Apply

	TEXTBOOKS:	
1.	Richardson, Mathew. Advanced Communication Skills. Charlie Creative Lab, 2020.	
2.	Rizvi, Ashrif. Effective Technical Communication, Tata Mc Grahill, 2011.	

	REFERENCE BOOKS:	
1.	Comfort, Jeremy, et al. Speaking Effectively: Developing Speaking Skills for Business English. Cambridge University Press, Cambridge: Reprint 2011	
2.	Terk, Natasha. Reports, Proposals and Procedures: A Write It Well Guide. Gildan Media, 2015.	
3.	Carnegie, Dale. The Art of Public Speaking. Prabhat Prakashan Pvt. Ltd. 1st Edition: New Delhi, 2016	

WEB REFERENCES:

S.No.	Publisher	Website link	Type of Content
1.	Mindtools	https://www.mindtools.com/a99xl9o/interview- skills	others
2.	Ecampusontario	https://ecampusontario.pressbooks.pub/writingco rrections/chapter/sample-chapter/	others

VIDEO REFERENCES:

S.No.	Video Details	Name of the Expert	Type of Content	Video Link
1.	SWAYAM	Dr. Vibhuti Gaur Indira Gandhi National Open University (IGNOU)	English at the Workplace	https://onlinecourses.swayam2.ac.in/nou24_lg67/ preview
2.	COURSERA	Brian McManus Language Specialist University of Pennsylvania	Writing Covering Letter, **Resume**	https://www.coursera.org/learn/career development

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 08/07/2024
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 06/07/2024

Mapping of COs with POs and PSOs															
COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1									1	3		1			
CO2									1	3		1			
CO3									1	3		1			
CO4									1	3		1			
CO5									1	3		1			
Avg.									**1.0**	**3.0**		**1.0**			
1–Low, 2 –Medium, 3–High.															

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 08/07/2024
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 06/07/2024

BE23PT808	APTITUDE SKILLS - III	CP	L	T	P	C
		1	0	0	1	0.5
Programme & Branch	COMMON TO ALL B.E. / B.TECH. BRANCHES	Version: 1.0				

Course Objectives:		
1.	To develop foundational knowledge and skills in time & work, chain rule, permutations and combinations, probability, boats and streams, pipes and cisterns	
2.	To enhance logical reasoning skills and critical thinking	
	INTRODUCTION (Not for Examination)	**1**
Importance	Problem-solving skills, analytical skills and logical reasoning are crucial in various aspects of an engineering education, career, and professional development. Hence, aptitude skills are needed for engineers in the following areas: • Engineering Design and Analysis. • Innovation and Research. • Project Management. • Competitive Exams and Career Advancement.	
Real-life Example(s)	• **Cargo Ships:** Cargo ships traveling through rivers or canals must consider the current's speed to estimate travel time accurately. This is crucial for logistics and scheduling. • **Industrial Process:** In industries, large tanks are filled with liquids using multiple pipes. The filling and emptying rates are crucial for maintaining production schedules and efficiency. • **Algorithm design:** Developing efficient algorithms often involves exploring different permutations of data structures or computational steps. • **Communication systems:** Calculating error rates in data transmission and designing error correction codes use the concepts of probability	
Linkages	Aptitude Skills I, Aptitude Skills II and Aptitude Skills IV	
UNIT–I	**QUANTITATIVE APTITUDE**	**8**
	Time & Work : Basic Concepts of Time and Work - Work and Time Relationship - Work Efficiency - Combined Work - Work Rate - Fractional Work - Work and Wages - Real-life Applications **Chain Rule :** Basic Concept of the Chain Rule - Differentiation of Composite Functions - Chain Rule with Power Rule - Chain Rule with Trigonometric Functions - Chain Rule with Exponential and Logarithmic Functions - Chain Rule with Implicit Differentiation - Chain Rule in Multivariable Calculus - Advanced Applications and Problem Solving **Permutations & Combinations :** Basic Concepts of Permutations - Basic Concepts of Combinations - Permutations and Combinations with Repetition - Permutations of Multisets - Applications of Permutations and Combinations - Permutations with Restrictions - Combinations with Restrictions	

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

	Probability : Basic Concepts of Probability - Types of Events - Probability of Events - Conditional Probability - Independence and Dependence - Complementary Events - Expected Value and Variance - Probability Distributions - Applications of Probability in Real Life **Boats & Streams :** Speed of Boat in Still Water - Speed of Stream or Current - Upstream and Downstream Concepts - Relative Speed - Calculating Efficiency - Advanced Problems with Multiple Boats or Streams **Pipes & Cisterns :** Inlet and Outlet Pipes - Individual Rates of Pipes - Combined Efficiency - Problems Involving Leakage or Partials - Alternative Filling Scenarios - Pipes with Different Capacities - Applications in Real-life Scenarios	
UNIT–II	**LOGICAL REASONING**	**7**
	Non-verbal reasoning: Pattern Recognition - Analogy and Classification - Series Completion - Spatial Orientation and Visualization - Cube and Dice Problems - Mirror and Water Image Problems - Analytical Reasoning with Diagrams **Syllogisms:** Basic Concepts of Syllogisms - Types of Syllogisms - Categorical Syllogisms - Venn Diagram Representation - Rules of Inference - Types of Validity - Formal vs Informal Fallacies - Conditional Syllogistic Reasoning **Critical Thinking:** Understanding Arguments - Argument Structure - Logical Fallacies - Evidence and Reasoning - Counterarguments and Rebuttal - Assumptions and Implications - Creative Thinking - Contextual Understanding - Practice and Application **Statement & Conclusion:** Understanding Statements - Types of Statements - Analyzing Premises - Identifying Conclusions - Logical Connectives - Validity of Conclusions – Assumptions - Negation of Statements - Strength and Weakness	
	Total (P)	**16 Periods**
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Solve quantitative problems, including time & work, chain rule, permutations and combinations, probability, boats and streams, pipes and cisterns	L3 – Apply
CO2	Apply logical reasoning, analyze information and draw conclusions	L3 – Apply
	TEXTBOOKS:	
1.	Dr. R.S. Aggarwal., "Quantitative Aptitude for Competitive Examinations", S.Chand and Company Ltd., 2022	
2.	Dr. R.S. Aggarwal, "A Modern Approach to Logical Reasoning", S.Chand and Company Ltd., 2022	
3.	FACE, "Aptipedia: Aptitude Encyclopedia", 2nd edition, Wiley India Pvt. Ltd., 2017	
	REFERENCE BOOKS:	

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam

1.	Arun Sharma, "Quantitative Aptitude for the CAT" 10th edition, McGraw-Hill Publishing, 2022	
2.	Praveen R. V., "Quantitative Aptitude and Reasoning", 3rd edition, PHI Learning Pvt. Ltd., 2016	

WEB REFERENCES:

S.No.	Publisher	Website link	Type of Content
1.	Indiabix	https://www.indiabix.com/online-test/aptitude-test/	Tests for Practice
2.	Placement preparation	https://www.placementpreparation.io/quantitative-aptitude/	Tests for Practice
3.	Geeks for geeks	https://www.geeksforgeeks.org/aptitude-for-placements/	Learning Resources and Tests for Practice

VIDEO REFERENCES:

	Video Details	Name of the Expert	Type of Content	Video Link
1.	YouTube	Career Ride	Video Lectures	https://www.youtube.com/playlist?list=PLpyc33gOcbVA4qXMoQ5vmhefTruk5t9lt
2.	YouTube	Freshersworld.com	Video Lectures	https://www.youtube.com/playlist?list=PLjLhUHPsqNYkcq6YOfiywbTfnvf_TN7i9

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2													
CO2	3	2													
Avg.	3.0	2.0													

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of Science and Humanities
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 08/07/2024
Passed in BoS Meeting held on 20/06/2024
Approved in Academic Council Meeting held on 06/07/2024

PROFESSIONAL ELECTIVES

VERTICAL 1 – JAVA FULL STACK
VERTICAL 7 – JAVA AUTOMATION

BE23CS501	FUNDAMENTALS OF WEB DEVELOPMENT	CP	L	T	P	C
		4	2	0	2	3
Programme & Branch	**Common to B.E. (CSE) and B.TECH. (IT, CSBS and AI&DS) Branches**	**Version: 1.0**				

Course Objectives:		
1.	To understand the fundamentals of Computer Networks and the Internet.	
2.	To design web pages with media and graphics.	
3.	To develop visual presentation and responsive web pages using CSS.	
4.	To create an interactive web page using advanced JavaScript.	
5.	To develop responsive web layouts using bootstrap and work with jQuery for dynamic web interactions.	
	INTRODUCTION (Not for Examination)	**2**
Importance	• Understanding the basics of HTML, CSS, and JavaScript provides a solid foundation for learning more advanced topics and frameworks. • Mastering the fundamentals helps you develop problem-solving skills essential for tackling more complex development challenges. • Familiarity with web development fundamentals helps you adhere to web standards and best practices, ensuring compatibility and accessibility. • Creating User-Centric Designs: User Experience (UX) - Learning how design affects usability. Responsive Design - Ensuring websites work across various devices and screen sizes.	
Real-life Example(s)	Building an Event Booking Website: Developing a web application for a local event management company. The website will allow users to browse upcoming events, book tickets, and receive confirmation emails.	
Linkages	**Pre-requisite:** Computer Networks, Problem Solving using C Programming, Python for Data Science. **Future Courses:** C# and .NET.	
UNIT–I	**INTRODUCTION TO WEB DESIGN**	**6**
	Computer Network Basics – Introduction to Internet – History – WWW – Evolution of Web – Web Browser – URI – Web Server – Website – Web System Architecture (Single Tier, Two Tier, Three Tier Architecture) – HTTP Request and Response – Port – DNS – Introduction to Client-side and Server-side scripting. ***Experiential Learning:** Use Figma to design a "User Feedback	

	Form" with fields for name, email, comments, and a submit button, ensuring a user-centered design.	
UNIT–II	**HTML**	**6**
	Basic HTML Elements – Attributes – Hyperlinks and bookmarks – Images – Favicon – Emojis – List and Table – Form Elements – Layouts – Other HTML5 Elements – Inline Vs Block level elements – Media and Graphics. ***Experiential Learning:** Create a feedback form with a <h2> titled "Feedback Form," a text input for the name, an email input for contact, a text area for comments, and a submit button.	
UNIT–III	**CSS**	**6**
	Basics of CSS – Types – Selectors – Pseudo classes – Core CSS3 Properties – CSS3 Features – Media Queries CSS Preprocessors (SASS, SCSS). ***Experiential Learning:** Create a simple webpage with a product card that includes: Product Cart, Buy Now Button.	
UNIT–IV	**JAVASCRIPT BASICS**	**6**
	Introduction to JavaScript – HTML Vs CSS Vs JavaScript – Syntax – First JavaScript – Keywords) – Variables – Operators – Data Types – Type Conversion – Control Flow Statements – Functions – Event listener – Constructor – Prototypes – Objects: String, Array, Math, Date, Regular Expressions, Events – DOM – Form Validation – Canvas. ***Experiential Learning:** Create user validation in Registration Form.	
UNIT–V	**BOOTSTRAP AND JQUERY**	**6**
	Basics of Bootstrap – Grid System and Layout – Navbar and Navigation Components – Buttons and Alerts – Forms and Input Groups – Cards and Modals – Create Responsive Web Page – Introduction to jQuery – Selecting and Manipulating DOM Elements – Event Handling – jQuery Plugins. ***Experiential Learning:** Create a 3-column grid with cards that include a title, image, and description.	
	Total (L)	**32 Periods**
	*** INTERNAL EVALUATION ONLY**	
	LIST OF EXPERIMENTS:	
1.	Acquaintance with elements, Tags and basic structure of HTML files.	
2.	Practicing basic and advanced text formatting.	
3.	Designing of webpage - Document Layout, Forms, Layouts, Lists, Frames, Tables, Controls.	
4.	Acquaintance with creating style sheet, CSS properties and styling.	

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

5.	Working with HTML elements box, Positioning and Block properties in CSS.	
6.	Designing with cascading style sheet-Internal & External Style Sheet.	
7.	JavaScript: Designing a Simple Project using Java Script.	
	Total (P)	**30 Periods**
	Total (L+P)	**62 Periods**
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Understand the concepts of Computer Networks and the Internet.	**L2 - Understand**
CO2	Develop a web page using HTML elements, forms, tables and multimedia components.	**L3 - Apply**
CO3	Design responsive, visually appealing, and maintainable web pages using CSS.	**L3 - Apply**
CO4	Apply Javascript objects to build dynamic web page with validation.	**L3 - Apply**
CO5	Develop a responsive web page using Bootstrap's and integrate jQuery plugins to enhance website features.	**L3 - Apply**
	TEXTBOOKS:	
1.	Philip Ackermann, "Full Stack Web Development: The Comprehensive Guide", 1st Edition, Rheinwek Computing, 2023.	
2.	John Dean, "Web Programming with HTML5, CSS and JavaScript", 1st Edition, Jones & Bartlett Learning, 2018.	
	REFERENCE BOOKS:	
1.	Nabendu Biwas, "Ultimate Full-Stack Web Development with MERN", Orange Education Pvt Ltd., 2023.	
2.	Jennifer Robbins, "Learning Web Design: A Beginner's Guide To HTML, CSS, JavaScript, And Web Graphics", 5th Edition, O'Reilly Publisher, 2018.	
3.	A. Powell, "HTML & CSS: The Complete Reference Thomas" 5th Edition, Tata McGraw Hill, 2010.	
4.	Lea Verou, "CSS Secrets: Better Solutions to Everyday Web Design Problems", 1st Edition, O'Reilly Publisher, 2015.	
	WEB REFERENCES:	

S.No	Publisher	Website link	Type of Content
1.	Freecodecamp	https://shorturl.at/aa5aY	Articles

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

2.	Web.dev	https://shorturl.at/IntBl	Articles
3.	w3schools	https://shorturl.at/fIfgp	Others
4.	Hubspot	https://shorturl.at/7kCi6	Others
5.	Valuecoders	https://shorturl.at/eNfFi	Articles

VIDEO REFERENCES:

S.No	Video Details	Name of the Expert	Type of Content	Video Link
1.	YouTube	Madhavan Mukund	Lecture	https://shorturl.at/3abn1
2.	YouTube	Zach Gollwitzer	Lecture	https://shorturl.at/S1sJj
3.	YouTube	Zach Gollwitzer	Lecture	https://shorturl.at/4hcUT

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1										2		
CO2	3	3	2		2					2				3	
CO3	3	3	3		3									3	
CO4	3	3	3	2	2			1						3	2
CO5	3	3	3		3				2	2		2		3	
Avg.	**3.0**	**2.8**	**2.4**	**2.0**	**2.5**			**1.0**	**2.0**	**2.0**		**2.0**	**2.0**	**3.0**	**2.0**

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

VERTICAL 2 - AGILE METHODOLOGY WITH DEVOPS PROGRAMMING

BE23CS511	CLOUD FUNDAMENTALS AND DEVOPS	CP	L	T	P	C
		4	2	0	2	3
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT, CSBS and AI&DS) Branches	Version: 1.0				

Course Objectives:		
1.	To understand fundamental cloud computing concepts effectively.	
2.	To understand cloud networking and hybrid deployments.	
3.	To learn DevOps in microservices, culture, and CI/CD collaboration.	
4.	To implement DevOps automation effectively.	
5.	To familiarize scalability, serverless computing, and monitoring.	
	INTRODUCTION (Not for Examination)	**2**
Importance	Cloud Services – Virtualization - Continuous Integration/Continuous Delivery – Devops culture.	
Real-life Example(s)	Online Streaming Services- E-commerce websites -Game Development-Online Banking.	
Linkages	**Pre-requisite:** Foundational Knowledge, Operating Systems, Networking, Security, Programming and Scripting. **Future Courses:** Advanced Cloud Architecture and Design, Advanced DevOps Practices and Automation.	
UNIT–I	**INTRODUCTION TO CLOUD FUNDAMENTALS**	**6**
	Cloud Computing Concepts – Types of Cloud Services – Cloud Deployment Models – Cloud Service Providers – Cloud Security and Compliance.	
UNIT–II	**CLOUD INFRASTRUCTURE AND NETWORKING**	**6**
	Virtualization and Containers – Cloud Storage Solutions – Cloud Networking Fundamentals – Hybrid Cloud Deployments – Managing Cloud Resources.	
UNIT–III	**DEVOPS IN THE REAL WORLD**	**6**
	What Is DevOps – Traditional and Modern Release Management – DevOps and Microservices – DevOps Culture and Collaboration – Continuous Integration (CI) & Continuous Deployment (CD).	
UNIT–IV	**DEVOPS TOOLS AND AUTOMATION**	**6**
	Version Control Systems – Configuration Management – Container Orchestration – CI/CD Tools – Infrastructure as Code.	
UNIT–V	**DEVOPS IN CLOUD ENVIRONMENTS**	**6**
	Cloud-native DevOps Practices – Scalability and Elasticity – Serverless Computing – Cloud Monitoring and Logging – DevOps Best Practices.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

	Total (L)	**32 Periods**
	COURSE PROJECT:	
1.	Set up basic Cloud Monitoring Alerts.	
2.	Setting up a DevOps Environment.	
	Total (P)	**30 Periods**
	Total (L+P)	**62 Periods**
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Understand and demonstrate the skills acquired in Cloud and DevOps related concepts.	**L2 – Understand**
CO2	Apply the knowledge of CI/CD tools in real time applications.	**L3 – Apply**
CO3	Apply cloud monitoring services to develop real-time applications.	**L3 – Apply**
CO4	Apply CI/CD pipelines to automate and streamline the application development process.	**L3 – Apply**
CO5	Apply various cloud services to achieve efficient project development.	**L3 – Apply**
	TEXTBOOKS:	
1.	Kai Hwang, Geoffrey C. Fox and Jack J. Dongarra, "Distributed and Cloud Computing-From Parallel Processing to the Internet of Things", Elsevier India, 2012.	
2.	Sanjeev Sharma, Bernie Coyne, "DevOps for Dummies", 3rd IBM Limited Edition, John Wiley & Sons, Inc, 2017.	
	REFERENCE BOOKS:	
1.	Jez Humble and David Farley, "Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation", 1st Edition, Addison-Wesley Professional, 2010.	
	WEB REFERENCES:	

S.No	Publisher	Website link	Type of Content
1.	AWS (Amazon Web Services)	https://aws.amazon.com/training/	Web Reference
2.	Microsoft Azure	https://learn.microsoft.com/en-us/azure/	Web Reference
3.	DevOps.com	https://www.devops.com	Web Reference

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

	VIDEO REFERENCES:			
S.No	**Video Details**	**Name of the Expert**	**Type of Content**	**Video Link**
1.	NPTEL	Prof. Soumya K.Ghosh IIT Kharagpur	Lecture	https://onlinecourses.nptel.ac.in/noc23_cs89/unit?unit=18&lesson=20

Mapping of COs with POs and PSOs															
COs	**POs**												**PSOs**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	1	2	1							3	3	3	
CO2	3	3	1	2	1							3	3	3	
CO3	3	3	1	2	3	1	1		2	2		3	3	3	
CO4	3	3	1	2	3	1	1		2	2		3	3	3	
CO5	3	3	1	2	3	1	1		2	2		3	3	3	
Avg.	**3.0**	**3.0**	**1.0**	**2.0**	**2.2**	**1.0**	**1.0**		**2.0**	**2.0**		**3.0**	**3.0**	**3.0**	
1–Low, 2 –Medium, 3–High.															

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

VERTICAL 3 - CYBERSECURITY

BE23IT521	FOUNDATIONS OF CYBERSECURITY	CP	L	T	P	C
		4	2	0	2	3
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT, CSBS and AI&DS) Branches	Version: 1.0				

Course Objectives:		
1.	To introduce students with foundational cybersecurity and cloud computing concepts and their relationship.	
2.	To equip students with knowledge of cyber threats, vulnerabilities, and mitigation strategies.	
3.	To familiarize students with cyber laws, intellectual property, and legal aspects of cybercrimes.	
4.	To introduce students' essential security technologies, including encryption and authentication.	
5.	To enable students to develop incident response plans and ensure business continuity.	
	INTRODUCTION (Not for Examination)	**2**
Importance	Cybersecurity is essential to protect sensitive information, ensure privacy, prevent data breaches, and safeguard critical infrastructure in an increasingly digital world.	
Real-life Example(s)	Online banking system - Mobile applications - E-commerce websites.	
Linkages	**Pre-requisite:** C, C++, Python, Computer Networks, Data Structures and Algorithms, Database Management Systems. **Future Courses:** Cryptography, Object-Oriented Software Engineering, Web Technology, Network Security and Penetration Testing, Web Application Security.	
UNIT–I	**INTRODUCTION TO CYBERSECURITY**	**6**
	Introduction to Cloud Computing: Concepts and Deployment Models - Cloud Security Fundamentals - The CIA (Confidentiality, Integrity, Availability) Triad in Cloud Security - **Overview of Cybersecurity**: Importance of Cybersecurity in Modern Society - Key Terminologies - Historical Evolution of Cybersecurity - Cybersecurity Domains - Cybersecurity Threat Landscape - Ethical and Professional Issues in Cybersecurity.	
UNIT–II	**CYBER THREATS AND VULNERABILITIES**	**6**
	Types of Cyber Threats - Vulnerability Assessment -Common Attack Vectors - Social Engineering Attacks -Insider Threats - Advanced Persistent Threats (APTs) - Zero-Day Vulnerabilities - Threat Modeling.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technolog
KIOT Campus, Kakapalayam
Salem-637 504

UNIT–III	**CYBER CRIME AND LEGAL FRAMEWORKS**	**6**
	Overview of Cyber Crime- Cyber Laws and Regulations - Reporting Mechanisms for Cyber Incidents - Intellectual Property Rights in Cyberspace - Privacy Laws and Data Protection - Cyber Forensics and Evidence Collection -Regional Cyber Law - Case Studies of Cyber Crime. ***Project based Learning** **Project Topic:** Secure Data Storage System Create a mini application that encrypts sensitive information like user details, banking data before storing it in a database.	
UNIT–IV	**SECURITY TECHNOLOGIES AND PRACTICES**	**6**
	Basic Security Measures - Encryption and Cryptography Fundamentals - Authentication Methods - Public Key Infrastructure (PKI) - Secure Network Design – - Intrusion Detection and Prevention Systems (IDS/IPS) - Security Information and Event Management (SIEM) - Endpoint Security – Cyber law and Digital Forensics - Data Privacy and Compliance Standards. ***Project based Learning** **Project Topic:** E-commerce platform with essential security features. This project simulates a platform for managing data security like user authentication, Secure storage of user credentials using encryption.	
UNIT–V	**INCIDENT RESPONSE AND MANAGEMENT**	**6**
	Incident Response Planning- Steps in Incident Management - Business Continuity and Disaster Recovery Planning - Communication Strategies During Incidents - Post-Incident Analysis and Reporting - Legal and Regulatory Requirements in Incident Management - Cyber Insurance – - Tabletop Exercises and Simulations. ***Project based Learning** **Project Topic:** Phishing Simulation Awareness Program This project simulates phishing attacks using fake login pages or emails to educate users on identifying phishing attempts.	
	Total (L)	**32 Periods**
	*** INTERNAL EVALUATION ONLY**	
	LIST OF EXPERIMENTS:	
1.	Encrypt a text file using AES symmetric encryption.	
2.	Create a fake login page using the Social Engineering Toolkit.	
3.	Write a program to implement Caesar Cipher and RSA encryption.	
4.	Encrypt and decrypt a sample message.	
5.	Install and configure Snort as an IDS.	

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

6.	Simulate a ransom ware attack by encrypting files on a test system.	
7.	Demonstrate intrusion detection system using any tool (snort or any software).	
	Total (P)	**30 Periods**
	Total (L+P)	**62 Periods**
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Understand and explain cybersecurity and cloud security concepts.	**L2 – Understand**
CO2	Identify and analyze various cyber threats and vulnerabilities.	**L3 – Apply**
CO3	Demonstrate an understanding of cyber laws, regulations, and incident reporting processes.	**L3 – Apply**
CO4	Apply security technologies and practices to protect data, networks, and systems.	**L3 – Apply**
CO5	Design and implement comprehensive incident response and disaster recovery plans.	**L3 – Apply**
	TEXTBOOKS:	
1.	Michael E. Whitman, Herbert J. Mattord, "Principles of Information Security", 6th Edition, Cengage Learning, 2019.	
2.	Nina Godbole, SunitBelapure "Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", 1st Edition, Wiley India, January 2011.	
	REFERENCE BOOKS:	
1.	Jeffrey S. Beasley, Gary P. J. T., "Cybersecurity Essentials", 3rd Edition, Cisco Press, 2020.	
2.	Chuck Easttom, "Computer Security and Incident Response", 1st Edition, Pearson, 2019.	
3.	William Stallings, Lawrie Brown, "Computer Security: Principles and Practice", 5th Edition, Pearson, 2018.	
	WEB REFERENCES:	

S.No	Publisher	Website link	Type of Content
1.	Web reference	https://www.codecademy.com/learn/introduction-to-cybersecurity	Web Reference
2.	Website	https://www.kaspersky.com/resource-center/threats/web	Web Reference
3.	Web reference	https://www.w3schools.com/cybersecurity/	Web Reference

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

	VIDEO REFERENCES:			
S.No	**Video Details**	**Name of the Expert**	**Type of Content**	**Video Link**
1.	NPTEL	Dr.Jeetendra Pande, Associate Professor Uttarakhand Open University	Lecture	https://www.youtube.com/watch?v=7qGWQnNDj8E&t=10s
2.	NPTEL	Prof.Saji K Mathew, IIT Madras	Lecture	https://www.youtube.com/watch?v=OYsY5B9pqYU
3.	NPTEL	1. Prof.V.Kamakoti, Department of Computer Science and Engineering, IIT Madras 2. Prof. Shankar Raman, University of Madras.	Lecture	https://www.youtube.com/watch?v=RKDo4Kp6DC0

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	1	1	1	1	2	2					2		1
CO2	2	3	2	1	1	1	2	2	2				3		2
CO3	2	2	3	2	2	1	3	2	3	2		2	2	3	
CO4	3	3	2	3	2	2	2	3	3	3		3	3	2	
CO5	1	1	1	1	1	1	1	1		2		2	3		3
Avg.	**2.2**	**2.2**	**1.8**	**1.8**	**1.4**	**1.2**	**2.4**	**2**	**1.6**	**1.4**		**1.4**	**2.6**	**2.5**	**2.0**
1–Low, 2 –Medium, 3–High.															

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

VERTICAL 4 - DATA ANALYTICS AND AI

BE23AD531	FOUNDATIONS OF DATA ENGINEERING	CP	L	T	P	C
		4	2	0	2	3
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT and CSBS) Branches	Version: 1.0				

Course Objectives:		
1.	To introduce the foundational concepts of data engineering and its role in modern data ecosystems.	
2.	To enable students to understand data modeling, storage and processing techniques.	
3.	To provide hands-on knowledge of ETL pipelines and workflow orchestration.	
4.	To explore modern cloud-based tools and frameworks for data engineering.	
5.	To prepare students to design and implement end-to-end data pipelines and workflows.	
	INTRODUCTION (Not for Examination)	**2**
Importance	Foundation for building and managing scalable data systems - Develops skills in ETL, data modeling, and cloud-based solutions - Essential for handling real-time and batch data processing.	
Real-life Example(s)	Real-time fraud detection in banking (e.g., Apache Kafka) - E-commerce data pipelines for customer insights (e.g., Amazon) - Healthcare data warehousing for diagnostics (e.g., Snowflake).	
Linkages	**Pre-requisite:** Python for Data Science, Data Structures and Algorithms, Database Management Systems. **Future Courses:** Big Data Analytics, Cloud Computing.	
UNIT–I	**INTRODUCTION TO DATA ENGINEERING**	**6**
	Data Engineering – Role of Data Engineers in the Data Ecosystem – Applications of Data Engineering with Real-World Use Cases – Overview of the Data Ecosystem: Generation, collection, storage, transformation, and consumption.	
UNIT–II	**DATA MODELING AND ETL PIPELINES**	**7**
	Overview of ETL and its importance – Data Extraction Techniques: Extracting data from APIs and files (CSV, JSON) – Data Transformation: Cleaning and preprocessing – Data Loading: Loading into relational databases using Python tools like Pandas and SQL Alchemy.	
UNIT–III	**DATA STORAGE AND PROCESSING**	**6**
	Data Warehousing: OLTP vs. OLAP systems – Tools like Snowflake and Big Query – Big Data Basics: Distributed storage using HDFS – Batch Processing Frameworks: Basics of Apache Hadoop and Apache Spark (PySpark) – Streaming Data Processing: Introduction to Apache Kafka.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem- 637 504

UNIT–IV	**WORKFLOW ORCHESTRATION AND CLOUD DATA ENGINEERING**	**6**
	Data Pipeline Concepts: Architecture and use cases – Workflow Orchestration Tools: Apache Airflow, DAGs, and Scheduling – Building a sample workflow – Cloud Platforms for Data Engineering: Basics of AWS, Azure, and GCP – Storage solutions: AWS S3 and Azure Blob.	
UNIT–V	**CAPSTONE PROJECT AND INDUSTRY TRENDS**	**5**
	Capstone Project: Design and discuss a basic data pipeline – Industry Trends in Data Engineering: Real-time analytics – Automation in Data Engineering (AI/ML-assisted workflows) – Career Pathways: Required skills and certifications.	
	Total (L)	**32 Periods**
	LIST OF EXPERIMENTS:	
1.	Explore the Data Lifecycle and Ecosystem.	
2.	Design a Simple Database and Query Using SQL.	
3.	Extract, Transform, and Load (ETL) a dataset.	
4.	Perform Batch Processing Using PySpark.	
5.	Simulate a Streaming Pipeline Using Apache Kafka.	
6.	Orchestrate a Workflow Using Apache Airflow.	
	Total (P)	**30 Periods**
	Total (L+P)	**62 Periods**
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Understand the role and significance of data engineering in the data ecosystem.	**L2 – Understand**
CO2	Design and implement data models and ETL pipelines for relational and NoSQL databases.	**L3 – Apply**
CO3	Apply data storage and processing frameworks for batch and real-time data.	**L3 – Apply**
CO4	Build workflow orchestration pipelines and explore cloud-based data engineering solutions.	**L3 – Apply**
CO5	Demonstrate the ability to design end-to-end data pipelines.	**L3 – Apply**
	TEXTBOOKS:	
1.	Joe Reis, Matt Housley, "Fundamentals of Data Engineering", 2nd Edition, O'Reilly Media, 2022.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

2.	Valliappa Lakshmanan, "Data Engineering on Google Cloud", O'Reilly Media, 2021.
	REFERENCE BOOKS:
1.	Tom White, "Hadoop: The Definitive Guide", 4th Edition, O'Reilly Media, 2015.
2.	Holden Karau, "Learning Spark: Lightning-Fast Data Analytics", O'Reilly Media, 2020.
3.	Andreas Antonopoulos, "Mastering Apache Kafka", Packt Publishing, 2017.

WEB REFERENCES:

S.No	Publisher	Website link	Type of Content
1.	Microsoft	https://learn.microsoft.com/en-us/credentials/certifications/azure-data-fundamentals/?practice-assessment-type=certification	Web Reference
2.	Altexsoft	https://www.altexsoft.com/blog/what-is-data-engineering-explaining-data-pipeline-data-warehouse-and-data-engineer-role/	Web Reference

VIDEO REFERENCES:

S.No	Video Details	Name of the Expert	Type of Content	Video Link
1.	YouTube	Darshil Parmar, Freelance Data Engineer and Solution Architect	Lecture	https://www.youtube.com/watch?v=hf2go3E2m8g
2.	YouTube	Justin Chow, Developer Advocate, Airbit	Lecture	https://www.youtube.com/watch?v=PHsC_t0j1dU

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1									2	2	1	
CO2	3	3	3	2	2							2	3	2	
CO3	3	3	3	2	3							2	2		3
CO4	3	3	3	2	3				2	2	3	2		3	3
CO5	3	3	3	3	3	2	2		2	3	3	3	2	3	3
Avg.	**3.0**	**2.8**	**2.6**	**2.2**	**2.7**	**2.0**	**2.0**		**2.0**	**2.5**	**3.0**	**2.2**	**2.2**	**2.2**	**3.0**

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

VERTICAL 6 - BUSINESS PROCESS AUTOMATION

BE23CB551	FUNDAMENTALS OF IT SERVICE MANAGEMENT	CP	L	T	P	C
		4	2	0	2	3
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT, CSBS and AI&DS) Branches	Version: 1.0				

Course Objectives:		
1.	To understand the concept of user interface.	
2.	To learn about creating and managing users and groups.	
3.	To learn and configure a Service Catalog.	
4.	To implement scripts for business rules.	
5.	To design and manage reports and dashboards for data-driven insights.	
	INTRODUCTION (Not for Examination)	**2**
Importance	User Interface – Users and Groups – Lists – Forms - Tables – Records.	
Real-life Example(s)	IT Service Management – HR Management – IT Asset Management – Finance Operation Management.	
Linkages	**Future Courses:** Custom Application Development, IT Service Management Practices.	
UNIT–I	**INTRODUCTION AND INTERFACE**	**6**
	Introduction – Versions – Frames – Application menus and modules – Content Frame- Sample Use Cases – Key Components of User Interface and Navigation.	
UNIT–II	**USERS AND GROUPS**	**6**
	User Profile – User Types – Creating and Managing Users – Group Types – Managing Groups – Role types and Role Assignment – Access Control and Security – Lists and Tables – Forms – Instance.	
UNIT–III	**SERVICE CATALOGUE**	**6**
	Introduction – Designing Catalogue Items – Flow Designer – Task Delegation – UI Policies – Scripting in UI Policies – UI Policy Order – Data Policies – Converting between UI Policy and Data Policy.	
UNIT–IV	**CLIENT SCRIPTS AND BUSINESS RULES**	**6**
	Applications – OnLoad – Onchange – OnSubmit – OnCellEdit – Business Rule Configuration – Business Rule Actions – Business Rule Scripts – Dot-Walking.	
UNIT–V	**REPORTS AND DASHBOARDS**	**6**
	Introduction to Reports - Creating, Scheduling and Distributing Reports – Report Types – Visualizing Data using Report Designer – Creating Dashboard – Performance Analytics in Dashboard.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

	***Project based Learning** **Project Topic:** Customer Satisfaction Survey System This project Implements a Customer Satisfaction Survey System to gather feedback on IT services for Survey Management, Reporting and Dashboard Creation.	
	Total (L)	**32 Periods**
	*** INTERNAL EVALUATION ONLY**	
	LIST OF EXPERIMENTS:	
1.	Write a program/script to automatically log into ServiceNow (using APIs or Selenium for UI automation) and retrieve the list of available modules in the Application Navigator.	
2.	Implement a solution where the visibility of certain modules in the Application Navigator depends on the user's role.	
3.	Write a script to filter the activity stream of a record to show only comments added by the assigned user.	
4.	Create a catalog item called "Laptop Request" with fields for the requester to select the laptop model, accessories, and justification.	
5.	Write an onLoad client script to set the default value of the "Priority" field to "Low."	
6.	Design a flow for a high-priority Incident that requires approval from the manager first and then the director.	
7.	Design a business rule to send an email notification to the Assigned To user when a new Incident is assigned to them.	
8.	Develop a dashboard that helps track and report on the performance of the Change Management process, focusing on change requests, approval workflows, and the impact of changes on the environment.	
	Total (P)	**30 Periods**
	Total (L+P)	**62 Periods**
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Describe the components of the user interface.	**L2 – Understand**
CO2	Implement the principles of user permissions and access control.	**L3 – Apply**
CO3	Develop and set up a Service Catalog in Service Now.	**L3 – Apply**
CO4	Deploy scripts for automating business rules and processes.	**L3 – Apply**
CO5	Explore reports and dashboards that provide data-driven insights.	**L3 – Apply**

	TEXTBOOKS:
1.	Felix Acosta, "Managing the ServiceNow Platform: A comprehensive guide to ServiceNow administration", Kindle Edition, 2023.
	REFERENCE BOOKS:
1.	R. Parvin, "ServiceNow ITSM: Implementation and Best Practices: A Comprehensive Guide to ServiceNow's Incident, Problem, Change, and More. Unlock the Full Potential of ITSM Processes Within ServiceNow", Kindle Edition, 2023.
2.	Tim Woodruff , "ServiceNow Development Handbook - Third Edition: A compendium of ServiceNow "NOW" platform development and architecture pro-tips, guidelines, and best practices", Kindle Edition, 2023.
3.	Andrew Kindred, "Mastering ServiceNow Scripting: Leverage JavaScript APIs to perform client-side and server-side scripting on ServiceNow instances", Kindle Edition.

WEB REFERENCES:

S.No	Publisher	Website link	Type of Content
1.	Web reference	https://www.pluralsight.com/courses/servicenow	Web Reference
2.	O'reilly	https://learning.oreilly.com/library/view/learning-servicenow	Web Reference
3.	Udemy	https://www.udemy.com/course/total-servicenow-developer-and-admin-course-with-javascript/?couponCode=IND21PM	Course
4.	Web Reference	https://nowlearning.servicenow.com/	Web Reference

VIDEO REFERENCES:

S.No	Video Details	Name of the Expert	Type of Content	Video Link
1.	YouTube	Runjay Patel	Course	https://www.youtube.com/watch?v=7pC5A9MWIJY&list=PLVuhoY6Ddi5jZVQn0YKq9a1_toIluZlZa
2.	YouTube	Cobuman	Course	https://www.youtube.com/watch?v=90D1C-9mogg

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	2	3	1			1	1	1			2	
CO2	3	2	3	2	3	1			1	1	1			3	2
CO3	3	2	3	2	3	1			1	1	1			3	3
CO4	3	2	3	2	3	1			1	1	1			2	2
CO5	3	2	3	2	3	1			1	1	1		3		
Avg.	**3.0**	**2.0**	**3.0**	**2.0**	**3.0**	**1.0**			**1.0**	**1.0**	**1.0**		**3.0**	**2.5**	**2.3**

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 20/01/2025
Passed in BoS Meeting held on 21/12/2024
Approved in Academic Council Meeting held on 11/01/2025

VERTICAL 8 - INTEGRATED SOFTWARE SYSTEM DESIGN

BE23CS541	WEB DEVELOPMENT FOUNDATIONS	CP	L	T	P	C
		4	2	0	2	3
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT, CSBS and AI&DS) Branches	Version: 1.0				

Course Objectives:		
1.	To understand the foundational concepts of computer networks, Internet functioning, and basic web architecture.	
2.	To introduce the structure and elements of HTML5 required for creating basic web pages.	
3.	To provide the knowledge of CSS3 necessary for styling and formatting web pages.	
4.	To introduce JavaScript programming for adding functionality and interactivity to web pages.	
5.	To be familiar with UI frameworks and version control tools for modern web development.	
	INTRODUCTION (Not for Examination)	**2**
Importance	It enables students to create functional, interactive, and user-friendly websites that form the backbone of today's digital world. Understanding HTML, CSS, JavaScript, and modern tools helps learners develop real-time applications used in businesses, education, communication, and entertainment. This subject builds the foundational skills required for careers in software development, UI/UX design, and web application engineering.	
Real-life Example(s)	E-Commerce Websites, Social Media Platforms, Online Banking Portals, Educational Websites / LMS, Business Websites.	
Linkages	**Pre-requisite:** Computer Networks, Problem Solving using C Programming, Object Oriented Programming using C++. **Future courses:** System Design, Competitive Coding, Frontend Development.	
UNIT–I	**FUNDAMENTALS OF WEB DEVELOPMENT**	**5**
	Basics of Computer Networks – Introduction to Internet and its History – Web Terminologies – Web System Architectures – Introduction to Web Servers – Web Communication Protocols – Ports and DNS Concepts – Introduction to Client-Side and Server-Side Scripting.	
UNIT–II	**HTML5**	**5**
	HTML Basics – Attributes in HTML – Hyperlinks and Bookmarks – Working with Images – Lists and Tables – Form Elements – Layouts in HTML – Other Important HTML5 Elements – HTML Multimedia.	

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

UNIT–III	**CSS3**	**6**
	Basics of CSS – CSS Selectors – Pseudo-classes and Pseudo-elements – Core CSS3 Properties – CSS3 Features – Responsive Design and Media Queries – CSS Preprocessors (SASS / SCSS).	
UNIT–IV	**JAVASCRIPT**	**7**
	Introduction to JavaScript – JavaScript Syntax and Basics – JavaScript Building Blocks – Control Flow Statements – Functions in JavaScript – Event Listeners – Object-Oriented JavaScript Concepts – Built-in JavaScript Objects – Working with Events – Document Object Model (DOM) Manipulation – Form Validation using JavaScript.	
UNIT–V	**BOOTSTRAP, GIT & GITHUB VERSION CONTROL**	**7**
	Bootstrap: Overview and setup (CDN vs Local) – Grid System and Layout – Navbar and Navigation Components – Buttons and Alerts – Forms and Input Groups – Cards and Modals – Create Responsive Web Page. Introduction to Version Control – Installing Git – Basic Git Commands: clone, add, commit, push – Creating and Managing GitHub Repositories – Hosting Static Websites on GitHub Pages.	
	Total (L)	**32 Periods**
	LIST OF EXPERIMENTS:	
1.	Inspect HTTP Request/Response headers using developer tools.	
2.	Simulate DNS lookups and observe port behavior.	
3.	Design a registration form using HTML forms.	
4.	Build a webpage with navigation (hyperlinks and bookmarks) and embed an audio and a video into a sample webpage.	
5.	Create responsive layouts using Flexbox and media queries.	
6.	Write basic SASS/SCSS code and compile it.	
7.	Manipulate DOM elements dynamically.	
8.	Perform client –side form validations.	
9.	Create a fully responsive multi-page website using Bootstrap.	
10.	Initialize Git repo – Push code to GitHub – Manage branches & PRs.	
11.	Host a sample project using GitHub Pages.	
	Total (P)	**30 Periods**
	Total (L+P)	**62 Periods**
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

	and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Explain and differentiate key web concepts including Internet technologies, protocols, DNS, and client–server scripting models.	**L2 – Understand**
CO2	Construct structured web pages using HTML5 elements such as forms, multimedia, tables, and layouts.	**L3 – Apply**
CO3	Apply CSS3 properties and responsive design techniques to create visually appealing and adaptable web layouts.	**L3 – Apply**
CO4	Use JavaScript functions, events, DOM manipulation, and form validation techniques to build interactive web pages.	**L3 – Apply**
CO5	Implement responsive websites using Bootstrap and manage/host projects using Git and GitHub Pages.	**L3 – Apply**
	TEXTBOOKS:	
1.	Terry Felke Morris, "Web Development and Design Foundations with HTML5", 9th Edition, Pearson, 2018.	
	REFERENCE BOOKS:	
1.	Jon Duckett, "HTML & CSS: Design and Build Websites", Wiley, 2014.	
2.	Jon Duckett, "JavaScript & jQuery: Interactive Front – End Web Development", Wiley, 2014.	
3.	Achyut Godbole and Atul Kahate, "Web Technologies: TCP/IP to Internet Application Architectures", 2nd Edition, McGraw Hill Education, 2012.	
4.	Kogent Learning Solutions Inc., "HTML5 Black Book", Dream tech Press, 2011.	

WEB REFERENCES:

S.No	Publisher	Website link	Type of Content
1.	Mozilla Foundation	https://developer.mozilla.org/	Web Content
2.	Bootstrap	https://getbootstrap.com/	Web Content
3.	GitHub	https://docs.github.com/	Web Content

VIDEO REFERENCES:

S.No	Video Details	Name of the Expert	Type of Content	Video Link
1.	YouTube	Drew Ryan	Demonstration	https://www.youtube.com/watch?v=9cKsq14Kfsw
2.	YouTube	freeCodeCamp.org	Tutorial	https://www.youtube.com/watch?v=PkZNo7MFNFg

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

Mapping of COs with POs and PSOs															
COs	**POs**												**PSOs**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	1									1	2		1
CO2	3	3	2		2					1				3	
CO3	3	3	3		3									3	
CO4	3	2	3	2	2			1					1	3	1
CO5	2	3	3		3				2	1		2		3	2
Avg.	**2.8**	**2.6**	**3.0**	**2.0**	**2.5**			**1.0**	**2.0**	**1.0**		**1.5**	**1.5**	**3.0**	**1.3**
1–Low, 2 –Medium, 3–High.															

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

VERTICAL 9 - CRM WITH BUSINESS INTELLIGENCE

BE23CB561	CUSTOMER RELATIONSHIP MANAGEMENT SYSTEM ADMINISTRATION	CP	L	T	P	C
		4	2	0	2	3
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT, CSBS and AI&DS) Branches	Version: 1.0				

Course Objectives:		
1.	To introduce Salesforce platform basics.	
2.	To understand Salesforce data security and objects.	
3.	To customize Salesforce Lightning and sales objects.	
4.	To learn Service Cloud and collaboration tools.	
5.	To learn analytics and automation in Salesforce.	
	INTRODUCTION (Not for Examination)	**2**
Importance	A Salesforce Administrator customizes and automates the Salesforce Platform to solve business problems and work with stakeholders to define requirements, support users, manage data, maintain security, and provide analytics that help in decision-making.	
Real-life Example(s)	Sales Pipeline Management, Customer Relationship Tracking, Automated Business Processes, Customizing the Platform for Business Needs.	
Linkages	**Future courses:** Customer Relationship Management System Development.	
UNIT–I	**INTRODUCTION TO SALESFORCE**	**6**
	Salesforce Platform Basics: Overview of the Salesforce Platform – Use cases – Architecture – Setup navigation – AppExchange – **Prepare Salesforce Org for Users:** Set and update exchange rates and update with ACM – Customize the Home Page – Create list views – Manage Chatter groups – **User Management:** Add new users – Assign-User control access – **Customize an Org to Support a New Business Unit:** User access and Chatter – Modify the data model – Configure email templates, automate business processes – **Identity Basics:** Salesforce Identity – Identity users – Key identity terminology.	
UNIT–II	**SALESFORCE DATA SECURITY AND OBJECT CUSTOMIZATION**	**6**
	Data Security: Object, field, and record access, role hierarchy, sharing rules, permission set groups and basic org protection settings – **Data Modeling:** Standard/custom objects – Relationships and Schema Builder – **Lightning Customization:** Customize Lightning apps – List views, page layouts, compact layouts, buttons, and quick actions – **Object Configuration:** Create fields, picklists, dependencies, formulas, record types, and validation rules.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technolog
KIOT Campus, Kakapalayam
Salem-637 504

UNIT–III	**SALESFORCE LIGHTNING CUSTOMIZATION ESSENTIALS**	**6**
	Lightning App Builder: Create and customize Lightning Home, Record, and App pages using Lightning components – **Formulas & Validations:** formula fields, roll-up summary fields, and validation rules -Accounts & Contacts for Lightning Experience – **Accounts & Contacts:** customer information and relationships – **Leads & Opportunities:** Convert leads, track opportunities using Path and Kanban – **Products, Quotes & Contracts:** Products, price books, quotes, and contracts – **Campaign Basics:** Organize campaigns and track marketing performance – **Sales Path:** Customize sales stages and work with opportunities.	
UNIT–IV	**SERVICE CLOUD & COLLABORATION IN LIGHTNING**	**6**
	Configure Service Cloud in Lightning Experience: Set up the Service Console, case automation, entitlements, and service contracts for customer support – Chatter Administration for Lightning Experience – AppExchange Basics – **Data management:** Duplicate management – Import and export with Data management tools.	
UNIT–V	**SALES ANALYTICS & APPROVAL AUTOMATION**	**6**
	Reports & Dashboards for Lightning Experience – Create Reports and Dashboards for Sales and Marketing Managers – Approve Records with Approval Processes – Build a Discount Approval Process – Build a Simple Flow – Flow Builder Basics – Case Studies and Capstone Project.	
	Total (L)	**32 Periods**
	LIST OF EXPERIMENTS:	
1.	Create a Salesforce Dev org, configure company profile, and set up users, roles, profiles, and basic security.	
2.	Create custom objects and fields, define relationships, and apply field level security, record types, and validation rules.	
3.	Build a custom Lightning app and record pages; work with Accounts, Contacts, Leads, Opportunities, Products, Quotes, and Campaigns using Path/Kanban.	
4.	Configure Service Console, case assignment and escalation, entitlements/service contracts, and perform data import/export.	
5.	Create sales/marketing reports and dashboards, configure an approval process (e.g., discount approval), and build a simple Flow in Flow Builder.	
	Total (P)	**30 Periods**
	Total (L+P)	**62 Periods**

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Understand basic Salesforce setup and user management.	**L2 - Understand**
CO2	Configure security settings and customize Salesforce objects.	**L3 - Apply**
CO3	Manage Lightning pages and sales processes.	**L3 - Apply**
CO4	Customize Lightning pages and execute sales processes.	**L3 - Apply**
CO5	Apply Salesforce tools to create reports, dashboards, and approval workflows.	**L3 - Apply**
	TEXTBOOKS:	
1.	Rakesh Gupta, "Mastering Salesforce CRM Administration: An Advanced Administration Certification Handbook", PACKT Publishing Limited, 2025.	
2.	Krzysztof Nowacki & Mateusz Twarożek, "Salesforce CRM Administration Handbook: A comprehensive guide to administering, configuring, and customizing Salesforce CRM", PACKT Publishing Limited, 2024.	
	REFERENCE BOOKS:	
1.	Sharif Shaalan and Timothy Royer, "Salesforce for Beginners: A step-by-step guide to optimize sales and marketing and automate business processes with the Salesforce platform", PACKT Publishers, 2nd Ed, 2022.	
2.	Paul Goodey, "Salesforce CRM – The Definitive Admin Handbook", 4th Edition, Packt Publishing Limited, 2023.	
	WEB REFERENCES:	

S.No	Publisher	Website link	Type of Content
1.	Salesforce	https://www.salesforce.com/blog/what-is-trailhead/	Web reference
2.	Website Reference	https://trailhead.salesforce.com/users/srebello7/trailmixes/salesforce-administrator-explorer	Web Reference

VIDEO REFERENCES:

S.No	Video Details	Name of the Expert	Type of Content	Video Link
1.	YouTube	Apoorva	Lecture	https://youtu.be/cA7pFWpgO3M?si=A8Zp5owG6exvbFbZ
2.	YouTube	Isaac Duke	Lecture	https://youtu.be/19VTXemdr_o?si=9B7BMP0rGco-J4q7
3.	YouTube	Deepika	Lecture	https://youtu.be/bOzJOkPU0cI?si=HJA[illegible]

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

Mapping of COs with POs and PSOs															
COs	**POs**												**PSOs**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	1	1	1				1	2		2			
CO2	3	3	2	2	3				2	3		2			
CO3	2	3	3	3	3				2	3		2			
CO4	2	2	2	2	2				3	3		2			
CO5	2	2	2	2	3				3	3		3			
Avg.	**2.4**	**2.4**	**2.0**	**2.0**	**2.4**				**2.2**	**2.8**		**2.2**			
1–Low, 2 –Medium, 3–High.															

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

VERTICAL 10 - IT INFRASTRUCTURE MANAGEMENT

BE23AD551	IT INFRASTRUCTURE FUNDAMENTALS	CP	L	T	P	C
		4	2	0	2	3
Programme & Branch	Common to B.E. (CSE) and B.TECH. (IT, CSBS and AI&DS) Branches	Version: 1.0				

Course Objectives:		
1.	To understand the evolution and core differences between Traditional, Cloud and Hyper-Converged IT Infrastructure models.	
2.	To analyze the components and specifications of core end-user hardware.	
3.	To learn foundational knowledge of Operating System architectures, particularly Windows and Linux, and perform basic configuration and operation tasks.	
4.	To implement procedures for Software and Patch Management.	
5.	To understand Asset Management and enforce effective IT Usage Policies.	
	INTRODUCTION (Not for Examination)	**2**
Importance	It is the foundation that supports all organizational IT services, covering the necessary hardware, software, and policies to enable core business operations and secure digital services.	
Real-life Example(s)	Scalability - Using Cloud Infrastructure to handle peak load for e-commerce sites - Security - Implementing Patch Management across all devices to prevent data breaches - Tracking - Utilizing Asset Management to monitor server warranty and location - Continuity - Configuring Virtual Machines for quick system recovery after failure.	
Linkages	**Pre-requisite:** Operating System, Computer Networks. **Future courses:** Cloud Architecture, Cyber Security, Advanced Virtualization.	
UNIT–I	**FOUNDATIONS OF IT INFRASTRUCTURE**	**6**
	Components of an Enterprise IT Environment: Server Room & Data Center Architecture) – Types of Infrastructure: Traditional Hardware Infra – Virtualization & Private Cloud – Hyper-Converged Infrastructure (VMware vSAN, Nutanix) – Public Cloud Basics (AWS/Azure Overview) – IT Teams Roles: NOC, SOC, SysAdmin, IT Helpdesk.	
UNIT–II	**END-USER COMPUTING DEVICES**	**6**
	Desktop & Laptop Hardware Components: CPU Types – RAM – Storage Types (HDD/SSD/NVMe) – BIOS/UEFI – Printers & Scanners (Types, Drivers & Troubleshooting) – Hardware Compatibility (Chipset, Sockets, RAM Frequencies). ***Experimental Learning:** Assembling a PC, RAM upgrade, SSD cloning, printer configuration	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

UNIT–III	**OPERATING SYSTEM ESSENTIALS**	**6**
	Windows vs Linux Architecture: OS Architecture Overview – File Systems: NTFS, EXT4 – User, Group, Permissions Basics – Basic OS Operations: Task Manager, Services, Registry, Logs – Linux Basics: Shell Commands, Package Install, System Status. ***Experimental Learning**: Create Partitions & Dual-Boot VM - Linux Terminal Tasks & Shell Scripts.	
UNIT–IV	**SOFTWARE DEPLOYMENT & MAINTENANCE**	**6**
	Software Lifecycle & Management: Software Lifecycle: Install, Update & Uninstall – Licensing Models: OEM, Volume Licenses – Windows Update & WSUS Overview – Antivirus Policies & Endpoint Security Agents – Application Compatibility & Rollback. ***Experimental Learning:** Patch Scanning & Update Deployment – Troubleshoot DLL/Driver/Software Errors.	
UNIT–V	**IT ASSET GOVERNANCE**	**6**
	IT Asset & Helpdesk Management: Asset Tagging & Lifecycle Documentation – Tiketing Tools Basics (Freshservice / ServiceNow Workflow) – IT Security & Compliance Policies – Backup Policies for Endpoints – Common IT Helpdesk SLAs. ***Project based Learning:** Asset Entry in ITSM Tool - Raising & Resolving Tickets with SLA Tracking.	
	Total (L)	**32 Periods**
	*** INTERNAL EVALUATION ONLY**	
	Bloom's Taxonomy Levels: Remember, Understand, Apply, Analyze, Evaluate, Create.	
	LIST OF EXPERIMENTS:	
1.	Assemble a PC and verify hardware components via BIOS/UEFI.	
2.	Upgrade RAM and clone HDD/SSD to NVMe for performance enhancement.	
3.	Install and configure printers/scanners, troubleshooting driver and connectivity issues.	
4.	Create dual-boot VM with Windows and Linux using partitioning.	
5.	Perform Linux terminal commands and write basic shell scripts for automation.	
6.	Install, update, and rollback software while checking application compatibility.	
7.	Configure Windows Update and WSUS for patch management.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

8.	Deploy antivirus and endpoint security agents, configure scanning policies.	
9.	Enter assets in ITSM tool and manage tickets with SLA tracking.	
10.	Implement backup and restore policies for endpoints to ensure data integrity.	
	Total (P)	**30 Periods**
	Total (L+P)	**62 Periods**
	OPEN-ENDED PROBLEMS / QUESTIONS	
	Course specific Open-Ended Problems will be solved during the classroom teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.	
	Course Outcomes: **Upon completion of this course, the students will be able to:**	**BLOOM'S Taxonomy**
CO1	Understand the foundational concepts and architectures of Traditional, Cloud and Hyper-Converged IT infrastructure.	**L2 - Understand**
CO2	Explain the specifications and roles of essential end-user hardware (Desktop, Laptops, Printers, Scanners) within an organization.	**L2 - Understand**
CO3	Configure and manage basic operations in both Windows and Linux operating systems using fundamental commands and utilities.	**L3 - Apply**
CO4	Implement the procedures for Software Installation, Patch Management, and troubleshooting to maintain system stability and security.	**L3 - Apply**
CO5	Analyze and apply principles of IT Asset Management and formulate effective IT Usage Policies for governance and compliance.	**L3 - Apply**
	TEXTBOOKS:	
1.	Andrew S. Tanenbaum & Herbert Bos, "Modern Operating Systems", 5th Edition, Pearson, 2022.	
2.	Francisco Castillo & Korina Monoso, "Managing Information Technology", 2nd Edition, Springer, 2024.	
3.	Thomas Erl & Eric Barceló Monroy, "Cloud Computing: Concepts, Technology, Security & Architecture", Pearson / Prentice Hall, 2024.	
	REFERENCE BOOKS:	
1.	Jorge Marx Gómez, Manuel Mora, Mahesh S. Raisinghani & Wolfgang Nebel (Editors), Engineering and Management of Data Centers: "An IT Service Management Approach", Springer, 2017.	
2.	Thomas A. Limoncelli, The Practice of System and Network Administration: "DevOps and Other Best Practices for Enterprise IT", 3rd Edition, O'Reilly, 2017.	
3.	Paul Bocij, "Business Information Systems: Technology, Development and Management", 6th Edition, Pearson, 2018.	

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

	WEB REFERENCES:		
S.No	**Publisher**	**Website link**	**Type of Content**
1.	Microsoft (Microsoft Docs)	https://docs.microsoft.com	Web Content
2.	Red Hat Documentation	https://docs.redhat.com/en	Web Content
3.	VMware	https://www.vmware.com/products/vsan.html	Web Content

	VIDEO REFERENCES:			
S.No	**Video Details**	**Name of the Expert**	**Type of Content**	**Video Link**
1.	YouTube	Mythili Vutukuru / IIT Bombay	Lecture	https://www.youtube.com/watch?v=Jph3H1wZTKM
2.	YouTube	Prof. Christopher Barnatt	Lecture	https://www.youtube.com/watch?v=KWVte9WGxGE

Mapping of COs with POs and PSOs

COs	POs												PSOs		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	3		2					1		2	3	2	1
CO2	3	3	3		2				2	2		2	3	2	2
CO3	3	3	3	2	3	2			1	2	1	3	3	3	2
CO4	3	3	3	2	3	2		2	1	2	1	3	3	3	3
CO5	3	3	3	3	3	2		2	2	3	2	3	3	3	3
Avg.	**3.0**	**2.8**	**3.0**	**2.3**	**2.6**	**2.0**		**2.0**	**1.5**	**2.0**	**1.3**	**2.6**	**3.0**	**2.6**	**2.2**

1–Low, 2 –Medium, 3–High.

CHAIRPERSON
Board of Studies
Faculty of CSE & IT
Knowledge Institute of Technology
KIOT Campus, Kakapalayam
Salem-637 504

w.e.f. 22/12/2025
Passed in BoS Meeting held on 09/12/2025
Approved in Academic Council Meeting held on 15/12/2025

	WEB REFERENCES:		
S.No	Publisher	Website link	Type of Content
1.	Microsoft (Microsoft Docs)	https://docs.microsoft.com/	Web Content
2.	Red Hat Documentation	https://docs.redhat.com/en/	Web Content
3.	VMware	https://www.vmware.com/products/vsphere.html	Web Content

*	VIDEO REFERENCES:			
S.No	Video Details	Name of the Expert	Type of Content	Video Link
1.	YouTube	Mykhaylo Kopylenko / IIIT Bhopal	Lecture	https://www.youtube.com/watch?v=JqnHJLwZ7QI
2.	YouTube	Prof. Christopher Barnatt	Lecture	https://www.youtube.com/watch?v=kWVpe9WBxGE

Mapping of COs with POs and PSOs:

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3		2					1		2	3	2	2
CO2	3	3	3		2					2		2	3	2	2
CO3	3	3	3	2	3	2			1	2	1	3	3	3	2
CO4	3	3	3	2	3	2			2	1	2	3	3	3	3
CO5	3	3	3	3	3	2			2	2	3	3	3	3	3
Avg	3.0	2.6	3.0	2.3	2.6	2.0			2.0	1.5	2.0	1.3	2.6	3.0	2.6	2.2

1-Low, 2 -Medium, 3-High.