THE MAHATMA GANDHI UNIVERSITY

Bachelor in Computer Applications (Honours)

SYLLABUS

MGU-BCA (Honours)

(2024 Admission Onwards)

Faculty: Technology and Applied Sciences

Expert Committee: Computer Application (UG)

Programme: Bachelor in Computer Applications (Honours)

Mahatma Gandhi University
Priyadarshini Hills
Kottayam – 686560, Kerala, India

CONTENTS

External Experts	
1	**Prof. (Dr.) Bindu V R**, Professor and Head, School of Computer Sciences, Mahatma Gandhi University, Kottayam
2	**Prof. (Dr.) Sabu M K**, Professor, Department of Computer Applications, Cochin University of Science and Technology, Kochi
Members of the Expert Committee in Computer Application (UG)	
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11	**Mr. Biju Kumar S P,** Assistant Professor, Department of Computer Applications, NSS College Rajakumari, Idukki (Dist)

Second Semester							
Sl. No.	**Course Code**	**Course Type**	**Course Title**	**Hours per week**			**Credit**
				L	**T**	**P**	
1	MG2CCRBCA100	CC	Mathematics Foundations to Computer Science	4	0	0	4
2	MG2CCRBCA101	CC	Data Structures	4	0	2	5
3	MG2CCRBCA102	CC	Operating Systems	4	0	0	4
4	MG2SECBCA100	SEC	Web Technologies	1	0	2	2
5	MG2VACBCA100	VAC	Indian Constitution: Legal and Ethical Perspectives for IT	2	0	0	2
6		AEC	AEC -English	3	0	0	3
7		AEC-OL	AEC-Other Language	3	0	0	3
TOTAL				21	0	4	
				25			**23**

	Mahatma Gandhi University **Kottayam**
Programme	**BCA (Honours)**
Course Name	**Mathematics Foundation to Computer Science**
Type of Course	**Core Course**
Course Code	MG2CCRBCA100
Course Level	NA
Course Summary	This course will introduce graph theory and mathematical techniques that form the foundation of advanced computational methods focusing on numerical methods and optimization. It enables students to comprehend and apply various problem-solving strategies to address both theoretical and practical challenges in computer science.

Semester	2	Credits			4	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		4	0	0	0	60
Pre-requisites, if any	NIL					

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Apply Concepts of Graph Theory to solve real-life problems.	A	1
2	Apply numerical methods to approximate solutions to mathematical problems.	A	1,2
3	Understand the concepts of Linear programming and Operations Research, and Apply them using graphical and simplex methods.	A	1,2
4	Formulate and solve transportation problems	C	1,2

**Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

COURSE CONTENT

Content for Classroom transactions (Units)

Module	Units	Course description	Hrs	CO No.
1		**Elementary Graph Theory**		
	1.1	Basic terminologies of graphs, connected and disconnected graphs, subgraphs, paths and cycles, complete graphs, digraphs, weighted graphs, Planar graphs. (Section 3.1 of REF. 1)	4	1
	1.2	Basic concepts of Euler graphs. Characterisation of Euler graphs. (Section 3.1 of REF. 1)	4	1
	1.3	Basic concepts of Trees and Spanning trees. Properties of trees. (Section 3.2 of REF. 1)	5	1
2		**Numerical Methods**		
	2.1	Roots of Nonlinear equations: Bisection method and Newton-Raphson methods. (Section 6.1, 6.6, 6,8 of REF. 2) *Only formula and problem-solving for all the topics mentioned above.*	6	2
	2.2	Numerical Interpolation: Newton's Forward and Backward Interpolation Formula. (Section 9.1,9.7 of REF. 2) *Only formula and problem-solving for all the topics mentioned above.*	5	2
	2.3	Numerical Integration: Trapezoidal rule and Simpson's 1/3 rule. (Section 12.1- 12.4 of REF. 2) *Only formula and problem-solving for all the topics mentioned above.*	6	2
3		**Linear Programming Problem**		
	3.1	Linear programming: Introduction, Formulation of LPP. (REF. 3)	5	3
	3.2	Graphical method for solving LPP with two variables, Special cases in graphical methods.	5	3

		(REF. 3)		
	3.3	Simplex method, Artificial variable techniques, Big M method. (REF. 3)	6	3
4		**Transportation**		
	4.1	Transportation problem: Definition, Linear form, North-west corner method, Least cost method, Vogel's approximation method for finding a feasible solution. (REF. 3)	4	4
	4.2	MODI method for finding the optimum solution. Degeneracy (REF. 3)	6	4
	4.3	Unbalanced Transportation Problem, Maximisation in transportation problem. (REF. 3)	4	4

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** • Brainstorming lectures • Explicit teaching • Active Cooperative learning
Assessment Types	**MODE OF ASSESSMENT** **A. Continuous Comprehensive Assessment (CCA)** **CCA for Theory: 30 Marks** • Quiz / MCQ • Assignment • Tests
	B. Semester End Examination **ESE for Theory: Written Test (70 Marks, 2 Hrs)** Part A: Answer any 5 questions out of 8. Each question carries 2 marks. (5 x 2 = 10 marks) Part B: Answer any 5 questions out of 8. Each question carries 6 marks. (5 x 6 = 30 marks). Part C: Answer any 2 questions out of 4. Each question carries 15 marks. (2 x 15 = 30 marks)

REFERENCES

1. Robert J McEliece, Robert B Ash, Carol Ash - Introduction to Discrete Mathematics, McGraw Hill.
2. E Balagurusamy - Numerical Methods, Tata McGraw Hill.
3. V K Kapoor - Operations Research- Concepts, Problems & Solutions, Sultan Chand & Sons

SUGGESTED READINGS

1. Narsingh Deo - Graph Theory with applications to Engineering and Computer Science.
2. P Kandasamy, K Thilagavathy, K Gunavathi - Numerical Methods.
3. Belly E Gillet - Introduction to Operations Research (A Computer Oriented Arithmetic Approach), Tata Mc Graw Hill.

	Mahatma Gandhi University **Kottayam**
Programme	**BCA (Honours)**
Course Name	**Data Structures**
Type of Course	**Core Course**
Course Code	**MG2CCRBCA101**
Course Level	NA
Course Summary	This course module offers a comprehensive introduction to data structures and its applications. It covers foundational topics such as algorithms, arrays, stacks, queues, recursion, and linked lists. It also covers advanced concepts like hashing, graphs, and tree structures, including AVL trees.

Semester	2	Credits			5	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		4	0	1	0	90

Pre-requisites, if any	1. **Programming Fundamentals:** Understanding the basic syntax and semantics of the C programming language. 2. **Problem-Solving Skills:** Ability to break down a problem into smaller steps, devise a step-by-step solution and be familiar with simple algorithms.

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Understand the fundamental concepts of Data Structures, the Representation of single and two-dimensional arrays and the implementation of various operations on them	An	1
2	Analyse the representation of stacks and queues using arrays, operations on them and application of these data structures in problem-solving.	An	1,2
3	Demonstrate the ability to implement and manipulate various types of linked lists (singly, doubly, and circular)	An	1,2
4	Illustrate the basic concepts of Graphs and Trees and the operations on Binary search trees.	An	1,2

5	Implement Data Structures using C programming language	A	2
Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)			

COURSE CONTENT

Content for Classroom transactions (Units)

Module	Units	Course description	Hrs	CO No.
1	1.1	Introduction and Overview: Definition, Classification and Operations of Data Structures. Algorithms: Complexity, Time-Space Trade off.	2	1
	1.2	Arrays: Definition and Classification of Arrays, Representation of Linear Arrays in Memory, Operations on Linear Arrays: Traversing, Inserting, Deleting, Searching, Sorting and Merging.	4	1
	1.3	Searching: Linear Search and Binary Search, Comparison of Methods.	3	1
	1.4	Sorting: Bubble Sort, Selection Sort, and Insertion Sort.	4	1
	1.5	Two-Dimensional Arrays, Representation of Two-Dimensional Arrays in Memory, Matrices	2	1
2	2.1	Stacks: Definition, Representation of Stacks using Arrays, Operations on Stacks using Arrays	3	2
	2.2	Application of Stacks: Arithmetic Expressions, Polish Notation, Conversion of Infix Expression to Postfix Expression, Evaluation of Postfix Expression.	5	2
	2.3	Queues: Definition, Representation of Queues using arrays, Types of Queue: Simple Queue, Circular Queue, Double-Ended Queue, Priority Queue,	4	2
	2.4	Operations on Simple Queues and Circular Queues using Array, Applications of Queues.	5	2
3	3.1	Linked Lists: Definition, Comparison with Arrays, Representation, Types of Linked lists	3	3
	3.2	Traversing, Inserting, Deleting and Searching in Singly Linked List. Doubly Linked List and Circular Linked List. Applications of Linked Lists.	7	3
	3.3	Introduction to Hashing, Hash Tables	2	3
	3.4	Recursion: Definition, Runtime Stack, Applications of Recursion: Factorial of Number, Fibonacci Series	5	3
4	4.1	Graphs: Definition, Terminology.	2	4

	4.2	Trees: Definition, Terminology, Binary Trees, Traversal of Binary Tree, Binary Search Tree, Inserting and Searching in Binary Search Tree	5	4
	4.3	Height Balanced Trees: AVL Trees- Introduction	4	4
5	5.1	(Practical Session) Lab Programs: 1. Write a program for insertion and deletion operations in an array. 2. Write a program to search for an element in an array using Linear Search and Binary Search. 3. Write a program to sort an array using Bubble Sort, Selection Sort and Insertion Sort. 4. Write a program to merge two arrays. 5. Write a program to add and subtract two matrices. 6. Write a program to multiply two matrices. 7. Write a program to insert an element into a Singly Linked List: (a) At the beginning (b) At the end (c) At a specified position 8. Write a program to delete an element from a Singly Linked List: (a) At the beginning (b) At the end (c) A specified element 9. Write a program to perform the following operations in a Doubly Linked List: (a) Create (b) Search for an element 10. Write a program to perform the following operations in a Circular Linked List: (a) Create (b) Search an element 11. Write a program to implement stack operations using an array. 12. Write a program to evaluate a postfix expression using a stack. 13. Write a program to perform the following using recursion: (a) Find the factorial of a number (b)Generate Fibonacci Series 14. Write a program to implement simple queue operations using an array. 15. Write a program to implement circular queue operations using an array.	30	5

		16. Write a program to perform the following operations on a binary search tree. (a) Preorder Traversal (b) Inorder Traversal (c) Postorder Traversal 17. Write a program to perform an insertion operation in a binary search tree.		

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** • ICT enabled Lectures • Interactive sessions • Class discussions
Assessment Types	**MODE OF ASSESSMENT** **B. Continuous Comprehensive Assessment (CCA)** **CCA for Theory: 30 Marks** • Written tests • Quiz • Assignments **CCA for Practical: 15 Marks** • Practical assignments • Lab Record • Observation of practical skills • Viva
	C. Semester End Examination **ESE for Theory: Written Test (70 Marks, 2 Hrs)** Part A: Very Short Answer Questions (Answer all) - (5*2=10 Marks) Part B: Short answer Questions (5 out of 7 Questions) - (5*6=30 Marks) Part C: Essay Questions (2 out of 3 Questions) - (2*15=30 Marks) **ESE for Practical: 35 Marks (1.5 Hrs)** • Logic - 10 Marks • Successful Compilation - 5 Marks • Output - 5 Marks • Viva - 10 Marks • Record - 5 Mark

REFERENCES

1. G.S Baluja (2004). Data Structures Through C (A Practical Approach) (2nd Edition). Danapat Rai & Co.

2. Ellis Horowitz and Sartaj Sahni. Fundamentals of Data Structures (2nd Edition). Galgotia Publications.

SUGGESTED READINGS

1. Seymour Lipschutz, Theory and Problems of Data Structures, Schaums Outline Series,2006, McGraw Hill.
2. Yedidyah Langsam, Moshe Augustein, Aaron M Tenenbaum- Data structures using C and C++, Second Edition, Prentice Hall.

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Programme	**BCA (Honours)**
Course Name	**Operating Systems**
Type of Course	**Core Course**
Course Code	**MG2CCRBCA102**
Course Level	NA
Course Summary	This course provides a comprehensive understanding of operating systems (OS), focusing on their design, functionality, and core components. Students will explore fundamental concepts, including process management, scheduling, synchronization, memory management, and strategies to handle deadlocks and virtual memory.

Semester	2	Credits			4	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		4	0	0	0	60
Pre-requisites, if any						

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Describe the structure, types, services of operating system.	U	1
2	Analyse the performance of various process scheduling algorithms.	An	2
3	Appraise various techniques for process synchronization and deadlock handling.	An	2
4	Analyse the method employed for memory management in computer systems.	An	2

**Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

COURSE CONTENT

Content for Classroom transactions (Units)

Module	Units	Course description	Hrs	CO No.
1	1.1	Operating Systems Overview: Definition. Functions, Structure- Simple, Layered, Microkernels, Modules.	6	1
	1.2	Operating systems Operation-Dual-Mode operation and Timer. Operating System services, User Operating System Interface, System Calls, Types of system calls.	6	1
2	2.1	Process Management: Process Definition, Process states, Process State transitions, Process Scheduling, Process Control Block, Threads, Concept of multithreads.	5	2
	2.2	Process Scheduling: Definition, Scheduling Criteria, CPU scheduling- Preemptive and Non-preemptive. Scheduling algorithms (FCFS, SJF and RR), Performance evaluation of the scheduling Algorithms.	9	2
3	3.1	Process Synchronization: Introduction, Inter-process Communication, Race Conditions. Critical Section Problem, Mutual Exclusion, Semaphores, Monitors.	8	3
	3.2	Deadlocks: System model, deadlock characterization, deadlock prevention, avoidance, Banker's algorithm, Deadlock detection, and recovery from deadlocks.	10	3
4	4.1	**Memory Management**: Logical and Physical address map, Swapping, Contiguous Memory allocation- Internal and External fragmentation and Compaction, Paging, Segmentation.	8	4
	4.2	**Virtual Memory**: Demand paging, Page Replacement algorithms- FIFO, LRU, Optimal. Allocation of frames, thrashing.	8	4

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** • Use of ICT tools in conjunction with traditional classroom teaching methods • Interactive sessions • Class discussions
Assessment Types	**MODE OF ASSESSMENT** **A. Continuous Comprehensive Assessment (CCA)** **CCA for Theory: 30 Marks** • Written tests • Assignments • Quiz • Seminar
	B. Semester End Examination **ESE for Theory: Written Test (70 Marks,2 Hrs)** Part A: Very Short Answer Questions (Answer all) - (5*2=10 Marks) Part B: Short answer Questions (5 out of 7 Questions) - (5*6=30 Marks) Part C: Essay Questions (2 out of 3 Questions) - (2*15=30 Marks)

REFERENCES

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne (2006), Operating System Principles, 7th edition. Wiley India Private Limited, New Delhi.
2. William Stallings (2006), Operating Systems, Internals and Design Principles, 5th edition, Pearson Education, India.

SUGGESTED READINGS

1. Andrew S Tanenbaum, Modern Operating Systems, Third Edition, Prentice Hall India.

	Mahatma Gandhi University **Kottayam**
Programme	**BCA (Honours)**
Course Name	**Web Technologies**
Type of Course	**SEC**
Course Code	**MG2SECBCA100**
Course Level	NA
Course Summary	This course introduces the fundamental concepts of web development, focusing on HTML, CSS, and JavaScript to build interactive and responsive web pages. Students will also explore server management, web hosting, and modern techniques like AJAX to enhance web application performance.

Semester	2	Credits			2	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		1	0	1	0	45
Pre-requisites, if any						

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Apply HTML and CSS to design and develop interactive web pages, incorporating forms, tables, multimedia, and navigation components.	A	1
2	Implement JavaScript for dynamic web page behavior, including DOM manipulation, form validation, and event handling, while integrating AJAX for asynchronous web applications.	A	2
3	Design and develop fully functional, responsive, and interactive web applications using HTML, CSS, JavaScript and AJAX	A	2

**Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

COURSE CONTENT

Content for Classroom transactions (Units)

Module	Units	Course description	Hrs	CO No.
1	1.1	Introduction to HTML, history of HTML, Objective, basic Structures of HTML, Header Tags, body tags, Paragraph tags.	2	1
	1.2	Tags for FORM Creation, TABLE, FORM, TEXTAREA, SELECT, IMG, IFRAME FIELDSET, ANCHOR.	2	1
	1.3	Lists in HTML, Introduction to DIV tag, NAVBAR Design. Introduction to CSS, types, Selectors, and Responsiveness of a web page.	2	1
	1.4	Introduction to www, Protocols and Programs, Applications and development tools, web browsers, DNS, Web hosting Provider, Setting up of Windows/Linux/Unix web servers, Web hosting in cloud, Types of Web Hosting.	2	1
2	2.1	Introduction to JavaScript: Functions and Events, Document Object model traversing using JavaScript. Output System in JavaScript i.e. Alert, throughput, Input box, Console. Variables and Arrays in JavaScript. Date and String handling in JavaScript.	3	2
	2.2	Manipulating CSS through JavaScript: Form Validation like Required validator, length validator, Pattern validator. Advanced JavaScript, Combining HTML, CSS and JavaScript events and buttons, controlling your browser.	2	2
	2.3	Introduction to AJAX, Purpose, advantages and disadvantages, AJAX based Web applications and alternatives of AJAX.	2	2
3	3.1	**Practical Session** 1. Create your class time table using table tag. 2. Design a Webpage for your college containing description of courses, department, faculties, library etc. using list tags, href tags, and anchor tags. 3. Create web page using Frame with rows and columns where we will have header frame, left frame, right frame,	30	3

		and status bar frame. On clicking in the left frame, information should be displayed in right frame. 4. Create Your Resume using HTML, use text, link, size, color and lists. 5. Create a Web Page of a super market using (internal CSS) 6. Use Inline CSS to format your resume that you have created. 7. Use External CSS to format your time table created. 8. Use all the CSS (inline, internal and external) to format college web page that you have created. 9. Write a HTML Program to create your college website using for mobile device. 10. Write an HTML/JavaScript page to create login page with validations. 11. Develop a Simple calculator for addiction, subtraction, multiplication and division operation using JavaScript. 12. Use Regular Expressions for validations in Login Page using JavaScript. 13. Write a Program to retrieve date from a text file and displaying it using AJAX.		

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** • ICT enabled Lectures • Interactive sessions • Class discussions
Assessment Types	**MODE OF ASSESSMENT** **A. Continuous Comprehensive Assessment (CCA)** **CCA for Theory: 15 Marks** • Written tests • Quiz • Assignments **CCA for Practical: 15 Marks** • Lab Involvement • Creativity • Lab Record

	• Viva
	B. Semester End Examination **ESE for Theory: Written Test(35 Marks, 1 Hr)** Part A: Short Answer Questions (4 out of 6 Questions) - (4*5=20 Marks) Part **B**: Essay Question (1 out of 2 Questions) - (1*15=15 Marks) **ESE for Practical: 35 Marks (1.5 Hrs)** • Design & Development - 20 Marks • Viva- 10 Marks • Record - 5 Mark

REFERENCES:

1. Laura Lemay, Mastering HTML, CSS & Java Script Web Publishing, BPB Publications, 2016

2. Thomas A. Powell, The Complete Reference HTML & CSS, Fifth Edition, 2017

SUGGESTED READINGS:

1. Silvio Moreto, Bootstrap 4 By Example, ebook, 2016.

2. Tanweer Alam, Web Technologies, Khanna Book Publishing, 2011.

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Programme	**BCA (Honours)**					
Course Name	**Indian Constitution: Legal and Ethical Perspectives for IT**					
Type of Course	**VAC**					
Course Code	**MG2VACBCA100**					
Course Level	NA					
Course Summary	This course provides an interdisciplinary exploration of the Indian Constitution and its intersection with Information Technology (IT). Spanning three modules, the course examines the foundational principles of the Constitution, emphasizing their relevance in the digital era. Students will delve into governance frameworks, IT laws, and cybersecurity, gaining insights into e-Governance and digital transparency. The course also addresses the ethical implications of emerging technologies, highlighting constitutional perspectives on privacy, data protection, and accountability.					
Semester	2	Credits			2	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		2	0	0	0	30
Pre-requisites, if any	NIL					

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Understand the fundamental principles of the Indian Constitution	U	6
2	Explain the legal framework governing IT and cybersecurity in India, and evaluate the role of e-Governance in promoting transparency and accountability.	An	1
3	Analyze the ethical and constitutional implications of emerging technologies.	An	7

**Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

COURSE CONTENT

Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1	**Foundations of the Indian Constitution**			
	1.1	**Introduction to the Indian Constitution:** Historical background and evolution of the Constitution, Salient features and the Preamble	2	1
	1.2	**Fundamental Rights and Duties:** Fundamental Rights (Articles 12–35), including Right to Privacy in the digital age, Fundamental Duties in the context of digital citizenship and cyber ethics	2	1
	1.3	**Directive Principles of State Policy:** Overview and their impact on governance, Relevance to IT policies and development	3	1
	1.4	**Constitutional Amendments:** Process of amendments, Key amendments impacting IT and technology policies	3	1
2	**Governance, IT Laws, and Cybersecurity**			
	2.1	**Separation of Powers and IT in Governance:** Legislature, Executive, and Judiciary roles in IT policy-making, e-Governance initiatives and digital transformation	2	2
	2.2	**Legal Framework for IT and Cybersecurity:** Overview of the IT Act, 2000 and its amendments, Cybercrime laws, digital signatures, and electronic records	2	2
	2.3	**Right to Information Act and Digital Transparency:** Promoting transparency through RTI, Role of IT in ensuring public accountability and access to information	3	2
	2.4	**Data Protection and Privacy:** Legal provisions on data protection, Emerging challenges with digital data and cybersecurity	3	2
3	**Ethics, Emerging Trends, and IT Applications**			
	3.1	**Digital Ethics and Accountability:** Cyber ethics, misinformation, and online behaviour, Combating challenges like cyberbullying and the digital divide	3	3
	3.2	**Constitutional Perspective on Emerging Technologies:** Legal and ethical implications of AI, blockchain, and IoT, Data sovereignty and balancing innovation with privacy	2	3

	3.3	**IT for Governance and Policy Implementation:** Role of IT in improving public service delivery, Case studies on successful digital governance initiatives in India.	3	3
	3.4	**Future Directions and Challenges:** Technological advancements and constitutional implications, Evolving role of the judiciary in IT disputes and digital rights	2	3

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** Lectures, Discussions, Case Analysis
Assessment Types	**MODE OF ASSESSMENT** **A. Continuous Comprehensive Assessment (CCA)** **CCA for Theory: 15 Marks** • Written test • Assignments • MCQ
	B. Semester End Examination **ESE for Theory: Written Test (35 Marks, 1 Hr)** Part A: Short Answer Questions (7 out of 10 Questions) - (7*5=35 Marks)

REFERENCES:

1. "Introduction to the Constitution of India" by D.D. Basu (Module 1)
2. "Cyber Law in India" by Farooq Ahmad, 6th Edition, New Era Law Publications. (Module 2)
3. "Ethics and Technology: Controversies, Questions, and Strategies for Ethical Computing" by Herman T. Tavani (Module 3)

SUGGESTED READINGS:

1. "The Constitution of India: A Contextual Analysis" by Arun K. Thiruvengadam
2. "Legal Dimensions of Cyber Space" by S.K. Verma and Raman Mittal
3. "Information Technology Law and Practice" by Vakul Sharma
4. "Artificial Intelligence and Law" by Thomas E. Arnold and Michael D. Kirby
5. "E-Governance: Concepts and Case Studies" by C.S.R. Prabhu.
6. The Constitution of India by B.L. Fadia Sahitya Bhawan; New edition (2017).