

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.



Beyond Knowledge

M.E. / M.Tech. Regulations 2023


M.E. – Computer Science and Engineering

Curriculum and Syllabi

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

Version: 1.0

Date: 09.09.2023

	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	Version 1.0

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

M.E. COMPUTER SCIENCE AND ENGINEERING

VISION OF THE INSTITUTE
<ul style="list-style-type: none"> 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 create globally competent software professionals with social values to cater the ever-changing industry requirements.

MISSION OF THE DEPARTMENT	
M1	To provide appropriate infrastructure to impart need-based technical education through effective teaching and research.
M2	To involve the students in collaborative projects on emerging technologies to fulfill the industrial requirements.
M3	To render value based education to students to take better engineering decision with social consciousness and to meet out the global standards.
M4	To inculcate leadership skills in students and encourage them to become a globally competent professional.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)	
PEO 1	Develop proficiency as a computer science engineer with an ability to solve a wide range of computational problems and have sustainable development in industry or any other work environment.
PEO 2	Possess the ability to think analytically and logically to understand technical problems with computational systems for a lifelong learning which leads to pursuing research.
PEO 3	Strongly focus on design thinking and critical analysis to create innovative products and become entrepreneurs.

PROGRAM OUTCOMES (POs)	
Engineering Graduates will be able to:	
PO1	An ability to independently carry out research / investigation and development work to solve practical problems.
PO2	An ability to write and present a substantial technical report/document.
PO3	Students should be able to demonstrate a degree of mastery over the area of Computer Science and Engineering.
PO4	Efficiently design, build and develop system application software for distributed and centralized computing environments in varying domains and platforms.
PO5	Understand the working of current Industry trends, the new hardware architectures, the software components and design solutions for real world problems by Communicating and effectively working with professionals in various engineering fields and pursue research orientation for a lifelong professional development in computer and automation arenas.
PO6	Model a computer based automation system and design algorithms that explore the understanding of the tradeoffs involved in digital transformation.

Program Specific Outcomes (PSOs)	
After the successful completion of M.E. Programme in Computer Science and Engineering, the graduates will be able to	
PSO 1	Design, develop and implement interdisciplinary application software projects to meet the demands of industry requirements using modern tools and technologies.
PSO 2	Analyze the societal needs to provide novel solutions through technological based research

KNOWLEDGE INSTITUTE OF TECHNOLOGY(AUTONOMOUS), SALEM – 637504												
M.E. COMPUTER SCIENCE AND ENGINEERING										Version : 1.0		
Courses of Study and Scheme of Assessment (Regulations 2023)										Date : 09.09.23		
Sl. No.	Course Code	Course Title	Periods / Week						Maximum Marks			
			CAT	CP	L	T	P	C	IA	ESE	Total	
SEMESTER I												
-	-	Induction Programme	-	-	-	-	-	-	-	-	-	-
THEORY												
1.	ME23MA103	Applied Probability and Statistics for Computer Science Engineers	FC	4	3	1	0	4	40	60	100	
2.	ME23RM201	Research Methodology and IPR	RM	3	2	1	0	3	40	60	100	
3.	ME23CP301	Advanced Data Structures and Algorithms	PC	3	3	0	0	3	40	60	100	
4.	ME23CP302	Database Practices	PC	3	3	0	0	3	40	60	100	
5.	ME23CP303	Network Technologies	PC	3	3	0	0	3	40	60	100	
6.	ME23CP304	Principles of Programming Languages	PC	3	3	0	0	3	40	60	100	
7.	ME23AC7XX	Audit Course – I*	AC	2	2	0	0	NC	40	60	100	
PRACTICALS												
8.	ME23CP305	Advanced Data Structures and Algorithms Laboratory	PC	4	0	0	4	2	60	40	100	
9.	ME23CP306	Database Practices Laboratory	PC	4	0	0	4	2	60	40	100	
EMPLOYABILITY ENHANCEMENT												
10.	ME23PT801	Technical Seminar / Case Study Presentation / Presentation	EEC	2	0	0	2	0	100	-	100	
TOTAL				31	19	2	10	23	500	500	1000	
SEMESTER II												
THEORY												
1.	ME23CP307	Advanced Software Engineering	PC	3	3	0	0	3	40	60	100	
2.	ME23CP308	Multicore Architecture and Programming	PC	3	3	0	0	3	40	60	100	
3.	ME23MC701	Universal Human Values and professional ethics	MC	3	3	0	0	3	40	60	100	
4.	ME23CP4XX	Professional Elective - I	PE	3	3	0	0	3	40	60	100	
5.	ME23CP4XX	Professional Elective - II	PE	3	3	0	0	3	40	60	100	
6.	ME23AC7XX	Audit Course – II*	AC	2	2	0	0	0	40	60	100	
7.	ME23XX5XX	Open Elective - I	OE	3	3	0	0	3	40	60	100	
PRACTICALS												
8.	ME23CP309	Software Engineering Laboratory	PC	2	0	0	2	1	60	40	100	
EMPLOYABILITY ENHANCEMENT												
9.	ME23PT802	Research Paper Review and Presentation	EEC	2	0	0	2	1	100	-	100	
TOTAL				24	20	0	4	20	440	460	900	

*Audit Course is Optional

KNOWLEDGE INSTITUTE OF TECHNOLOGY(AUTONOMOUS), SALEM – 637504											
M.E. COMPUTER SCIENCE AND ENGINEERING										Version : 1.0	
Courses of Study and Scheme of Assessment (Regulations 2023)										Date : 09.09.23	
Sl. No.	Course Code	Course Title	Periods / Week						Maximum Marks		
			CAT	CP	L	T	P	C	IA	ESE	Total
SEMESTER III											
THEORY											
1.	ME23CP310	Security Practices	PC	3	3	0	0	3	40	60	100
2.	ME23CP4XX	Professional Elective - III	PE	3	3	0	0	3	40	60	100
3.	ME23XX5XX	Open Elective - II	OE	3	3	0	0	3	40	60	100
THEORY CUM PRACTICAL											
4.	ME23CP4XX	Professional Elective - IV	PE	5	3	0	2	4	50	50	100
5.	ME23CP311	Internet of Things	PC	5	3	0	2	4	50	50	100
PRACTICAL											
6.	ME23CP601	Project Work – Phase I	PW	12	0	0	12	6	60	40	100
TOTAL				31	15	0	16	23	280	320	600
SEMESTER IV											
PRACTICAL											
1.	ME23CP602	Project Work –Phase II	PW	24	0	0	24	12	60	40	100
TOTAL				24	0	0	24	12	60	40	100

AUDIT COURSES (AC)

Registration for any of these courses is optional to students

Sl. No.	COURSE CODE	COURSE TITLE	PERIODS / WEEK			CREDITS	SEM
			Lecture	Tutorial	Practical		
1.	ME23AC701	English for Research Paper Writing	2	0	0	0	I / II
2.	ME23AC702	Disaster Management	2	0	0	0	I / II
3.	ME23AC703	Constitution of India	2	0	0	0	I / II
4.	ME23AC704	நற்றமிழ் இலக்கியம்/ Heritage of Tamil	2	0	0	0	I / II

SEMESTER-WISE CREDITS DISTRIBUTION

SUMMARY							
Sl. No.	Course Category	Credits per Semester				Credits	Credit %
		I	II	III	IV		
1.	FC	4	-	-	-	4	5
2.	RM	3	-	-	-	3	4
3.	PC	16	7	8	-	31	40
4.	PE	-	6	6	-	12	15
5.	OE	-	3	3	-	6	8
6.	PW	-	-	6	12	18	23
7.	MC/AC	-	3	-	-	3	4
8.	EEC	-	1	-	-	1	1
Total		23	20	23	12	78	100

CAT	Category of Course	FC	Foundation Courses	MC	Mandatory Courses
CP	Contact Period	PC	Professional Core Courses	AC	Audit Courses
L	Lecture Period	PE	Professional Elective Courses	IA	Internal Assessment
T	Tutorial Period	OE	Open Elective Courses	ESE	End Semester Examination
P	Laboratory Period	PW	Project Work Courses		
C	Credits	EEC	Employability Enhancement Courses		



ME23MA103	APPLIED PROBABILITY AND STATISTICS FOR COMPUTER SCIENCE ENGINEERS				Version: 1.0				
Programme & Branch	M.E- COMPUTER SCIENCE AND ENGINEERING				CP	L	T	P	C
					4	3	1	0	4
Course Objectives:									
1.	To encourage students to develop a working knowledge of the central ideas of Linear Algebra.								
2.	To enable students to understand the concepts of Probability and Random Variables.								
3.	To understand the basic probability concepts with respect to two dimensional random variables along with the relationship between the random variables and the significance of the central limit Theorem.								
4.	To apply the small / large sample tests through Tests of hypothesis.								
5.	To enable the students to use the concepts of multivariate normal distribution and principal components analysis.								
UNIT-I		LINEAR ALGEBRA				9+3			
Vector spaces (L1)- norms (L1) - Inner Products (L2) - Eigenvalues using QR transformations (L3) - QR Factorization (L3) - generalized eigenvectors (L2) - Canonical forms (L2) - singular value Decomposition (L3) and applications - pseudo inverse (L3) - least square approximations (L3).									
UNIT-II		PROBABILITY AND RANDOM VARIABLES				9+3			
Probability (L1) - Axioms of probability(L2) - Conditional probability(L2) - Baye's theorem(L3) - Random Variables (L1)- Probability function (L2) - Moments (L2) - Moment generating functions (L3) and their Properties (L2) - Binomial, Poisson, Geometric, Uniform, Exponential, Gamma and Normal Distributions (L3) - Function of a random variable (L2).									
UNIT- III		TWO DIMENSIONAL RANDOM VARIABLES				9+3			
Joint distributions (L2) - Marginal and conditional distributions (L3) - Functions of two - dimensional random variables (L3) - Regression curve (L3) - Correlation (L3).									
UNIT - IV		TESTING OF HYPOTHESIS				9+3			
Sampling distributions (L1) - Type I and Type II errors (L2) - Small and Large samples (L3) - Tests based on Normal, t, Chi square and F distributions for testing of mean, variance and proportions (L3) - Tests for independence of attributes and goodness of fit (L3).									
UNIT-V		MULTIVARIATE ANALYSIS				9+3			
Random vectors and matrices(L2) - Mean vectors and covariance matrices(L3) - Multivariate normal density(L2) and its properties(L2) - Principal components(L2) - Population principal components(L3) - Principal components from standardized variables(L3).									
OPEN ENDED PROBLEMS / QUESTIONS									
Course specific Open Ended Problems will be solved during the class room teaching. Such problems can be given as Assignments and evaluated as Internal Assessment only and not for the End semester Examinations.									
Total : 60 PERIODS									

Course Outcomes: Upon completion of this course the students will be able to:		BLOOM'S Taxonomy
CO1	Apply the concepts of Linear Algebra to solve practical problems.	L3 – Apply
CO2	Use the ideas of probability and random variables in solving engineering problems.	L3 – Apply
CO3	Be familiar with some of the commonly encountered two dimensional random variables and be equipped for a possible extension to multivariate analysis	L3 – Apply
CO4	Use statistical tests in testing hypotheses on data.	L3 – Apply
CO5	Develop critical thinking based on empirical evidence and the scientific approach to knowledge development.	L3 – Apply

REFERENCE BOOKS:

1.	Dallas E Johnson, "Applied multivariate methods for data Analysis", Thomson and Duxbury press, Singapore, 1998.
2.	Richard A. Johnson and Dean W. Wichern, "Applied multivariate statistical Analysis", Pearson Education, Fifth Edition, 6 th Edition, New Delhi, 2013.
3.	Bronson, R., "Matrix Operation" Schaum's outline series, Tata McGraw Hill, New York, 2011.
4.	Oliver C. Ibe, "Fundamentals of Applied probability and Random Processes", Academic Press, Boston, 2014.
5.	Johnson R. A. and Gupta C.B., "Miller and Freund's Probability and Statistics for Engineers", Pearson India Education, Asia, 9 th Edition, New Delhi, 2017.

VIDEO REFERENCES:

1.	https://youtu.be/14PQawp_rjk (Dr.Somesh kumar IIT-Kharagpur)
2.	https://youtu.be/IEUTRhyoHNc (Prof Jharaeswar maiti IIT-Kharagpur)

WEB REFERENCES:

1.	https://www.edanz.com/blog/anova-explained
2.	http://stankova.net/book.pdf

ONLINE COURSES:

1.	https://nptel.ac.in/courses/110105087
2.	https://onlinecourses.nptel.ac.in/noc23_ge25/preview

Mapping of COs with POs and PSOs

COs	POs						PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1	1	2	3			1	1	
CO2	3		2	2		3	1	
CO3			1		3	2	1	
CO4	2	1	3	2	2	2	1	
CO5	2	2	1		1	2	1	
Average	2	1.6	2	2	2	2	1	

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

E23RM201	RESEARCH METHODOLOGY AND IPR		Version: 1.0				
(COMMON TO ALL BRANCHES)							
Programme & Branch	M.E- COMPUTER SCIENCE AND ENGINEERING		CP	L	T	P	C
			3	2	1	0	3
Course Objectives:							
1.	Analyze the significance of research and formulate well-defined research questions.						
2.	Apply appropriate research methods and critically evaluate research articles.						
3.	Create well-structured research papers and utilize research tools proficiently.						
4.	Produce effective technical reports and deliver impactful presentations.						
5.	Understand forms of intellectual property and analyze their implications on technological research and international cooperation.						
UNIT-I	CONCEPT OF RESEARCH		6+3				
Meaning and Significance of Research (L2)-Skills, Habits and Attitudes for Research (L1)-Time Management (L3) -Status of Research in India (L2)-Why, How, and What a Research is? (L2)-Types and Process of Research (L2)-Outcome of Research (L2)-Sources of Research Problem (L2)-Characteristics of a Good Research Problem (L2)-Errors in Selecting a Research Problem (L2)-Importance of Keywords (L1)-Literature Collection - Analysis (L2)-Citation Study - Gap Analysis (L2)-Problem Formulation Techniques (L2).							
UNIT-II	RESEARCH METHODS AND JOURNALS		6+3				
Interdisciplinary Research (L2)-Need for Experimental Investigations (L2)-Data Collection Methods (L3)-Appropriate Choice of Algorithms / Methodologies / Methods (L3)-Measurement and Result Analysis (L3)-Investigation of Solutions for Research Problem (L3)-Interpretation (L2)-Research Limitations (L4)-Journals in Science/Engineering (L2)-Indexing and Impact factor of Journals (L2)-Citations(L2)- h Index (L2)- i10 Index (L2)-Journal Policies (L4)How to Read a Published Paper (L2)-Ethical Issues Related to Publishing(L3)- Plagiarism and Self-Plagiarism (L2).							
UNIT-III	PAPER WRITING AND RESEARCH TOOLS		6+3				
Types of Research Papers (L2) - Original Article/Review Paper/Short Communication/Case Study (L2) - When and Where to Publish? (L2) - Journal Selection Methods (L2) - Layout of a Research Paper (L2) - Guidelines for Submitting the Research Paper (L2) - Review Process - Addressing Reviewer Comments (L3) - Use of tools / Techniques for Research (L3) - Hands - on Training related to Reference Management Software - EndNote (L3)- Introduction to Origin, SPSS, etc (L2) - Software for Detection of Plagiarism (L2)							
UNIT-IV	EFFECTIVE TECHNICAL THESIS WRITING/ PRESENTATION		6+3				
How to Write a Report (L3) - Language and Style (L1) - Format of Project Report - Use of Quotations (L2) - Method of Transcription Special Elements (L2) - Title Page - Abstract - Table of Contents - Headings and Sub-Headings (L2) - Footnotes - Tables and Figures - Appendix - Bibliography etc. (L3) - Different Reference Formats (L2) - Presentation using PPTs (L2).							
UNIT-V	NATURE OF INTELLECTUAL PROPERTY		6+3				
Patents(L1) - Designs(L2) - Trade and Copyright (L2) - Process of Patenting and Development (L2) - Technological research(L2) - innovation(L2) - patenting(L2) - Development International Scenario (L2) - International Cooperation on Intellectual Property (L2) - Procedure for Grants of Patents (L2).							
Total: 30 + 15 = 45 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 examination

Course Outcomes:

Upon completion of this course the students will be able to:

BLOOMS Taxonomy

CO1	Illustrate the importance and objectives of research in contributing to knowledge and solving real-world problems.	L2 - Understand
CO2	Experiment with data collection techniques, choosing fitting approaches to ensure sound research framework and methodology.	L3 - Apply
CO3	Interpret the components and structure of research papers, and apply this knowledge to create organized and effective academic documents.	L2 - Understand
CO4	Apply knowledge to produce engaging presentations and detailed technical reports that effectively communicate research findings.	L3 - Apply
CO5	Differentiate between types of intellectual property and comprehend patenting as essential for safeguarding innovation and creativity.	L4 - Analyze

REFERENCE BOOKS:

1.	Cooper Donald R, Schindler Pamela S and Sharma JK, "Business Research Methods", Tata McGraw Hill Education, 11e (2012).
2.	DePoy, Elizabeth, and Laura N. Gitlin, "Introduction to Research-E-Book: Understanding and Applying Multiple Strategies", Elsevier Health Sciences, 2015.
3.	Walliman, Nicholas, "Research Methods: The basics", Routledge, 2017
4.	Bettig Ronald V., "Copyrighting culture: The political economy of intellectual property", Routledge, 2018.
5.	The Institute of Company Secretaries of India, Statutory body under an Act of parliament, "Professional Programme Intellectual Property Rights, Law and practice", September 2013.

VIDEO REFERENCES:

1.	https://www.youtube.com/watch?v=1vf8ZvADxfY&list=PLLhSIFdZcUWRlgiXMkd1rNeLSz1You40
2.	https://www.youtube.com/watch?v=eIUaS51U05M&list=PLIEVEMAFhG4_JmLtwGr6G0PRGB13xapyC

WEB REFERENCES:

1.	https://www.researchgate.net/
2.	https://www.wipo.int/about-ip/en/

ONLINECOURSES:

1.	https://onlinecourses.nptel.ac.in/noc23_ge36/preview
2.	https://onlinecourses.nptel.ac.in/noc22_hs59/preview

Mapping of COs with POs and PSOs

COs	POs						PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1	3	2	2	3	2	3		3
CO2	3				1	3		3
CO3	3			1	1	2		3
CO4	3				1	1		3
CO5	3			1	1	1		3
Average	3	2	2	1.7	1.2	2		3

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

3ME23CP301		ADVANCED DATA STRUCTURES AND ALGORITHMS			Version: 1.0				
Programme & Branch		M.E- COMPUTER SCIENCE AND ENGINEERING			CP	L	T	P	C
					3	3	0	0	3
Course Objectives:									
1.	To understand the usage of algorithms in computing								
2.	To learn and use hierarchical data structures and its operations								
3.	To learn the usage of graphs and its applications								
4.	To select and design data structures and algorithms that is appropriate for problems								
5.	To study about NP Completeness of problems.								
UNIT-I		ROLE OF ALGORITHMS IN COMPUTING & COMPLEXITY ANALYSIS			9				
Algorithms (L1) – Algorithms as a Technology (L2) - Time and Space complexity of algorithms (L3)- Asymptotic analysis (L4)-Average and worst-case analysis (L4) - Asymptotic notation (L3)- Importance of efficient algorithms (L2) - Program performance measurement (L4) - Recurrences: The Substitution Method (L3) – The Recursion-Tree Method (L3) - Data structures and algorithms (L2).									
UNIT-II		HIERARCHICAL DATA STRUCTURES			9				
Binary Search Trees: Basics (L1) – Querying a Binary search tree (L2) – Insertion and Deletion (L3)- Red Black trees: Properties of Red-Black Trees (L2) – Rotations (L2) – Insertion – Deletion (L3) – B - Trees: Definition of B – trees (L2) – Basic operations on B-Trees (L3) – Deleting a key from a B - Tree (L3) - Heap (L2) –Heap Implementation(L3) – Disjoint Sets(L3) - Fibonacci Heaps: structure (L2) – Mergeable (L2) - heap operations (L3) - Decreasing a key and deleting a node (L3) - Bounding the maximum degree (L3).									
UNIT-III		GRAPHS			9				
Elementary Graph Algorithms: Representations of Graphs (L1) – Breadth-First Search (L2) – Depth-First Search (L2) – Topological Sort (L2) – Strongly Connected Components (L3) - Minimum Spanning Trees: Growing a Minimum Spanning Tree (L2) – Kruskal and Prim (L3)- Single-Source Shortest Paths: The Bellman-Ford algorithm (L3) – Single-Source Shortest paths in Directed Acyclic Graphs (L2) – Dijkstra’s Algorithm (L3); Dynamic Programming - All-Pairs Shortest Paths: Shortest Paths and Matrix Multiplication (L2) – The Floyd-Warshall Algorithm (L3).									
UNIT-IV		ALGORITHM DESIGN TECHNIQUES			9				
Dynamic Programming: Matrix-Chain Multiplication (L2) – Elements of Dynamic Programming (L2) – Longest Common Subsequence (L3) - Greedy Algorithms: – Elements of the Greedy Strategy (L2)- An Activity - Selection Problem (L3) - Huffman Coding (L3).									
UNIT-V		NP COMPLETE AND NP HARD			9				
NP-Completeness: Polynomial Time (L2) – Polynomial-Time Verification (L3) – NP - Completeness and Reducibility (L3) – NP-Completeness Proofs (L4) – NP-Complete Problems (L4).									
Total:- 45 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 examination									

Course Outcomes: Upon completion of this course the students will be able to:		BLOOMS Taxonomy
CO1	Design data structures and algorithms to solve computing problems.	L2 – Understand
CO2	Choose and implement efficient data structures and apply them to solve problems.	L3 – Apply
CO3	Design algorithms using graph structure and various string-matching algorithms to solve real-life problems	L3 – Apply
CO4	Design one’s own algorithm for an unknown problem.	L2 – Understand
CO5	Apply suitable design strategy for problem solving.	L3 – Apply
REFERENCE BOOKS:		
1.	S.Sridhar, " Design and Analysis of Algorithms", Oxford University Press, 1st Edition, 2014.	
2.	Adam Drozdex, "Data Structures and algorithms in C++", Cengage Learning, 4 th Edition, 2013.	
3.	T.H. Cormen, C.E.Leiserson, R.L. Rivest and C.Stein, "Introduction to Algorithms", Prentice Hall of India, 3rd Edition, 2012.	
4.	Mark Allen Weiss, "Data Structures and Algorithms in C++", Pearson Education, 3rd Edition, 2009.	
5.	E. Horowitz, S. Sahni and S. Rajasekaran, "Fundamentals of Computer Algorithms", University Press, 2nd Edition, 2008.	
VIDEO REFERENCES:		
1.	https://youtu.be/8h80p_rYv1Y?si=6KMk6GYJpwRQ0pZj	
WEB REFERENCES:		
2.	https://ocw.mit.edu/courses/6-851-advanced-data-structures-spring-2012/	
ONLINE COURSES:		
3.	https://www.coursera.org/learn/advanced-data-structures	

Mapping of COs with POs and PSOs								
COs	POs						PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1	3	2	2	3	1	3	2	
CO2	3	1			2	3	2	
CO3	3		1	1		2	2	
CO4	3	2	1		2	1	2	
CO5	3	3	1	1		1	2	
Average	3	2	1.3	1.7	1.7	2	2	
1-Low, 2 -Medium, 3-High.								

ME23CP302	DATABASE PRACTICES				Version: 1.0				
Programme & Branch	M.E. COMPUTER SCIENCE AND ENGINEERING				CP	L	T	P	C
					3	3	0	0	3
Course Objectives:									
1.	Describe the fundamental elements of relational database management systems.								
2.	Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.								
3.	Understand query processing in a distributed database system.								
4.	Understand the basics of XML and create well-formed and valid XML documents.								
5.	Distinguish the different types of NoSQL databases.								
UNIT – I		RELATIONAL DATA MODEL				9			
Entity Relationship Model (L2) – Relational Data Model (L2) – Mapping Entity Relationship Model to Relational Model (L2) – Relational Algebra (L3) – Structured Query Language (L3) – Database Normalization (L3).									
UNIT – II		DISTRIBUTED DATABASES, ACTIVE DATABASES AND OPEN DATABASE CONNECTIVITY				9			
Distributed Database Architecture (L2) – Distributed Data Storage (L2) – Distributed Transactions (L3) – Distributed Query Processing (L3) – Distributed Transaction Management (L2)– Event Condition Action Model (L3) – Design and Implementation Issues for Active Databases (L2) – Open Database Connectivity (L3)									
UNIT – III		XML DATABASES				9			
Structured, Semi structured, and Unstructured Data (L2) – XML Hierarchical Data Model (L2)– XML Documents (L3) – Document Type Definition (L3) – XML Schema (L3) – XML Documents and Databases (L3)– XML Querying (L3) – XPath (L3)– XQuery (L3)									
UNIT – IV		NOSQL DATABASES AND BIG DATA STORAGE SYSTEMS				9			
NoSQL (L2) – Categories of NoSQL Systems (L2) – CAP Theorem (L2)– Document -Based NoSQL Systems and MongoDB (L3) – MongoDB Data Model (L3) – MongoDB Distributed Systems Characteristics (L2) – NoSQL Key-Value Stores (L3) – DynamoDB Overview (L2) – Voldemort Key-Value Distributed Data Store (L3) – Wide Column NoSQL Systems (L2) – Hbase Data Model (L2) – Hbase Crud Operations (L3) – Hbase Storage and Distributed System Concepts (L2) – NoSQL Graph Databases and Neo4j (L3) – Cypher Query Language of Neo4j (L2) – Big Data (L2) – MapReduce – Hadoop (L2) – YARN (L2)									
UNIT – V		DATABASE SECURITY				9			
Database Security Issues (L2) – Discretionary Access Control Based on Granting and Revoking Privileges (L2) – Mandatory Access Control and Role-Based Access Control for Multilevel Security (L3) – SQL Injection (L3)– Statistical Database Security (L3) – Flow Control (L2) – Encryption and Public Key Infrastructures (L2)– Preserving Data Privacy (L2) – Challenges to Maintaining Database Security (L2) – Database Survivability (L2)– Oracle Label-Based Security (L3).									
Total : 45 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 examination

Course Outcomes: Upon completion of this course the students will be able to:		BLOOM'S Taxonomy
CO1	Convert the ER-model to relational tables, populate relational databases and formulate SQL queries on data.	L3 – Apply
CO2	Understand and write well-formed XML documents	L3 – Apply
CO3	Be able to apply methods and techniques for distributed query processing.	L3 – Apply
CO4	Design and Implement secure database systems.	L3 – Apply
CO5	Use the data control, definition, and manipulation languages of the NoSQL databases	L3 – Apply

REFERENCE BOOKS:

1.	R. Elmasri, S.B. Navathe, "Fundamentals of Database Systems", Seventh Edition, Pearson Education 2016.
2.	Henry F. Korth, Abraham Silberschatz, S. Sudharshan, "Database System Concepts", Seventh Edition, McGraw Hill, 2019.
4.	R. Elmasri, S.B. Navathe, "Fundamentals of Database Systems", Seventh Edition, Pearson Education 2016.
5.	Henry F. Korth, Abraham Silberschatz, S. Sudharshan, "Database System Concepts", Seventh Edition, McGraw Hill, 2019.
6.	C.J.Date, A.Kannan, S.Swamynathan, "An Introduction to Database Systems, Eighth Edition, Pearson Education, 2006
7.	Raghu Ramakrishnan , Johannes Gehrke "Database Management Systems", Fourth Edition, McGraw Hill Education, 2015.

VIDEO REFERENCES:

1.	https://www.youtube.com/watch?v=ztHopE5Wnpc
2.	https://www.youtube.com/watch?v=HXV3zeQKqGY

WEB REFERENCES:

1.	https://www.sqltutorial.org/
2.	https://beginnersbook.com/2018/10/xml-tutorial-learn-xml/

ONLINE COURSES:

1.	https://www.udacity.com/course/sql-and-relational-databases--ud197
2.	https://www.edx.org/professional-certificate/database-management-essentials

Mapping of COs with POs and PSOs

COs	POs						PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1	2	2	1	3	1	2	2	
CO2	2	2		2	1	1	2	
CO3	3	1	2	1		1	2	
CO4	3	2	2	1	1	1	2	
CO5	2	3	1	1		1	2	
Average	2.4	2	1.5	1.6	1	1.2	2	

1–Low, 2 –Medium, 3–High

ME23CP303	NETWORK TECHNOLOGIES				Version: 1.0				
Programme & Branch	M.E- COMPUTER SCIENCE AND ENGINEERING				CP	L	T	P	C
					3	3	0	0	3
Course Objectives:									
1.	To understand the basic concepts of network.								
2.	To explore various technologies in the wireless domain.								
3.	To study about 4G and 5G cellular networks.								
4.	To learn about Network Function Virtualization.								
5.	To understand the paradigm of Software defined networks.								
UNIT -I		NETWORKING CONCEPTS				9			
Peer To Peer Vs Client (L2) - Server Networks (L2) - Network Devices (L2) - Network Terminology (L1) - Network Speeds (L2) - Network throughput, delay (L2) - OSI Model (L1) - Packets, Frames, And Headers (L2) - Collision And Broadcast Domains (L2) - LAN Vs WAN (L2) - Network Adapter(L3) – Hub (L3) – Switch (L3) – Router (L3) – Firewall (L1), IP addressing (L3).									
UNIT-II		WIRELESS NETWORKS				9			
Wireless access techniques (L2)- IEEE 802.11a, 802.11g, 802.11e, 802.11n/ac/ax/ay/ba/be (L2) QoS (L2) – Bluetooth (L3) – Protocol Stack (L2) – Security (L3) – Profiles (L2) – zigbee (L3)									
UNIT-III		MOBILE DATA NETWORKS				9			
4G Networks and Composite Radio Environment (L2) – Protocol Boosters(L2) – Hybrid 4G Wireless Networks Protocols (L2) – Green Wireless Networks (L2) – Physical Layer and Multiple Access (L2) – Channel Modelling for 4G (L2) – Concepts of 5G (L2) – channel access (L2) –air interface (L2) - Cognitive Radiospectrum management (L2) – C-RAN architecture (L2) - Vehicular communications-protocol (L2) – Network slicing (L2) – MIMO, mmWave, Introduction to 6G (L2).									
UNIT-IV		SOFTWARE DEFINED NETWORKS				9			
SDN Architecture (L1) - Characteristics of Software-Defined Networking (L1) - SDN- and NFV-Related Standards (L1) - SDN Data Plane(L2) - Data Plane Functions (L3) - Data Plane Protocols (L1) - OpenFlow Logical Network Device (L2) - Flow Table Structure (L2) - Flow Table Pipeline (L2) - The Use of Multiple Tables (L2) - Group Table (L2) - OpenFlow Protocol (L1) - SDN Control Plane Architecture (L2) - Control Plane Functions (L2) - Southbound Interface(L2) - Northbound Interface (L2) – Routing (L3) - ITU-T Model (L1) - Open Daylight: Open Daylight Architecture (L2) – Open Daylight Helium (L1) - SDN Application Plane Architecture (L2) - Northbound Interface (L2) - Network Services Abstraction Layer (L2) - Network Applications (L3) - User Interface (L3).									
UNIT - V		NETWORK FUNCTIONS VIRTUALIZATION				9			
Motivation (L1) - Virtual Machines (L2) – NFV benefits (L1) – requirements (L2) – architecture (L2) - NFV Infrastructure (L3) - Virtualized Network Functions (L2) - NFV Management and Orchestration (L2)- NFV Use Cases (L2) - NFV and SDN (L2) – Network virtualization – VLAN and VPN (L2)									
Total:- 45 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 examination

Course Outcomes: Upon completion of this course the students will be able to:		BLOOMS Taxonomy
CO1	Explain basic networking concepts	L3 – Apply
CO2	Build different wireless networking protocols	L3 – Apply
CO3	Describe the developments in each generation of mobile data networks	L2 – Understand
CO4	Determine and develop SDN based applications	L3 – Apply
CO5	Experiment with the concepts of network function virtualization	L3 – Apply

REFERENCEBOOKS:

1.	James Bernstein, "Networking made Easy", 2018.
2.	HoudaLabiod, Costantino de Santis, HossamAfifi "Wi-Fi, Bluetooth, Zigbee and WiMax", Springer 2007
3.	Erik Dahlman, Stefan Parkvall, Johan Skold, 4G: LTE/LTE-Advanced for Mobile Broadband, Academic Press, 2013
4.	Saad Z. Asif "5G Mobile Communications Concepts and Technologies" CRC press – 2019
5.	William Stallings "Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud" 1st Edition, Pearson Education, 2016.
6.	Thomas D.Nadeau and Ken Gray, SDN – Software Defined Networks, O'Reilly Publishers, 2013.
7.	Guy Pujolle, "Software Networks", Second Edition, Wiley-ISTE, 2020

Mapping of COs with POs and PSOs

COs	POs						PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1	1	3	2		1		2	
CO2	1	3	3	3		1	2	
CO3	1	3	3	2	2	2	2	
CO4	1	2	2	1	2	1	2	
CO5	1	3	1	1	1	2	2	
Average	1	2.8	2.2	1.8	1.5	1.5	2	

1-Low, 2 -Medium, 3-High

ME23CP304	PRINCIPLES OF PROGRAMMING LANGUAGES	Version: 1.0				
Programme & Branch	M.E- COMPUTER SCIENCE AND ENGINEERING	CP	L	T	P	C
		3	3	0	0	3
Course Objectives:						
1.	To understand and describe syntax and semantics of programming languages					
2.	To understand data, data types, and basic statements					
3.	To understand call-return architecture and ways of implementing them					
4.	To understand object-orientation, concurrency, and event handling in programming languages					
5.	To develop programs in non-procedural programming paradigms					
UNIT-I	SYNTAX AND SEMANTICS	9				
Evolution of programming languages (L1) – describing syntax (L1) – context (L2) – free grammars (L2) – attribute grammars (L1) – describing semantics (L1) – lexical analysis (L3) – parsing (L1) – recursive (L2) – descent (L2) – bottom (L2) - up parsing						
UNIT-II	DATA, DATA TYPES, AND BASIC STATEMENTS	9				
Names (L1) – variables (L2) – binding (L1) – type checking (L1) – scope (L2) – scope rules(L2) – lifetime and garbage collection (L1) – primitive data types (L2)– strings (L2) – array types (L1) – associative arrays (L2) – record types (L1) – union types (L2) – pointers and references (L1) – Arithmetic expressions (L2) – overloaded operators (L3) – type conversions (L2) – relational and boolean expressions (L2) – assignment statements (L3) – mixed (L2) - mode assignments (L1) – control structures (L2) – selection (L1) – iterations – branching (L2) – guarded statements (L1)						
UNIT-III	SUBPROGRAMS AND IMPLEMENTATIONS	9				
Subprograms (L1) – design issues (L2) – local referencing (L1) – parameter passing (L2) – overloaded methods (L3) – generic methods (L1) – design issues for functions (L2) – semantics of call and return (L3) – implementing simple subprograms (L2) – stack and dynamic local variables (L2) – nested subprograms (L1) – blocks (L1) – dynamic scoping (L1)						
UNIT-IV	OBJECT-ORIENTATION, CONCURRENCY, AND EVENT HANDLING	9				
Object-orientation (L1) – design issues for OOP languages (L2) – implementation of object (L1) - oriented constructs (L2) – concurrency (L3) – semaphores (L3) – monitors (L2) – message passing (L2) – threads (L2) – statement level concurrency (L2) – exception handling (L2) – event handling (L1)						
UNIT-V	FUNCTIONAL AND LOGIC PROGRAMMING LANGUAGES	9				
Introduction to lambda calculus (L2) – fundamentals of functional programming languages (L3) – Programming with Scheme (L1) – Programming with ML (L3) – Introduction to logic and logic programming (L2) – Programming with Prolog (L3) – multi-paradigm languages (L1)						
Total:- 45 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 examination						

Course Outcomes: Upon completion of this course the students will be able to:		BLOOMS Taxonomy
CO1	Describe syntax and semantics of programming languages	L2 – Understand
CO2	Explain data, data types, and basic statements of programming languages	L3 – Apply
CO3	Design and implement subprogram constructs	L3 – Apply
CO4	Apply object-oriented, concurrency, and event handling programming constructs	L3 – Apply
CO5	Develop programs in Scheme, ML, and Prolog and Understand and adopt new programming language	L3 – Apply

REFERENCE BOOKS:

1.	Robert W. Sebesta, "Concepts of Programming Languages", Eleventh Edition, Addison Wesley, 2012
2.	W. F. Clocksin and C. S. Mellish, "Programming in Prolog: Using the ISO Standard", Fifth Edition, Springer, 2003
3.	Michael L.Scott, "Programming Language Pragmatics", Fourth Edition, Morgan Kaufmann, 2009.
4.	R.KentDybvig,"TheSchemeprogramminglanguage",FourthEdition,MITPress, 2009
5.	W.F.ClocksinandC.S.Mellish,"ProgramminginProlog:UsingtheISOStandard", Fifth Edition, Springer, 2003

Mapping of COs with POs and PSOs

COs	POs						PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1	1					1	2	
CO2	1		1		1	2	2	
CO3	1	1			1	2	2	
CO4		2	1	1	2	2	2	
CO5	1	2	1		2	3	2	
Average	1	1.7	1	1	1.5	2	2	

1–Low, 2 –Medium, 3–High

ME23CP305		ADVANCED DATA STRUCTURES AND ALGORITHMS LABORATORY			Version: 1.0				
Programme & Branch		M.E –COMPUTER SCIENCE AND ENGINEERING			CP	L	T	P	C
					4	0	0	4	2
Course Objectives:									
1.	To acquire the knowledge of using advanced tree structures.								
2.	To learn and usage of heap structures.								
3.	To understand the usage of graph structures and spanning trees.								
4.	To understand the problems such as matrix chain multiplication, activity selection and Huffman coding.								
5.	To understand the necessary mathematical abstraction to solve problems.								
List of Experiments / Exercises									
1.	Implementation of recursive functions for tree traversal and Fibonacci.								
2.	Implementation of iteration functions for tree traversal and Fibonacci.								
3.	Implementation of Merge Sort and Quick Sort.								
4.	Implementation of a Binary Search Tree.								
5.	Red-Black Tree Implementation.								
6.	Heap Implementation.								
7.	Fibonacci Heap Implementation.								
8.	Graph Traversals.								
9.	Spanning Tree Implementation.								
10.	Shortest Path Algorithms (Dijkstra's algorithm, Bellman Ford Algorithm).								
11.	Implementation of Matrix Chain Multiplication.								
12.	Activity Selection and Huffman Coding Implementation.								
					Total: 60 PERIODS				
HARDWARE/SOFTWARE REQUIREMENTS									
1.	64-bit Open source Linux or its derivative.								
2.	Open Source C++ Programming tool like G++/GCC.								
Course Outcomes:								BLOOM'S Taxonomy	
Upon completion of this course the students will be able to:									
1.	Design and implement basic and advanced data structures extensively.							L3 – Apply	
2.	Design algorithms using graph structures.							L3 – Apply	
3.	Design and develop efficient algorithms with minimum complexity using design techniques.							L3 – Apply	
4.	Develop programs using various algorithms.							L3 – Apply	
5.	Choose appropriate data structures and algorithms, understand the ADT/libraries, and use it to design algorithms for a specific problem.							L3 – Apply	
REFERENCES :									
1.	Lipschutz Seymour, "Data Structures Schaum's Outlines Series", Tata McGraw Hill, 3rd Edition, 2014.								

2.	Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, "Data Structures and Algorithms", Pearson Education, Reprint 2006.
3.	http://www.coursera.org/specializations/data-structures-algorithms
4.	http://www.tutorialspoint.com/data_structures_algorithms
5.	http://www.geeksforgeeks.org/data-structures/

Mapping of COs with POs and PSOs								
COs	POs						PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1	1	1		1	1		3	
CO2	1		1	2	2	1	3	
CO3	1	1	1	1	2	1	3	
CO4	1	2	2	2	2	1	3	
CO5	1	2	3	1	3	1	3	
Average	1	1.5	1.75	1.4	2	1	3	
1-Low, 2 -Medium, 3-High								



ME23CP306	DATABASE PRACTICES LABORATORY				Version: 1.0				
Programme & Branch	M.E- COMPUTER SCIENCE AND ENGINEERING				CP	L	T	P	C
					4	0	0	4	2
Course Objectives:									
1.	Execute the foundational components of relational database management systems.								
2.	Explore the fundamental concepts of the relational data model, entity-relationship model, relational database design, relational algebra, and SQL through experimentation.								
3.	Perform query processing within a distributed database system.								
4.	Analyze the fundamentals of XML and generate XML documents that are well-formed and valid.								
5.	Distinguish the different types of NoSQL databases.								
List of Experiments / Exercises									
1.	Implementation of Data Definition Language <ul style="list-style-type: none"> • Create, Alter and Drop • Enforce Primary Key, Foreign Key, Check, Unique and Not Null Constraints • Creating Views 								
2.	Implementation of Data Manipulation Language <ul style="list-style-type: none"> • Insert, Delete, Update • Cartesian Product, Equi Join, Left Outer Join, Right Outer Join and Full Outer Join Aggregate Functions • Set Operations • Nested Queries 								
3.	Implementation of Transaction Control Language. <ul style="list-style-type: none"> • Commit, Rollback and Save Points 								
4.	Implementation of Distributed Database Design.								
5.	Implementation of Row Level and Statement Level Triggers.								
6.	Implementation of Accessing a Relational Database using PHP, Python and R.								
7.	Creating XML Documents, Document Type Definition and XML Schema.								
8.	Using a Relational Database to store the XML documents as text and data elements.								
9.	Creating or publishing customized XML documents from pre-existing relational databases.								
10.	Extracting XML Documents from Relational Databases.								
11.	Creating Databases using MongoDB, DynamoDB, Voldemort Key-Value Distributed Data Store Hbase and Neo4j.								
12.	Implementing Access Control in Relational Databases.								
Total: 60 PERIODS									
Course Outcomes: Upon completion of this course the students will be able to:								BLOOM'S Taxonomy	
1.	Transform the ER model into relational tables, populate the relational databases, and create SQL queries to retrieve data.							L3 – Apply	
2.	Gain a comprehension of well-formed XML documents and be able to write them proficiently.							L3 – Apply	
3.	Develop the ability to utilize methods and techniques for distributed query processing.							L3 – Apply	
4.	Create and execute secure database systems through design and implementation.							L3 – Apply	
5.	Utilize the data control, definition, and manipulation languages specific to NoSQL databases.							L3 – Apply	

Mapping of COs with POs and PSOs								
COs	POs						PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1	2	2	1	3	1	2	3	
CO2	2	2		2	1	1	3	
CO3	3	1	2	1		1	3	
CO4	3	2	2	1	1	1	3	
CO5	2	3	1	1		1	3	
Average	2.4	2	1.5	1.6	1	1.2	3	
1-Low, 2 -Medium, 3-High								



Beyond Knowledge

ME23PT801	TECHNICAL SEMINAR / CASE STUDY PRESENTATION	Version : 1.0				
(COMMON TO ALL BRANCHES)						
Programme & Branch	M.E. COMPUTER SCIENCE AND ENGINEERING	CP	L	T	P	C
		2	0	0	2	0
Course Objectives:						
1	To encourage the students to study advanced engineering developments					
2	To prepare and present the technical and case study reports					
Method of Evaluation:						
<p>The students need to identify an area of interest or topic in their programme of study or case study and prepare a 5-10 page report and a presentation. Based on the report and presentation, the course is evaluated for 100 marks. Minimum 50 marks is essential to pass. In case a student fails, he / she has to make such presentation in the subsequent semesters. The evaluation guidelines will be issued by the Head of the Department before the commencements of the course. The objectives are improving literature searching capabilities, comprehension and ability to write reports and to make presentations. It is assessed in Internal Assessment mode only and no End Semester Examination.</p>						
Total : 30 PERIODS						
Course Outcomes: Upon completion of this course the students will be able to:						BLOOM'S Taxonomy
CO1	Perform the review and present technological developments in their field					L3 - Apply
CO2	Interpret the case study report and make a decision					L3 - Apply

Mapping of COs with POs						
COs	POs					
	PO1	PO2	PO3	PO4	PO5	PO6
1		3				
2		3				
Average		3				
1-Low, 2 -Medium, 3-High.						

ME23AC701	ENGLISH FOR RESEARCH PAPER WRITING	Version: 1.0				
(COMMON TO ALL BRANCHES)						
Programme & Branch	M.E- COMPUTER SCIENCE AND ENGINEERING	CP	L	T	P	C
		2	2	0	0	0
Course Objectives:						
1.	To teach how to improve writing skills and level of readability					
2.	To tell about what to write in each section					
3.	To summarize the skills needed when writing a Title					
4.	To infer the skills needed when writing the Conclusion					
5.	To ensure the quality of paper at very first-time submission					
UNIT-I	INTRODUCTION TO RESEARCH PAPER WRITING	6				
Planning and Preparation (L2), Word Order (L1), Breaking up long sentences (L2), Structuring Paragraphs and Sentences (L1), Being Concise and Removing Redundancy (L1), Avoiding Ambiguity and Vagueness (L2).						
UNIT-II	PRESENTATION SKILLS	6				
Clarifying Who Did What (L2), Highlighting Your Findings (L1), Hedging and Criticizing (L1), Paraphrasing and Plagiarism (L1), Sections of a Paper (L1), Abstracts, Introduction (L1).						
UNIT-III	TITLE WRITING SKILLS	6				
Key skills are needed when writing a Title (L1), key skills are needed when writing an Abstract (L1), key skills are needed when writing an Introduction (L1), skills needed when writing a Review of the Literature, Methods, Results, Discussion, Conclusions, The Final Check (L1)						
UNIT-IV	RESULT WRITING SKILLS	6				
Skills are needed when writing the Methods (L1), skills needed when writing the Results (L2), skills are needed when writing the Discussion (L2), skills are needed when writing the Conclusions (L2).						
UNIT-V	VERIFICATION SKILLS	6				
Useful phrases (L1), checking Plagiarism (L1), how to ensure paper is as good as it could possibly be the first- time submission (L1).						
Total: 30 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 examination						
Course Outcomes: Upon completion of this course the students will be able to:						BLOOMS Taxonomy
CO1	Understand that how to improve your writing skills and level of readability					L2 – Understand
CO2	Learn about what to write in each section					L1 – Remember
CO3	Understand the skills needed when writing a Title					L2 – Understand
CO4	Understand the skills needed when writing the Conclusion					L2 – Understand
CO5	Ensure the good quality of paper at very first-time submission					L2 – Understand

TEXTBOOKS:	
1.	Adrian Wallwork , English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2011
2.	Day R How to Write and Publish a Scientific Paper, Cambridge University Press 2006
REFERENCE BOOKS:	
1.	Goldbort R Writing for Science, Yale University Press (available on Google Books) 2006
2.	Highman N, Handbook of Writing for the Mathematical Sciences, SIAM. Highman's book 1998.



Beyond Knowledge

ME23AC702		DISASTER MANAGEMENT			Version: 1.0				
(COMMON TO ALL BRANCHES)									
Programme & Branch		M.E- COMPUTER SCIENCE AND ENGINEERING			CP	L	T	P	C
					2	2	0	0	0
Course Objectives:									
1	Summarize basics of disaster								
2	Explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.								
3	Illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.								
4	Describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.								
5	Develop the strengths and weaknesses of disaster management approaches								
UNIT-I		INTRODUCTION					6		
Disaster: Definition (L1), Factors and Significance (L1); Difference between Hazard And Disaster (L2); Natural and Manmade Disasters: Difference, Nature, Types and Magnitude (L1).									
UNIT-II		REPERCUSSIONS OF DISASTERS AND HAZARDS					6		
Economic Damage (L1), Loss of Human and Animal Life (L1), Destruction Of Ecosystem (L1). Natural Disasters: Earthquakes, Volcanisms, Cyclones, Tsunamis, Floods, Droughts And Famines, Landslides And Avalanches (L1), Man-made disaster: Nuclear Reactor Meltdown, Industrial Accidents, Oil Slicks And Spills, Outbreaks Of Disease And Epidemics, War And Conflicts (L1).									
UNIT-III		DISASTER PRONE AREAS IN INDIA					6		
Study of Seismic Zones (L1); Areas Prone To Floods and Droughts (L1), Landslides And Avalanches (L1); Areas Prone To Cyclonic and Coastal Hazards with Special Reference To Tsunami (L1); Post-Disaster Diseases and Epidemics (L1)									
UNIT-IV		DISASTER PREPAREDNESS AND MANAGEMENT					6		
Preparedness: Monitoring Of Phenomena Triggering a Disaster or Hazard (L2); Evaluation of Risk: Application of Remote Sensing (L1), Data from Meteorological And Other Agencies (L1), Media Reports: Governmental and Community Preparedness (L1).									
UNIT-V		RISK ASSESSMENT					6		
Disaster Risk: Concept and Elements (L1), Disaster Risk Reduction (L1), Global and National Disaster Risk Situation (L1). Techniques of Risk Assessment (L1), Global Co-Operation in Risk Assessment and Warning (L1), People's Participation in Risk Assessment. Strategies for Survival (L1)									
Total:- 30 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 examination									
Course Outcomes:								BLOOMS Taxonomy	
Upon completion of this course the students will be able to:									
CO1	Summarize basics of disaster							L1 - Remember	
CO2	Explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.							L2 - Understand	
CO3	Illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives							L2 - Understand	
CO4	Describe an understanding of standards of humanitarian response and							L2 - Understand	

	practical relevance in specific types of disasters and conflict situations.	
CO5	Develop the strengths and weaknesses of disaster management approaches	L2 – Understand
TEXTBOOKS:		
1.	Goel S. L., Disaster Administration And Management Text And Case Studies”, Deep & Deep Publication Pvt. Ltd., New Delhi,2009.	
2.	NishithaRai, Singh AK, “Disaster Management in India: Perspectives, issues and strategies “New Royal book Company,2007.	
REFERENCE BOOKS:		
1.	Sahni, Pradeep Et.Al. ,” Disaster Mitigation Experiences And Reflections”, Prentice Hall of India, New Delhi,2001.	



Beyond Knowledge

ME23AC703	CONSTITUTION OF INDIA		Version: 1.0				
(COMMON TO ALL BRANCHES)							
Programme & Branch	M.E- COMPUTER SCIENCE AND ENGINEERING		CP	L	T	P	C
			2	2	0	0	0
Course Objectives:							
1	To understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.						
2	To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional						
3	To role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.						
4	To address the role of socialism in India after the commencement of the Bolshevik Revolution 1917 And its impact on the initial drafting of the Indian Constitution						
UNIT-I	HISTORY OF MAKING OF THE INDIAN CONSTITUTION		6				
History(L1), Drafting Committee(L1), (Composition & Working)							
UNIT-II	PHILOSOPHY OF THE INDIAN CONSTITUTION		6				
Preamble(L1), Salient Features(L1).							
UNIT-III	CONTOURS OF CONSTITUTIONAL RIGHTS AND DUTIES		6				
Fundamental Rights(L1), Right to Equality(L1), Right to Freedom(L1), Right against Exploitation(L1), Right to Freedom of Religion(L1), Cultural and Educational Rights(L1), Right to Constitutional Remedies(L1), Directive Principles of State Policy(L1), Fundamental Duties(L1).							
UNIT-IV	ORGANS OF GOVERNANCE		6				
Parliament(L1), Composition(L1), Qualifications and Disqualifications(L1), Powers and Functions(L1), Executive(L1), President(L1), Governor(L1), Council of Ministers(L1), Judiciary, Appointment and Transfer of Judges(L1), Qualifications, Powers and Functions(L1).							
UNIT-V	LOCAL ADMINISTRATION		6				
District's Administration head: Role and Importance(L1), Municipalities: Introduction, Mayor and role of Elected Representative, CEO, Municipal Corporation(L1). Pachayati raj: Introduction(L1), PRI: Zila Panchayat(L1). Elected officials and their roles(L1), CEO Zila Pachayat: Position and role(L1). Block level: Organizational Hierarchy(Different departments) (L1), Village level:Role of Elected and Appointed officials(L1), Importance of grass root democracy(L1).							
UNIT-VI	ELECTION COMMISSION		6				
Election Commission: Role and Functioning (L1). Chief Election Commissioner and Election Commissioners (L1) - Institute and Bodies for the welfare of SC/ST/OBC and women(L1).							
Total:- 30 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 examination							
Course Outcomes:						BLOOMS	

Upon completion of this course the students will be able to:		Taxonomy
CO1	Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.	L2 – Understand
CO2	Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.	L2 – Understand
CO3	Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.	L2 – Understand
CO4	Discuss the passage of the Hindu Code Bill of 1956.	L2 – Understand

TEXTBOOKS:

1.	The Constitution of India, 1950(Bare Act), Government Publication
2.	Dr.S.N.Busi, Dr.B. R.Ambedkar framing of Indian Constitution, 1 st Edition, 2015.

REFERENCE BOOKS:

1.	M.P. Jain, Indian Constitution Law, 7 th Edn., LexisNexis,2014.
2.	D.D. Basu, Introduction to the Constitution of India, LexisNexis, 2015.



Beyond Knowledge

ME23AC704	நற்றமிழ் இலக்கியம்	Version: 1.0				
(COMMON TO ALL BRANCHES)						
Programme & Branch	M.E- COMPUTER SCIENCE AND ENGINEERING	CP	L	T	P	C
		2	2	0	0	0
Course Objectives:						
1	சங்க இலக்கியம் பற்றி மாணவர்களுக்கு எடுத்துரைத்தல்.					
2	நீதி நூல்கள் வாயிலாக அறக்கருத்துகளை எடுத்து கூறுதல்.					
3	சிலப்பதிகாரம், மணிமேகலை காப்பியங்களை எடுத்துரைத்தல்.					
4	இலக்கியங்களில் காணப்படும் அருள்நெறிக் கதைகளைப் பற்றி விளக்குதல்.					
5	தற்காலத் தமிழ் இலக்கியங்களை மாணவர்களுக்கு தெரியப்படுத்துதல்.					
UNIT-I	சங்க இலக்கியம்	6				
1. தமிழின் துவக்க நூல் தொல்காப்பியம் - எழுத்து, சொல், பொருள் (L1)						
2. அகநானூறு (82) - இயற்கை இன்னிசை அரங்கம் (L1)						
3. குறிஞ்சிப் பாட்டின் மலர்க்காட்சி (L1)						
4. புறநானூறு (95, 195) - போரை நிறுத்திய ஔவையார் (L1)						
UNIT-II	அறநெறித்தமிழ்	6				
1. அறநெறி வகுத்த திருவள்ளுவர் - அறம் வலியுறுத்தல், அன்புடைமை, ஒப்புறவு அறிதல், ஈகை, புகழ் (L2)						
2. பிற அறநூல்கள் - இலக்கிய மருந்து - ஏலாதி, சிறுபஞ்சமூலம், திரிகடுகம், ஆசாரக்கோவை (தூய்மையை வலியுறுத்தும் நூல்) (L2)						
UNIT-III	இரட்டைக்காப்பியங்கள்	6				
1. கண்ணகியின் புரட்சி- சிலப்பதிகார வழக்குரை காதை (L1)						
2. சமூக சேவை இலக்கியம் மணிமேகலை - சிறைக்கோட்டம் அறக்கோட்டமாகிய காதை (L1)						
UNIT-IV	அருள்நெறித்தமிழ்	6				
1. சிறுபாணாற்றுப்படை - பாரி முல்லைக்கு தேர் கொடுத்தது, பேகன் மயிலுக்குப் போர்வை கொடுத்தது, அதியமான் ஔவைக்கு நெல்லிக்கனி கொடுத்தது, அரசர் பண்புகள். (L2)						
2. நற்றிணை - அன்னைக்குரிய புன்னை சிறப்பு (L2)						
3. திருமந்திரம் (617,618) இயமம் நியமம் விதிகள் (L2)						
4. தர்மசாலையை நிறுவிய வள்ளலார் (L2)						
5. புறநானூறு - சிறுவனே வள்ளலானான் (L2)						
6. அகநானூறு (4) - வண்டு (L2)						
7. நற்றிணை (11) - நண்டு (L2)						
8. கலித்தொகை (11) - யானை, புறா (L2)						
9. ஐந்திணை ஐம்பது (27) - மான் (L2)						
ஆகியவை பற்றிய செய்திகள் (L2)						

UNIT-V	நவீன தமிழ் இலக்கியம்	6
1. உரைநடைத்தமிழ் (L1) <ul style="list-style-type: none"> - தமிழின் முதல் புதினம் (L1) - தமிழின் முதல் சிறுகதை (L1) - கட்டுரை இலக்கியம் (L1) - பயண இலக்கியம் (L1) - நாடகம் (L1) 		
2. நாட்டு விடுதலை போராட்டமும் தமிழ் இலக்கியமும் (L1)		
3. சமுதாய விடுதலையும் தமிழ் இலக்கியமும் (L1)		
4. பெண் விடுதலையும் விளிம்பு நிலையினரின் மேம்பாட்டில் தமிழ் இலக்கியமும் (L1)		
5. அறிவியல் தமிழ் (L1)		
6. இணையத்தில் தமிழ் (L1)		
7. சுற்றுச்சூழல் மேம்பாட்டில் தமிழ் இலக்கியம்		
Total:- 30 PERIODS		
Course Outcomes:		BLOOMS
Upon completion of this course the students will be able to:		Taxonomy
CO1	சங்க இலக்கியம் மாணவர்கள் முழுமையாக அறிந்து பயன்பெறுதல்.	L1 - நினைவில் கொள்ளுதல்
CO2	அறநெறி இலக்கியம் வாயிலாக வாழ்வியலுக்குத் தேவையான தாய்மைப் பணிகளை மேற்கொள்ளுதல்.	L2 - புரிந்து கொள்ளுதல்
CO3	சிலப்பதிகாரம், மணிமேகலை காப்பியங்களில் உள்ள நீதிக்கருத்துகளை மாணவர்கள் தெரிந்துகொள்ளுதல்.	L1 - நினைவில் கொள்ளுதல்
CO4	இலக்கியங்களில் காணப்படும் அருள்நெறிக் கதைகளைப் பற்றி விளக்குதல்.	L2 - புரிந்து கொள்ளுதல்
CO5	தற்காலத் தமிழ் இலக்கியங்களை மாணவர்கள் தெரிந்து அவற்றின் வாயிலாக பயன் அடைதல்.	L1 - நினைவில் கொள்ளுதல்
TEXTBOOKS: தமிழ் இலக்கிய வெளியீடுகள் புத்தகங்கள்		
1.	தமிழ் இணைய கல்விக்கழகம் (Tamil Virtual University) - www.tamilvu.org .	
2.	தமிழ் விகிப்பீடியா (Tamil Wikipedia) - https://ta.wikipedia.org .	
3.	தர்மபுர ஆதீன வெளியீடு.	
4.	வாழ்வியல் களஞ்சியம் - தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்.	
5.	தமிழ்க்கலைக்களஞ்சியம் - தமிழ் வளர்ச்சித்துறை (thamilvalarchithurai.com).	
6.	அறிவியல் களஞ்சியம் - தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்.	

Note:

Syllabus for the courses offered from 2nd Semester to 4th Semester, will be added after the approval of the Board of Studies (BoS) & Academic Council (AC) in due course.