SEMESTER –II

BCA-I-Sem-II(NEP 2.0)
MATHEMATICS FOUNDATIONS TO COMPUTER SCIENCE – II
CC103

Course Objectives	CO1: This course helps the students to understand correct lines of arguments and proofs. CO2: This course introduces mathematical techniques that are foundations for understandingadvanced computational methods, including numerical methods and optimization. CO3: This course helps the students to understand various problem-solving strategies andmethods to tackle both theoretical and practical challenges in computer science.

Total Hours of Teaching	**Lecture**	**Tutorial**	**Practical**	**Total Per Week**	**Credit Points : 4**
: 60	**4**	**0**	**4**	**8**	

Total Marks :100	**External Exam Theory : 80**	**Internal : 20**

Syllabus Contents:

Unit: I	*Logic and Methods of Proofs:* Propositions, logical operations (basic connectives), compound statements, construction of truth table, quantifiers, conditional statements, tautology, contradiction, contingency, logical equivalence. Conjunctive Normal Forms (CNF) and Disjunctive Normal Forms (DNF). Methods of proofs: Rules of inference for propositional logic, modus ponens, modus tollens, syllogism, proof by contradiction, Mathematical Induction	15 Hours
Unit: II	*Algebraic Structures:* Semi-group, Monoid, Group, Subgroup, Cyclic group	15 Hours
Unit: III	*Numerical Methods:* Concept and importance of errors in numerical methods. Solution of algebraic and transcendental equations: Bisection method and Newton-Raphsonmethods. Numerical Interpolation: Newton's Forward and Newton's Backward interpolation formula andLagrange's formula. Numerical Integration: Trapezoidal rule and Simpson's 1/3 rule Only formula and problem solving for all the topics mentioned above	15 Hours
Unit-IV	*Optimization Techniques:* Linear programming: Introduction, LP formulation, Graphical method for solving LPs with twovariables, , Simplex method, Duality. Transportation problem: Definition, Linear form, North-west corner method, Least cost method, Vogel's approximation method for finding feasible solution, MODI method for finding optimum solution, MODI method for finding optimum solution	15 Hours
Text Books:	1. Structures, 6th Edition, Pearson Education, 2015. 2. Sastry S. S., Introductory Methods of Numerical Analysis, Fifth Edition, PHL, 2022. 3. Taha Hamdy A., Operations Research: An Introduction, Eighth Edition, Pearson Prentice Hall, 2003. 4. S.B. Singh, Discrete Structures, Khanna Book Publishing, 2023 (AICTE Recommended Textbook) 5.

Reference Books:	1. Rosen Kenneth H. and Krithivasan Kamala, Discrete Mathematics and itsApplications, McGraw Hill, India, 2019. 2. Chakravorty J. G. and Ghosh P. R., Linear Programming and Game Theory, MoulikLibrary, 2017. 3. Sharma J. K., Operations Research: Theory and Applications, Fourth Edition,Macmilllan Publishers, 2007.
Web Resources	1. https://nptel.ac.in/courses/111107127 2. https://www.math.iitb.ac.in/~siva/si50716/SI507lecturenotes.pdf

BCA-I-Sem-II(NEP 2.0)
DATA STRUCTURES
CC104

Course Outcomes	CO1: Understand the fundamental concepts of Data Structures and their applications. CO2: Develop problem-solving skills using Data Structures. CO3: Implement Data Structures using C programming language
Prerequisite	1. **Programming Fundamentals:** Understanding the basic syntax and semantics of C programming language. 2. **Problem-Solving Skills:** Ability to break down a problem into smaller steps and devise a step-by-step solution and familiarity with simple algorithms.

Total Hours of Teaching : 60	Lecture	Tutorial	Practical	Total Per Week	Credit Points : 6
	4	0	4	8	

Total Marks :100	External Exam Theory : 80			Internal : 20
Practical : 50	External Exam. Practical:50			

Syllabus Contents:		
Unit: I	**Introduction and Overview:** Definition, Classification and Operations of Data Structures. Algorithms: Complexity, Time-Space Trade-off. **Arrays:** Definition and Classification of Arrays, Representation of Linear Arrays in Memory, Operations on Linear Arrays: Traversing, Inserting, Deleting, Searching, Sorting and Merging. Searching: Linear Search and Binary Search, Comparison of Methods. Sorting: Bubble Sort, Selection Sort, and Insertion Sort. Two-Dimensional Arrays, Representation of Two- Dimensional Arrays in Memory, Matrices and Sparse Matrices, Multi-Dimensional Arrays.	15 Hours
Unit: II	**Linked Lists:** Definition, Comparison with Arrays, Representation, Types of Linked lists, Traversing, Inserting, Deleting and Searching in Singly Linked List, Doubly Linked List and Circular Linked List. Applications of Linked Lists: Addition of Polynomials. **Hashing and Collision:** Hashing, Hash Tables, Types of Hash Functions, Collision, Collision Resolution with Open Addressing and Chaining.	15 Hours

Unit: III	**Stacks:** Definition, Representation of Stacks using Arrays and Linked List, Operations on Stacks using Arrays and Linked List, Application of Stacks: Arithmetic Expressions, Polish Notation, Conversion of Infix Expression to Postfix Expression, Evaluation of Postfix Expression. **Recursion:** Definition, Recursive Notation, Runtime Stack, Applications of Recursion: Factorial of Number, GCD, Fibonacci Series and Towers of Hanoi. **Queues:** Definition, Representation of Queues using Array and Linked List, Types of Queue: Simple Queue, Circular Queue, Double-Ended queue, Priority Queue, Operations on Simple Queues and Circular Queues using Array and Linked List, Applications of Queues.	15 Hours
Unit-IV	**Graphs:** Definition, Terminology, Representation, Traversal. **Trees:** Definition, Terminology, Binary Trees, Traversal of Binary Tree, Binary Search Tree, Inserting, Deleting and Searching in Binary Search Tree, Height Balanced Trees: AVL Trees, Insertion and Deletion in AVL Tree.	15 Hours
Text Books:	1. R.B. Patel, "Expert Data Structures with C", Khanna Book Publishing Company, 2023(AICTE Recommended Textbook) 2. Seymour Lipschutz, "Data Structures with C", Schaum's Outlines, Tata McGraw-Hill,2011. 3. Yashavant Kanetkar, "Data Structures Through C", 4th Edition, BPB Publications,2022.	
Reference Books:	1. Reema Thareja, "Data Structures Using C", Second Edition, Oxford University Press, 2014. 2. Ellis Horowitz, Sartaj Sahni, and Susan Anderson-Freed, "Fundamentals of Data Structures in C", Second Edition, Universities Press, 2007.	
Web Resources	1. **GeeksforGeeks** - Data Structures Tutorial 2. **Khan Academy** - Algorithms Course	

Practical

Mandatory 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) Delete an element from the end
11. Write a program to implement stack operations using an array.
12. Write a program to implement stack operations using a linked list.

13. Write a program to add two polynomials using a linked lists.
14. Write a program to evaluate a postfix expression using a stack.
15. Write a program to perform the following using recursion:
(a) Find the factorial of a number
(b) Find the GCD of two numbers
(c) Solve Towers of Hanoi problem
16. Write a program to implement simple queue operations using an array.
17. Write a program to implement circular queue operations using an array.
18. Write a program to implement circular queue operations using a linked list.
19. Write a program to perform the following operations on a binary search tree.
(a) Preorder Traversal
(b) Inorder Traversal
(c) Postorder Traversal
20. Write a program to perform insertion operation in a binary search tree.

Operating Systems LAB

Operating System Practical

Course Outcomes (COs):

CO1: To implement scheduling of algorithms.

CO2: Understanding the concept of critical section problems.CO3: Concepts of file allocation of frames.

CO4: Concept of Page replacement algorithms.

List of experiments
1. Write C program to simulate the FCFS CPU Scheduling algorithm.
2. Write C program to simulate the SJF CPU Scheduling algorithm.
3. Write C program to simulate the Round Robin CPU Scheduling algorithm.
4. Write a C program to simulate Bankers Algorithm for Deadlock Avoidance.
5. Write a C program to implement the Producer – Consumer problem using semaphores.
6. Write a C program to illustrate the IPC mechanism using Pipes.
7. Write a C program to illustrate the IPC mechanism using FIFOs.
8. Write a C program to simulate Paging memory management technique.
9. Write a C program to simulate Segmentation memory management technique.
10. Write a C program to simulate the Best Fit contiguous memory allocation technique.
11. Write a C program to simulate the First Fit contiguous memory allocation technique.
12. Write a C program to simulate the concept of Dining-Philosophers problem.
13. Write a C program to simulate the MVT algorithm.
14. Write a C program to implement FIFO page replacement technique.
15. Write a C program to write a C program for implementing sequential file allocation method.

BCA-I-Sem-II(NEP 2.0)
OPERATING SYSTEMS
CC105

Course Outcomes	At the end of the course, students will be able to:				
	CO1: Explain the fundamentals of the operating system.				
	CO2: Comprehend multithreaded programming, CPU scheduling, process management,process synchronization, memory, deadlocks, and storage management.				
	CO3: Compare the performance of CPU scheduling algorithms CO4: Identify the features of I/O and File handling methods.				

Total Hours of Teaching	Lecture	Tutorial	Practical	Total Per Week	Credit Points : 2
: 30	2	0	0	2	

Total Marks :50	External Exam Theory : 40	Internal : 10

Syllabus Contents:

Unit: I	**Operating Systems Overview:** Definition, Evaluation of O.S, Components & Services of OS, Structure, Architecture, types of Operating Systems, Batch Systems, Concepts of Multiprogramming and Time Sharing, Parallel, Distributed and real time Systems. **Operating Systems Structures:** Operating system services and systems calls, system programs, operating system structure, operating systems generations	8 Hours
Unit: II	**Process Management:** Process Definition, Process states, Process State transitions, Process Scheduling, Process Control Block, Threads, Concept of multithreads, Benefits of threads, Types of threads. **Process Scheduling:** Definition, Scheduling objectives, Scheduling algorithms, CPU scheduling Preemptive and Non-preemptive Scheduling algorithms (FCFS, SJF and RR),Performance evaluation of the scheduling Algorithms	7 Hours
Unit: III	**Process Synchronization:** Introduction, Inter-process Communication, Race Conditions, Critical Section Problem, Mutual Exclusion, Semaphores, Monitors. **Deadlocks:** System model, deadlock characterization, deadlock prevention, avoidance, Banker's algorithm, Deadlock detection, and recovery from deadlocks	8 Hours
Unit-IV	**Memory Management:** Logical and Physical address map, Swapping, Memory allocation,MFT, MVT, Internal and External fragmentation and Compaction, Paging, Segmentation. **Virtual Memory:** Demand paging, Page Replacement algorithms, Allocation of frames,thrashing. **I/O Management:** Principles of I/O Hardware: Disk structure, Disk scheduling algorithms.	7 Hours

Text Books:	1. Ekta Walia, Operating Systems Concepts, Khanna Publishing House, 2022 (AICTE Recommended Textbook) 2. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne (2006), Operating SystemPrinciples, 7th edition OR Later edition, Wiley India Private Limited, New Delhi. 3. Stallings (2006), Operating Systems, Internals and Design Principles, 5th edition,Pearson Education, India.
Reference Books:	1. Andrew S Tanenbaum, Modern Operating Systems, Third Edition, Prentice Hall India. 2. Sumitabha Das, UNIX Concepts and Applications, 4th Edition, Tata McGraw-Hill

BCA-I-Sem-II(NEP 2.0)
OBJECT ORIENTED PROGRAMMING USING JAVA
SEC102

Course Outcomes	CO1: To introduce the object oriented programming system concepts CO2: To introduce syntax and semantics of Java programming language CO3: To develop modular programs using Java CO4: To setup JDK environment to create, debug and run Java programs
Prerequisite	Knowledge of Problem Solving Techniques using C programming language

Total Hours of Teaching	**Lecture**	**Tutorial**	**Practical**	**Total Per Week**	**Credit Points : 6**
: 60	**4**	**0**	**4**	**8**	

Total Marks :100	**External Exam Theory : 80**	**Internal : 20**
Practical : 50	**External Exam. Practical:50**	

Syllabus Contents:

Unit: I	**Fundamentals of Object Oriented Programming:** Basic Concepts of Object OrientedProgramming (OOP), Benefits and Applications of OOP. **Java Evolution:** Java Features, Difference between Java, C and C++, Javaand Internet,Java Environment. **Overview of Java Language:** Introduction to Simple Java Program, Use ofComments and Math function, Application of two classes, Java Program Structure, Java Tokens and statements, Implementing Java programAnd JVM, Command Line Arguments. (Text Book 1: Chapters 1, 2 and 3)	15 Hours
Unit: II	**Constants, Variables and Data Types:** Constants, Variables, Data Types, Declaration of Variables, Giving values to Variables, Symbolic Constants, Typecasting. **Operators & Expressions:** Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, conditional operators, Bitwise operators, Arithmetic Expressions, Evaluation of Expressions, Type Conversions in Expressions, Operator Precedence & Associativity. **Decision Making, Branching & Looping:** Decision Making with Control Statements, Loopingstatements, Jump in loops, Labelled loops. (Text Book 1: Chapters 4, 5, 6, and 7.)	15 Hours
Unit: III	**Classes, Objects and Methods:** Defining Class, Methods Declaration, Constructors, MethodsOverloading, Overriding Methods, Inheritance **Arrays, Strings and Vectors:** 1D arrays, Creating an Array, 2D arrays, Strings, Vectors,Wrapper Classes, Enumerated Types **Inheritance:** Defining, extending classes, and Implementing Interfaces. Multiple inheritanceand polymorphism, overriding methods, concept of Multithreading in Java (Text Book 1: Chapters 8, 9, and 10)	15 Hours
Unit-IV	**Packages:** Basics of packages, System packages, Creating and accessing packages, Creating user defined packages, Adding class to a package. **Exception Handling:** Using the main keywords of exception handling: try, catch,throw, throwsand finally; Nested try, Multiple catch statements, Creating user defined exceptions (Text Book 1: Chapters 11 & 13)	15 Hours

Text Books:	1. Balaguruswamy E. (2023). Programming with JAVA: A Primer. 7th edition. India:McGraw Hill Education 2. Schildt, H. (2022). Java: The Complete Reference. 12th edition.McGraw-Hill Education
Reference Books:	1. Arunesh Goyal, The Essentials of JAVA, Khanna Book Publishing Company PrivateLimited, 2012. 2. Tanweer Alam, Core JAVA, Khanna Book Publishing Company Private Limited, 2015. 3. Y. Daniel Liang, Introduction to Java Programming, 7th Edition, Pearson,2008. 4. S. Malhotra and S. Choudhary, Programming in Java, 2nd Edition, OxfordUniversityPress, 2014.
Web Resources	1. https://www.w3schools.com/java/. 2. http://www.java2s.com/. 3. https://onlinecourses.nptel.ac.in/noc22_cs47/preview

List of Practical:

1. Write a program to read two numbers from user and print their product.
2. Write a program to print the square of a number passed through commandline arguments.
3. Write a program to send the name and surname of a student through command line arguments andprint a welcome message for the student.
4. Write a java program to find the largest number out of n natural numbers.
5. Write a java program to find the Fibonacci series & Factorial of a numberusing recursive and nonrecursive functions.
6. Write a java program to multiply two given matrices.
7. Write a Java program for sorting a given list of names in ascending order.
8. Write a Java program that checks whether a given string is a palindrome ornot . Ex:MADAM is apalindrome.
9. Write a java program to read n number of values in an array and display it inreverse order.
10. Write a Java program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class calledMulDiv that extends from AddSub class to use the member data of the superclass. MulDiv should have methods to multiply and divide A main function should access the methods and perform the mathematical operations.
11. Create a JAVA class called Student with the following details as variableswithin it.
    a. USN, NAME, BRANCH, PHONE, PERCENTAGE
    b. Write a JAVA program to create n Student objects and print the USN,Name, Branch, Phone,and percentage of these objects with suitable headings.
12. Write a Java program that displays the number of characters, lines and wordsin a text.
13. Write a Java program to create a class called Shape with methods called getPerimeter() and getArea(). Create a subclass called Circle that overrides the getPerimeter() and getArea() methods to calculate the area and perimeterof a circle.
14. Write a Java program to create a class Employee with a method called calculateSalary(). Create two subclasses Manager and Programmer. In eachsubclass, override the calculateSalary() method to calculate and return the salary based on their specific roles.
15. Write a Java program using an interface called 'Bank' having function 'rate_of_interest()'. Implement this interface to create two separate bank classes 'SBI' and 'PNB' to print different rates of interest. Include additionalmember variables, constructors also in classes 'SBI' and 'PNB'.

16. Write a Java package program for the class book and then import the datafrom the package anddisplay the result.
17. Write a Java program for finding the cube of a number using a package for various data typesand then import it in another class and display the results.
18. Write a Java program for demonstrating the divide by zero exceptionhandling.
19. Write a Java program that reads a list of integers from the user and throws anexception if any numbers are duplicates.
20. Create an exception subclass UnderAge, which prints "Under Age" along with the age value when an object of UnderAge class is printed in the catch statement. Write a class exceptionDemo in which the method test() throws UnderAge exception if the variable age passed to it as argument is less than 18. Write main() method also to show working of the program.

BCA-I-Sem-II(NEP 2.0) WEB TECHNOLOGIES SEC103	
Course Outcomes	CO1: To understand the concepts and architecture of the World Wide Web, Markup languages along with Cascading Style Sheets. CO2: To understand the concepts of event handling and data validation mechanisms. CO3: To understand the concepts of embedded dynamic scripting on client side programming. CO4: To develop modern interactive web applications
Prerequisite:	1) Proficiency in at least one programming language, such as Python, Java, or C. Understanding of programming concepts such as loops, conditionals, functions, and data structures like arrays, lists. 2) Familiarity with object-oriented programming (OOP) principles, including classes, objects, inheritance, and polymorphism.

Total Hours of Teaching	Lecture	Tutorial	Practical	Total Per Week	Credit Points : 2
: 15	1		2	3	

Practical : 50	External Exam. Practical:50	

Syllabus Contents:

Unit: I	**Fundamentals of Web Architecture and Web designing** Introduction to World Wide Web, Protocols, Web development tools, Web browsers, DNS, Web servers and web hosting, Types of Web Hosting. Introduction to HTML, History of HTML, Objective, Basic Structures of HTML, Header Tags, body tags, Paragraph Tags. Tags for FORM Creation, TABLE, FORM, TEXTAREA, SELECT, IMG, IFRAME FIELDSET, ANCHOR, Lists in HTML, Introduction to DIV tag, NAVBAR Design. Introduction to CSS: Types, Selectors and Responsiveness of a web page	8 Hours
Unit: II	**Web Programming using JavaScript, XML and AJAX** Introduction to JavaScript: Variables and Arrays in JavaScript, Output System in JavaScript (Alert, throughput, Input box, Console). Functions and Events in JavaScript, Introduction to Document Object Model (DOM) in JavaScript. Date and String handling in JavaScript. Manipulating CSS through JavaScript Validation mechanisms in JavaScript: Form Validation like required field validator, length validator, Pattern validator (Regular Expressions). Combining HTML, CSS and JavaScript Introduction to XML: uses, Key concepts, DTD	7 Hours

	schemas, XSLT and XSL Elements and transforming with XSLT. Introduction to AJAX, Purpose, advantages and disadvantages, AJAX based Web applications.
Text Books:	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
Reference Books:	1) Tanweer Alam, Web Technologies, Khanna Book Publishing, 2011. 2) DT Editorial Services, HTML 5 Black Book, Covers CSS 3, JavaScript, XML, XHTML, AJAX, PHP and jQuery, 2ed, DreamTech, 2016
Web Resources	1) www.javatpoint.com 2) www.w3schools.com 3) www.geeksforgeeks.org/web-technology/

Practical list:

PART-A (Programs based on Unit-I)

1) Create Your Resume using different HTML tags (use text, color and lists.)
2) Create your class time table using table tag.
3) Design a Webpage for your college containing description of courses, department, faculties, library etc. using list tags, href tags, and anchor tags.
4) Create web page using Frame with header frame, left frame, right frame, and status bar frame. On clicking in the left frame, information should be displayed in right frame.
5) Create web page for student admission form using different form elements in HTML.
6) Create a Web Page of a super market using internal CSS.
7) Use Inline CSS to format your resume created through HTML tags.
8) Use External CSS to format your time table created.
9) Use all the CSS (inline, internal and external) to format college web page that you have created.
10) Write a HTML Program to create your college website for mobile device using CSS.

PART – B (Programs based on Unit-II)

1) Write a JavaScript program using Switch case.
2) Write a JavaScript program using any 5 events.
3) Write a JavaScript program using built in JavaScript objects.
4) Develop a Simple calculator for addiction, subtraction, multiplication and division operations using JavaScript.
5) Create HTML form for Student Information like Register Number, Name, Mobile Number, DOB and Email-Id with validations using JavaScript. (Use required field validator and length validator)
6) Write an HTML program to create login page with validations using JavaScript. (Use Regular Expressions for validations)
7) Create a DTD for Newspaper article.
8) Create XML schema for Student Information.
9) Create XSL file to convert XML file to XHTML file
10) Write a Program to retrieve date from a text file and displaying it using AJAX.

	BCA-I-Sem-II (NEP 2.0) **INDIAN CONSTITUTION** **VAC201**
Course Description	This course offers a unique perspective on the Constitution of India, focusing on its economic dimensions and impact on business. It delves into the historical and ideological underpinnings of the Constitution as an economic document, tracing its evolution from post-colonial economic governance to contemporary debates. Students explore constitutional battles over land reforms, economic liberalization, and fiscal federalism, gaining insights into competing economic ideologies and interests. Through case studies and legal analysis, they examine fundamental rights related to business, fiscal federalism, and constitutional issues shaping India's economic landscape. By the end of the course, students will develop a nuanced understanding of the Constitution's role in shaping economic policies and its implications for business practices, equipping them with valuable insights for careers in business management and policy advocacy.
Course Objectives	1. Develop an understanding of the Indian Constitution beyond legal and political lenses, emphasizing its significance for business students. 2. Recognize the importance of comprehending constitutional basics and their impact on trade, economy, and business practices. 3. Analyze the inclusion of economic justice in the preamble and its implications for post-colonial economic policies. 4. Explore the legal history of competing claims between economic development and principles of equity and justice in India. 5. Examine the transition from state-led industrialization to liberalization, highlighting the constitutional underpinnings of these economic shifts. 6. Investigate the constitutional provisions relevant to business, such as the fundamental right to practice any profession, occupation, trade, or business as enshrined in Article 19.

Course Outcomes	After completion of course, students will be able to : 1. Explain concept of the Indian Constitution, particularly from the perspective of economic governance and business 2. Employ a nuanced analytical framework about ongoing constitutional debates and battles which affect the domain of business 3. Develop a sense of how questions of economic growth have to be balanced with other constitutional commitments, including social and economic justice.

Total Hours of Teaching : 30	Lecture	Tutorial	Practical	Total Per Week	Credit Points : 02
	2	0	0	2	

Total Marks:50	Theory: 30	Internal: 20

Syllabus Contents:

Unit: I	**An Economic History of the Constitution of India** Historical understanding of the constitution as an economic document. Understanding the Preamble, starting from the land reform cases in the 1950s to the validity of the bitcoin ban imposed by the RBI, this module signpost all of the important economic moments in the constitutional history of post-colonial India; Constitutional design, Legal Regulation and economic justice	8 Hours
Unit: II	**Fundamental Rights and Business in India** Article 19(1)(g) grants every citizen the right, to practise any profession, or to carry on any profession, occupation, trade, or business. Like other fundamental rights, this right is subject to reasonable restrictions impose by the state. This particular provision of the Constitution has been one of the most severely litigated freedoms. Fundamental Duties.	8 Hours
Unit: III	**Fiscal Federalism** Article articles 301 to 307 of the Constitution pertains to Trade, Commerce and Intercourse within the Territory of India; Challenges associated with fiscal federalism in India including the vertical fiscal imbalance; Article 280 of the Constitution.	7 Hours

	Constitutional battles that shaped the economy	
Unit: IV	This module will be taught through key case studies that demonstrate the complex and fascinating overlap between the constitution and business and shall use Saurabh Kirpal's book Fifteen Judgments: Cases that Shaped India's Financial Landscape as our guide through this landscape. The case studies include the banning of diesel engine cars, Telecom regulation and ownership of broadcast media, Demonetisation, Aadhaar, the lifting of restrictions on dealing in cryptocurrencies.	7 Hours

Note: Relevant case studies based on the above units should be discussed in the class.

Suggested Field Work or Practical Work

1. Study and analyse case-Rustom Cavasjee Cooper v. Union of India, (1970) 1 SCC 248

2. Study and analyse case- State of Rajasthan v. Mohan Lal Vyas, AIR 1971 SC 2068 (confirmation of a private monopoly, not a violation of fundamental right)

3. Study and analyse case -Mithilesh Garg v. Union of India, (1992) 1 SCC 168 : AIR 1992 SC 221 (Right to carry on business, not breached when it is liberalised)

4. Study and analyse case -Chintamanrao v. The State of Madhya Pradesh, AIR 1951 SC 118 (scope of reasonable restrictions in relation to trade and occupation)

5. Study and analyse case -Cooverjee B. Bharucha v. Excise Commissioner, Ajmer, AIR 1954 SC 220 (the reasonableness of the restriction imposed may depend upon the nature of the business and prevailing conditions including public health and morality)

6. Study and analyse case- T. B. Ibrahim v. Regional Transport Authority. Tanjore, AIR 1953 SC 79

7. Study and analyse case- Harman Singh v. RTA, Calcutta, AIR 1954 SC 190

8.. Study and analyse case- Dwarka Prasad Laxmi Narain v. State of U.P., AIR 1954 SC 224

9. Study and analyse case- State of Bombay v. R.M.D. Chamarbaugwala, AIR 1957 SC 699

1. Study and Analyse case-Parbhani Transport Coop. Society Ltd. v. Regional Transport Authority, Aurangabad, AIR 1960 SC 801

Note:

Each student should prepare report any 5 practical or field work including detailed information as per guidelines and structure/format given by subject teacher. The report should be hand-written. Take photographs in your cell phone with prior permission during the visit to business units and discussion with people. Produce the black and white print of photographs in your report.

References

- The Oxford Handbook of the Indian Constitution, Oxford university press.

Cases

- Rustom Cavasjee Cooper v. Union of India, (1970) 1 SCC 248
- State of Rajasthan v. Mohan Lal Vyas, AIR 1971 SC 2068 (confirmation of a private
- monopoly, not a violation of fundamental right)
- Mithilesh Garg v. Union of India, (1992) 1 SCC 168 : AIR 1992 SC 221 (Right to
- carry on business, not breached when it is liberalised)
- Chintamanrao v. The State of Madhya Pradesh, AIR 1951 SC 118 (scope of
- reasonable restrictions in relation to trade and occupation)
- Cooverjee B. Bharucha v. Excise Commissioner, Ajmer, AIR 1954 SC 220 (the
- reasonableness of the restriction imposed may depend upon the nature of the
- business and prevailing conditions including public health and morality)
- T. B. Ibrahim v. Regional Transport Authority. Tanjore, AIR 1953 SC 79
- Harman Singh v. RTA, Calcutta, AIR 1954 SC 190
- Dwarka Prasad Laxmi Narain v. State of U.P., AIR 1954 SC 224
- State of Bombay v. R.M.D. Chamarbaugwala, AIR 1957 SC 699
- Parbhani Transport Coop. Society Ltd. v. Regional Transport
Authority, Aurangabad, AIR 1960 SC 801
- State of Bombay v. R. M. D. Chamarbaugwala, (1957) S.C.R. 874,
- G.K.Krishnan vs State of Tamil Nadu, 1975 SCC (1) 375
- Automobile Transport (Rajasthan) Ltd. Vs State of Rajasthan, AIR 1962 SC 1406