RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FOUR YEAR BACHELOR OF ENGINEERING (B.E.) DEGREE COURSE
SEMESTER: 4th (C.B.C.S.)
BRANCH: COMPUTER ENGINEERING

Fourth Semester:-

S N	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
1	Discrete Mathematics and Graph Theory	3	1	-	30	70	100	4	PCC-CS
2	Web Technology	3	-	-	30	70	100	3	PCC-CS
3	Operating System	3	-	-	30	70	100	3	PCC-CS
4	Data Structures	3	1	-	30	70	100	4	PCC-CS
5	Computer Architecture and Organization	3		-	30	70	100	3	PCC-CS
6	System Programming	3	-	-	30	70	100	3	PCC-CS
7	Web Technology-Lab	-	-	2	25	25	50	1	PCC-CS
8	Operating System- Lab	-	-	2	25	25	50	1	PCC-CS
9	Data Structure-Lab	-	-	2	25	25	50	1	PCC-CS
10	Consumer Affairs	2	-	-	-	-	-	Audit	MC
11	Internship (Min. 4 Weeks)	-	-	2	50	-	50	1	PROJ-CS
	Total	20	02	08	305	495	800	24	

L: Lectures T: Tutorial P: Practical
PCC-CS-Professional Core Courses **PEC-CS**-Professional Elective Courses
LC- Laboratory Course **BSC-** Basics Science Courses **ESC:** Engineering Science Courses
OEC-CS-Open Elective Courses   **MC-** Mandatory Course
PROJ-CS- Project
HSMC- Humanities and Social Sciences including Management Courses

Dr. S.V. Sonekar
chairman

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SEMESTER: 4th (C.B.C.S.)

BRANCH: COMPUTER ENGINEERING

Subject : *Discrete Mathematics and Graph Theory*   Subject Code : **BECME401T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
(3 +1)Hrs (L+T)	4	30	70	100

Aim: To understand the basic concepts of discrete mathematics, logic, algorithms, and computational complexity.

Prerequisite(s): High School Mathematics

Course Objectives:

1	A primary objective is to provide a bridge for the student from lower-division mathematics courses to upper-division mathematics.
2	Obtain skills and logical perspectives in introductory (core) courses that prepare them for subsequent courses.
3	Develop proficiency with the techniques of mathematics and/or computer science, the ability to evaluate logical arguments, and the ability to apply mathematical methodologies to solving real world problems.

Course Outcomes:

At the end of this course student are able to:

CO1	Apply graph theory models of data structures and state machines to solve problems of connectivity and constraint satisfaction.
CO2	How mathematical models for engineering are designed, analyzed and implemented in industry and organizations.

CO3	Mathematically identify basic data types and structures (such as numbers, sets, graphs, and trees) used in computer algorithms and systems; distinguish rigorous definitions and conclusions from merely plausible ones.
CO4	Analyze real world scenarios to recognize when Logic, sets, functions are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) in order to solve the problems using multiple approaches.
CO5	Apply knowledge of mathematics, physics and modern computing tools to scientific and engineering problems and in life-long learning.

Unit 1: Set Theory, Relations and Functions (08 Hrs)

Sets: Review of propositions and logical operations, Principle of mathematical induction, Review of sets, Types and operations on sets.

Relations: Ordered pairs and n-tuples, Types of relations, Composite relation, Transitive closure of a relation, Partially ordered set, Hasse diagrams.

Functions: Definition, Composition of functions, Types of functions, Characteristics function and its properties.

Unit 2: Fuzzy Set and Fuzzy Logic (06 Hrs)

Fuzzy sets and systems, Crisp set, Operations and combinations on Fuzzy sets, Relation between Crisp set and Fuzzy set, Fuzzy relations, Overview of Fuzzy logic and classical logic.

Unit 3: Group Theory and Ring Theory (06 Hrs)

Binary operation, Algebraic structure, Groupoid, Semigroup, Monoid, Group, Subgroup, Normal subgroup (Only definitions and examples), Ring, Commutative ring, Ring with unity, Zero divisor, Integral domain, Field (Only definitions and simple examples).

Unit 4: Graph Theory (08 Hrs)

Basic concepts of graph theory, Digraphs, Basic definitions, Matrix representation of graphs, Subgraphs and quotient graphs, Isomorphic graphs, Paths and circuits, Reachability and connectedness, Node base, Euler's path & Hamilton's path, Tree, Binary tree, Undirected tree,

Spanning tree, Weighted graphs (Only definitions and examples), Minimal spanning tree by Prim's algorithm & Kruskal's algorithm, Representation of algebraic expressions by Venn diagram and binary tree.

Unit 5: Combinatorics   (06 Hrs)

Permutations and combinations, Pigeonhole principle with simple applications, Recurrence relations (Concept and definition only), Generating functions, Solution of recurrence relations using generating functions.

Text/ Reference Books

1. *Discrete Mathematical Structures (PHI), B. Kolman, R. Busby, S. Ross.*
2. *Discrete Mathematical Structures with Applications to Computer Science (TMH), Tremblay and Manohar.*
3. *Fuzzy Sets Uncertainty and Information, George, J. Klir, Tina A. Folger.*
4. *Discrete Mathematics for Computer Scientists & Mathematicians, J. Mott, A. Kandel, T. Baker.*
5. *Discrete Mathematics, S. Lipschutz.*
6. *Neural network and Fuzzy systems (PHI), Bart Kosko.*

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SEMESTER: 4th (C.B.C.S.)
BRANCH: COMPUTER ENGINEERING

Subject : *Web Technology*   Subject Code : **BECME402T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
3 Hrs (Theory)	3	30	70	100

Aim: To learn advance technology to develop website which is more dynamic to use or create

Prerequisite(s): 1.You must have knowledge of Computer Accessing

        2. You must aware of Internet Accessing.

Course Objectives:

1	Create web pages and identify its elements and attributes
2	Understand the structure of servlet.
3	Build dynamic web pages using JavaScript (Client side programming).
4	To understand the concept of static and dynamic web applications

Course Outcomes:

At the end of this course student are able to:

CO1	Design web page using HTML tag, HTML forms, frame & frame sets
CO2	Describe and create the web page layout using CSS
CO3	Distinguish in HTML and XML & design dynamic websites
CO4	Summarize validation ,controls and graphics
CO5	Apply the concept for deployment of websites and its security issues.

Unit I: **[5 Hours]**

Introduction to HTML: The development process, Html tags and simple HTML forms, frames and frame sets tags, web site structure.

Unit II: [8 Hours]

Style sheets: Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS, CSS2

Unit III: [07 Hours]

XML - technologies, attributes, tree, XML validation – DTD, CSS, Schema, XML parser, database, Namespace

Unit IV: [08 Hours]

Validation: Understanding Validation, The validation controls Rich Controls: The calendar, AdRotator, Pages with Multiple view, User Controls and Graphics: User Controls, Dynamic Graphics

Unit V: [08 Hours]

Styles, Themes and Master Pages: Styles, Themes, Master Page Basics. ADO.NET and Data Binding: Configuring your Database, ADO.NET basics, Direct Data Access. Single Value data binding, Repeated Value Data Binding. Website Security: ASP.NET security Model, Forms Authentication, Windows Authentication.

Text books:

1. *ASP.NET: The Complete Reference Book by Matthew Macdonald*
2. *Visual Basic .net Comprehensive Concepts and Techniques by Shelly, cashman, Quasney*

Reference books:

1. *Programming in Visual Basic. NET by Julia Case Bradley, Anita C. Millspaugh , McGraw Hill, latest edition*

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SEMESTER: 4th (C.B.C.S.)
BRANCH: COMPUTER ENGINEERING

Subject : *Operating System*   Subject Code : **BECME403T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
3 Hrs (Theory)	3	30	70	100

Aim: Aim: To Know the role of operating system and its functions & operations performed.

Prerequisite(s):
1. Students must have the basic knowledge of Computer and its components.
2. They must aware with the basics of file system.

Course Objectives:

1	Introduce terminologies used in OS and File system concepts
2	Illustrate process scheduling, synchronization and Deadlock concept
3	Introduce Memory and Virtual memory management, and storage techniques
4	Understand the concept of System protection and security.

Course Outcomes:

At the end of this course student are able to:

CO1	Describe the concept of operating system and file system
CO2	Explain process management and evaluate process scheduling algorithms.
CO3	Describe process synchronization and apply the knowledge to solve problem
CO4	Describe and compare methods for handling deadlocks and secondary storage structures.
CO5	Describe and solve the problems of memory management along with security

Unit I: INTRODUCTION [08 Hours]

What is operating system, Types of operating system, Operating system services, System calls, Types of system calls, System programs, operating system structure, Virtual machines, Operating system design and implementation. FILE SYSTEM: File concepts, File system structure, Access methods, Directory structure, Allocation method, Free-space management, recovery.

Unit II: PROCESS MANAGEMENT & SCHEDULING [06 Hours]

PROCESS MANAGEMENT: Process concepts, process scheduling, Types of Scheduler, operation on processes, inter-process communication, Context Switch. PROCESS SCHEDULING: Basic concepts, scheduling criteria, scheduling algorithm, multiprocessor scheduling algorithm.

Unit III: PROCESS SYNCHRONIZATION & THREADING [08 Hours]

PROCESS SYNCHRONIZATION: Critical section problem, Peterson's solution, synchronization hardware, semaphore, classic problems of synchronization, monitors. THREADING: Multithreaded programming: overview, multithreading models, Threading issues.

Unit IV: DEADLOCKS [06 Hours]

DEADLOCKS: System model, deadlock characterization, methods for handling deadlocks, deadlock prevention, deadlock avoidance, deadlock detection, recovery from deadlock. SECONDARY STORAGE STRUCTURE: Overview of mass storage structure, disk structure, disk scheduling, disk management.

Unit V: MEMORY MANAGEMENT & SYSTEM PROTECTION [08 Hours]

MEMORY MANAGEMENT: Background, swapping, contiguous memory allocation, paging, structure of page table, segmentation. VIRTUAL MEMORY MANAGEMENT: Background, demand paging, page replacement, allocation of frames, thrashing. SYSTEM PROTECTION: Goals of protection, principles of protection, domain of protection, Access Matrix implementation, Revocation of access Right.

Text books:

1. *Operating system Principles -7th Edition-Abraham Silberschaz, Peter Baer Galvin , Greg Gagne Publisher -Willey*

Reference books:

1. *Operating system Third Edition, Achyut S. Godbole, Atul Kahate,Tata M GrawHill.*

2. Operating system concepts & design -2nd Edition ,Milan Milenkovic Tata MGraw Hill.

3. D.M Dhamdhere, Operating Systems: A Concept Based Approach 3rd Ed, McGraw- Hill, 2013

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FOUR YEAR BACHELOR OF ENGINEERING (B.E.) DEGREE COURSE
SEMESTER: 4th (C.B.C.S.)
BRANCH: COMPUTER ENGINEERING

Subject : *Data Structures*   Subject Code : **BECME404T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
(3+1)Hrs (L+T)	4	30	70	100

Aim: To provide knowledge about the available data structures and its application in programming.

Prerequisite(s): Programming Language 'C', Applied Mathematics

Course Objectives:

1	To impart the basic concepts in data structures and algorithms.
2	To emphasize the application of data structures in developing and implementing efficient programs and algorithms using searching and sorting
3	To understand the basic concepts of stack, queue, Linked list, trees and graphs
4	To enable them to write algorithms for solving problems with the help of fundamental data structures.

Course Outcomes:

At the end of this course Student are able to:

CO1	Understand the basic concept of data structures and time complexity.
CO2	Solve the problems and demonstrate using searching and sorting algorithms using programming language.
CO3	For given problem of stack and queues implement it and analyze the same to determine the time and computation complexity.
CO4	Classify & demonstrate the use of different data structures like linked list, trees & graphs along with related algorithms.

| CO5 | Infer the use of symbol tables for hashing and collision resolution. |

UNIT I :   [08 Hours]

Introduction: - Concept of Data structures, Time and space analysis of algorithms, Big oh and theta notations and omega notations, Average, best and worst case analysis, Searching and sorting techniques- Linear search, Binary search, Indexed search, Insertion sort, selection sort, Bubble Sort, radix Sort, Merge Sort, Hashing, Collision resolution policies.

UNIT II :   [07 Hours]

Linked Lists : Simply linked list, Implementation of linked list using static and dynamic memory allocation, operations on linked list, polynomial representations and manipulations are using linked list, circular linked list, doubly linked list, Generalized list, sparse matrix, polynomial

UNIT III :   [07 Hours]

Stack and Queue Stack and queue - Array representation of stacks, Queues and Dequeue, Circular queue, Polish notation, Implementation of stack using arrays, Application of stack & queue: Conversion from Infix to Postfix ,Evaluation of postfix expressions, Priority Queues

UNIT IV :   [06 Hours]

Trees: Basic Terminology, Basic trees, Binary tree representations, threaded storage representation, binary tree traversals, binary search trees, Application of trees. Preliminary treatment of AVL Trees, B-Trees.

UNIT V :   [08 Hours]

Graphs: Definition & terminology, Graph representation: matrix representation of Graph, List of structure, other representation of graphs, Breadth First Search, Depth First Search, Spanning trees, Shortest path algorithm, topological sorting, Critical path. Symbol Tables: static tree tables, dynamic tree tables, hash tables, hash functions,

Text Books :-

1. *Fundamentals of Data Structure by Horowitz and Sahani (CBS Publications)*

2. *Data Structures using C by Tanenbaum, Pearson Education*

3. *Data structure and Algorithm by Lafore(BPB Publication)*

Reference Books:-

1. *Data Structure and Programme Design in C by Kruse, Leung and Tondo,(PHI)*

2. *Schaum's outline: Date Structures by Seymour Lipschutz (Tata Mc Graw Hill)*

3. *An Introduction to DS with applications by Trembley and sorenson(Mc Graw Hill)*

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SEMESTER: 4th (C.B.C.S.)
BRANCH: COMPUTER ENGINEERING

Subject : *Computer Architecture and Organization*   Subject Code : **BECME405T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
3 Hrs (Theory)	3	30	70	100

Aim: To study fundamentals of Computer system

Prerequisite(s): Basic knowledge of computer

Digital Electronics, Concepts in Computer Engineering

Course Objectives:

1	To understand basic components and its interaction in computer system.
2	To understand computer processor organization and measures to improve its performance.
3	To understand computer memory hierarchy and computer I/O device interfacing.

Course Outcomes:

At the end of this course student are able to:

CO1	Understand computer system and its fundamental architecture.
CO2	Solve various computer arithmetic problems.
CO3	Understand functionalities and organization of processor and measures to improve its performance.
CO4	Understand I/O device interfacing and computer memory hierarchy.
CO5	Understand various methods in parallel organization of processor

Unit I: Basic structure of computers   **[08 Hours]**
A Brief History of computers - Designing for Performance - Von Neumann Architecture - Computer Components - Interconnection Structures - Bus Interconnection - Addressing modes - Instruction Set Architecture (Instruction set based classification of processor i.e. RISC, CISC, RISC vs CISC Comparison).

Unit II: Arithmetic Unit [06 Hours]

Addition & subtraction of signed numbers - Binary Multiplication: Booths algorithm - Unsigned Integer multiplication and division algorithm - Floating point operations.

Unit III: Processing unit [08 Hours]

Machine Instruction characteristics - types of operands - types of operations – Instruction formats – Instruction types - Processor organization - Register Organization - Instruction cycles – Instruction Pipelining - Control unit - Multiple bus organization - Hardwired control - Micro programmed control - Hazards.

Unit IV: I/O Organization and Memory Hierarchy [08 Hours]

Input/output Systems - Programmed I/O - Interrupt Driven I/O - Direct Memory Access (DMA)- Memory Systems: locality of reference principle - Memory Hierarchy - Cache memory - Main Memory - Virtual memory - Secondary storage.

Unit V: Parallel Organizations [06 Hours]

Superscalar Processors - Multiple Processor Organizations - Symmetric Multiprocessors - Non-uniform Memory Access - Vector Computations - Bus allocation Schemes.

Text books:

1. C. Hamacher, Z. Vranesic, and S. Zaky, "Computer Organization", McGraw Hill, Fifth Edition, 2011

2. W. Stallings, "Computer Organization and Architecture: Designing for performance", Ninth Edition, Pearson education, 2013.

Reference books:

1. D. Paterson, J. Hennesy, "Computer Organization and Design: The Hardware Software Interface", Fourth edition, Elsevier 2011.

2. J. P. Hays, "Computer Architecture and Organization", 2nd Edition, McGraw-Hill, 1988

3. Hwang and Briggs," Computer Architecture and parallel processing", McGraw Hill, 1985.

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SEMESTER: 4th (C.B.C.S.)
BRANCH: COMPUTER ENGINEERING

Subject : *System Programming*   Subject Code : **BECME406T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
3 Hrs (Theory)	3	30	70	100

Aim: To understand the design and implementation issues of System programs that play an important role in program development.

Prerequisite(s): Basics of Data structure and Operating systems

Course Objectives:

1	Distinguish between Operating Systems software and Application Systems software
2	Understand macros and its features
3	Classify linker, loader and compiler its passes
4	Describe Unix device driver

Course Outcomes:

At the end of this course student are able to:

CO1	Distinguish among different system programs and how assembler works. Tell the implementation of two pass assembler.
CO2	Relate among different features of Macro's and to simplify the process of macro implementation.
CO3	Demonstrate the working of loader and to compare and contrast among different loading schemes.
CO4	Demonstrate the working of compiler by categorizing it into different phases.
CO5	To demonstrate driver installation routines and to compare device drivers for different operating systems.

Unit I: [06 Hours]

IBM 360/370 & Assembler – Introduction to System Programming & its components, M/c Architecture, Instruction Formats, Data Formats Data Formats & Register Formats, Concept of assembler, design of single pass and two pass assembler.

Unit II: [06Hours]

Macro processor – Concept of macro, macro call within macro, macro definition within macro, recursive macro calls, design of macro processor.

Unit III: [10 Hours]

Linkers and Loaders: Basic Loader functions, Loader schemes, "Complier and go" Loaders, general Loader scheme, absolute loaders, subroutine linkages, relocating loaders, direct linking loaders, other loader schemes Binders, linking loaders, Overlays, Dynamic Binders, Design of an absolute Loaders, Design of a Direct – Linking loaders.

Unit IV: [06 Hours]

Compiler – Phases of Compilers, Overview of Databases and Algorithms required for all phases. Role of lexical analyzer, recognition of tokens, Study of LEX & YACC.

Unit V: [08 Hours]

Unix Device Drivers – Definition, Anatomy and Types, Device programming, Installation, Incorporation of driver routines, Basic device operation, Implementation with Line Printer, Comparative study between device drivers for UNIX & Windows. Case study of Intel®64 and IA-32 Processors Basic architecture

Text books:

1. *System Programming by John J. Donovan, TATA McGRAW-HILL Edition.*

2. *System Programming by Leland Beck, Pearson Ed.*

3. *D. M. Dhamdhere : "Systems programming and operating system", Tata McGraw Hill*

4. *Unix device drives by George Pajani, Pearson Education. Page 3 of 15 R.T.M.N.U Nagpur*

Reference Books: -

1. *Device Drives for Windows by Norton, Add Wesley.*

2. *Intel®64 and IA-32 Architectures Software Developer's Manual Volume1: Basic Architecture.*

3. *The Intel Microprocessors 8086 / 8088, 80186 / 80188, 80286,80386,80486, Pentium and Pentium PRO Processor by Barry B. Brey, 4th Edition, Prentice-Hall.*

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SEMESTER: 4th (C.B.C.S.)
BRANCH: COMPUTER ENGINEERING

Subject : *Web Technology (Lab)*   Subject Code :   **BECME402P**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
2 Hrs (Practical)	1	25	25	50

- **Practical List**

Group 1. HTML Tags - Develop and demonstrate a HTML document that illustrates
   A The use of Formatting Text.
   B Headings tags(H1,H2,H3,H4,H5,H6)
   C Font Details (Font Size, Style, Type, Color)
   D Setting Color(BG Color)

Group 2. Table & Lists - Develop and demonstrate a HTML document that illustrates
   A Unordered List(UL)
   B Ordered List(OL) and Definition list (DL)
   C Table Alignment (Cell Spacing, Cell Padding ,Height ,Width, Border, Rowspan , colspan)
   D Setting Different Table Attributes(Color, Image)

Group 3. Image & Link - Develop and demonstrate a HTML document that illustrates
   A Image as a background
   B Hyperlink using an image
   C Hyperlink with another web page(A, Base, Href)
   D Link to email address, FTP Websites

Group 4. Forms and Frames
   A Develop and demonstrate a HTML document that illustrates
   B Create "Website Login Form" which consists of following details UserName , Password Address, Ph. no, Sex, Hobbies, Date Of Birth ,Country , along with submit and Reset Button.
   C Create a Web page having Main Frame along with three Sub Frames(Windows)
   D Create a Frame which will consider as a Main Frame along with other Sub Frame. when the particular link gets selected from the main frame it will displayed the output on target frame.
   E Create a login form as above which will use the post method by sending data on another form.

Group 5. Multimedia
   A Develop a web page to play audio file using <a> Tag.

        B   Develop a web page to play video file using <Embed> Tag.

Group 6.   DHTML

        A   Create a CSS document on Internal style sheet

        B   Create a CSS document on External style sheet

        C   Create a CSS document on Inline style sheet

        D   Create a CSS document on placing Images at different position

- **From above practical list perform at least two practical from each group.**

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BRANCH: COMPUTER ENGINEERING

Subject : *Operating System(Lab)*   Subject Code : **BECME403P**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
2 Hrs (Practical)	1	25	25	50

- *Minimum eight to ten practical based on Operating System Syllabus*

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BRANCH: COMPUTER ENGINEERING

Subject : *Data Structures(Lab)*   Subject Code : **BECME404P**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
2 Hrs (Practical)	1	25	25	50

- *Minimum eight to ten practical based on above Data Structures syllabus using programming language with mini project*

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SEMESTER: 4th (C.B.C.S.)
BRANCH: COMPUTER ENGINEERING

Subject : *Consumer Affairs*   Subject Code : **BECME410T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
2 Hrs (Theory)	Nil	Nil	Nil	Nil

Aim: The understanding of the marketplace and how to function in it as wise and thoughtful consumers.

Prerequisite(s): Basics knowledge of consumer and market.

Course Objectives:

1	To identify the concepts of consumer and market
2	To understand the different consumer acts & policies
3	To categorize the consumer redressal mechanism in different application
4	To understand the consumer movements

Course Outcomes:

By the end of the course, the student will be able to –

CO1	Understand the basic concept and importance of Consumer Education
CO2	Grasp the concepts related to Consumer Education and Protection
CO3	Identify the regulations and redressal mechanism system
CO4	Aware of consumer movements

Unit 1   [06 Hours]

Concept of consumers and markets, concept of retail price, whole sale price, maximum retail price, local taxes, fair price and packaging.

Unit 2   [06 Hours]

Consumer protection act 1986, objectives and provisions, Grievances redress mechanism under consumer protection act 1986, procedure for filing and hearing a complaint, remedies, frivolous

and vexatious complaints, offences and penalties.

Unit 3   **[06 Hours]**

Industry regulations and consumer complaint redressal mechanism, Banking – RBI and banking ombudsman, Insurance – IRDA and insurance ombudsman, Telecommunication – TRAI, Food products – FSSAI, Advertising – ASCI

Unit 4   **[06 Hours]**

Evolution of consumer movements in India, their role in consumer protection, national consumer citizen charter

Reference Books

1. *Consumer Protection: Law and Practice, V. K. Agarwal, Bharat Law House Pvt. Ltd., 2021*

2. *Consumer Affairs, Sri Ram Khanna, Savita Hanspal, Sheetal Kapoor, H. K. Awasthi, Orient Blackswan, 2007*

3. *Textbook on Consumer Protection Law, Dr. H.K. Saharay, Universal Law, Publications, 2017*

4. *Consumer Protection and Redressal Mechanism, Atul Sharma and Arti Sharma, Global Vison Publication, 2019*

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FOUR YEAR BACHELOR OF ENGINEERING (B.E.) DEGREE COURSE
SEMESTER: 4th (C.B.C.S.)
BRANCH: COMPUTER ENGINEERING

Subject : *Internships*   Subject Code : **BECME411P**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
2 Hrs (Practical)	1	50	Nil	50

Activity: Field learning, Case study,

Students have to do internships to get exposure to latest technologies used by industries.

Minimum 04 weeks internship is desirable.

Dr. S. V. Sonekar
Chairman .