

# **Bachelor of Science (Information Technology)**

**PROGRAMME GUIDE**

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## INTRODUCTION

Constructing strong basic foundation in concepts of information technology for crafting developers with latest platforms for futuristic needs.

## PROGRAMME OUTCOMES

Program outcomes are narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviours that students acquire in their matriculation through the program

1. **Employability:** Ability to get employment opportunities in corporate/government/private sectors or to be a successful entrepreneur
2. **Environment and sustainability:** Understand the impact of sciences and computers' to craft solutions in a global, economic, environmental, and societal context.
3. **Modern tool usage:** Ability to use the modern programming languages, tools, techniques and skills necessary for design, develop and deploy software based applications.
4. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of upcoming information technology changes.
5. **Knowledge enhancement:** Comprehend the fundamentals, principles, applications and importance of computational concepts.
6. **Higher Education:** Capability to move on to higher level learning based on computer science fundamentals.
7. **Analysis & design of complex problems:** An ability to apply knowledge of computer science concepts, principles & techniques to solve various challenging computing problems

## PROGRAMME SPECIFIC OUTCOMES

PSOs are statements that describe what the graduates of a specific engineering program should be able to do

1. **PSO1:** Ability to analyze, interpret and present findings effectively using mathematical and communication skills.
2. **PSO2:** Understand the fundamentals and applications of programming, data structures, databases, networking, mobile computing, information security and data analysis.
3. **PSO3:** Amalgamate knowledge of information technology and computational tools for simulation.
4. **PSO4:** Ability to effectively apply the computer science concepts to analyze, design and develop cost effective, efficient and secure solutions to the societal problems.

## SALIENT FEATURES

- **Skill Enhancement Courses:** These courses give choices to students to provide in-depth understanding of different domains/areas in the world of computing.
- **Generic Electives:** Generic elective gives the students a choice to develop and expertise in the interdisciplinary areas of interest, for example Management etc.
- **Hands on Experience:** Experiential learning is introduced as a course to provide hands on experience about the software and hardware.
- **Professional Enhancement:** In addition to core curricula, course offers subjects like communication, analytical and soft skills to enhance personality and employability.
- **Interdisciplinary Minors:** Provision for minor specialization in Journalism, Fashion Design, Tourism and Agriculture.
- **Holistic Development:** Emphasis on case based teaching and learning through current industry cases, business magazines, newspapers, articles etc.

**PROGRAMME CODE: DE1123**

### **DURATION OF THE PROGRAMME:**

**Minimum Duration** 3 years

**Maximum Duration** 6 years

### **MEDIUM OF INSTRUCTION/EXAMINATION:**

Medium of instruction and Examination shall be English.

## PROGRAMME STRUCTURE

Term	Core Courses (CR I, CR II, CR III A, CR III B) CR I+II - (8+4) 12 x 4 Credits CR III (A) - 1 x 4 Credits CR III (B) - 1 x 8 Credits	Discipline Specific Electives (DSE) 4 x 4 Credits	Ability Enhancement Courses (AECC) 4 x 4 Credits	Skill Enhancement Courses (SEC) 4 x 4 Credits	Generic Electives (GE) 4 x 4 Credits	Credits
<b>I</b>	Discipline Specific Core- I Discipline Specific Core- II Discipline Specific Core- III		<b>AECC- I</b> Environmental Sciences <b>AECC-II</b> English Communication Skills			<b>20</b>
<b>II</b>	Discipline Specific Core- IV Discipline Specific Core- V Discipline Specific Core- VI Discipline Specific Core- VII		<b>AECC-III</b> Advanced English Communication Skills			<b>20</b>
<b>III</b>	Discipline Specific Core- VIII Discipline Specific Core- IX Discipline Specific Core- X		<b>AECC-IV</b> Community Development Project		<b>GE-I</b> (Accounting, Law and Taxation, General Management, Sales and Marketing, English, Mathematics)	<b>20</b>
<b>IV</b>	Discipline Specific Core- XI Discipline Specific Core- XII	<b>DSE- I</b>		<b>SEC-I</b>	<b>GE-II</b>	<b>20</b>
<b>V</b>	<b>CR-III (B)</b> Field Project	<b>DSE-II</b> <b>DSE-III</b>		<b>SEC-II</b>	<b>GE-III</b>	<b>24</b>
<b>VI</b>	<b>CR-III (A)</b> Term Paper	<b>DSE-IV</b>		<b>SEC-III</b> <b>SEC-IV</b>	<b>GE-IV</b>	<b>20</b>
<b>Total</b>	<b>60 Credits</b>	<b>16 Credits</b>	<b>16 Credits</b>	<b>16 Credits</b>	<b>16 Credits</b>	<b>124</b>

**BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)  
PROGRAMME SCHEME (ODL)**

<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>Cr.</b>	<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE(Pr.)</b>
<b>TERM1</b>					
DCAP170	FUNDAMENTALS OF INFORMATION TECHNOLOGY	4	30	40	30
DCAP172	PROGRAMMING METHODOLOGY	4	30	40	30
DMTH136	DISCRETE STRUCTURES	4	30	70	0
DENG139	ENGLISH COMMUNICATION SKILLS	4	30	70	0
DCHE110	ENVIRONMENTAL SCIENCES	4	30	70	0
<b>TERM2</b>					
DCAP194	INFORMATION SECURITY	4	30	70	0
DCAP200	DATABASE MANAGEMENT SYSTEMS	4	30	40	30
DCAP202	OBJECT ORIENTED PROGRAMMING	4	30	40	30
DCAP256	COMPUTER NETWORKS	4	30	40	30
DENG140	ADVANCED ENGLISH COMMUNICATION SKILLS	4	30	70	0
<b>TERM3</b>					
DCAP214	FUNDAMENTALS OF WEB PROGRAMMING	4	30	40	30
DCAP267	DATA STRUCTURES	4	30	40	30
DCAP560	OPERATING SYSTEM	4	30	70	0
GE-I	GENERIC ELECTIVE I	4	30	70	0
DCAP462	COMMUNITY DEVELOPMENT PROJECT	4	0	0	100
<b>TERM4</b>					
DCAP240	DATA STORAGE AND MANAGEMENT	4	30	70	0
DCAP509	SOFTWARE ENGINEERING	4	30	70	0
DSE-I	DISCIPLINE SPECIFIC ELECTIVE I	4	30	40	30
SEC-I	SKILL ENHANCEMENT COURSE I	4	30	70	0
GE-II	GENERIC ELECTIVE II	4	30	70	0
<b>TERM5</b>					
DSE-II	DISCIPLINE SPECIFIC ELECTIVE II	4	30	40	30
DSE-III	DISCIPLINE SPECIFIC ELECTIVE III	4	30	40	30
SEC-II	SKILL ENHANCEMENT COURSE II	4	30	70	0
GE-III	GENERIC ELECTIVE III	4	30	70	0
DCAP463	FIELD PROJECT	8	0	0	100

TERM6					
DSE-IV	DISCIPLINE SPECIFIC ELECTIVE IV	4	30	40	30
SEC-III	SKILL ENHANCEMENT COURSE III	4	30	70	0
SEC-IV	SKILL ENHANCEMENT COURSE IV	4	30	40	30
GE-IV	GENERIC ELECTIVE IV	4	30	70	0
DCAP464	TERM PAPER* OR	4	0	0	100
	1 Course from the GE basket 1 which is not chosen as Generic Elective (GE).	4	30	70	0
<b>TOTALCREDITS</b>					<b>124</b>

DISCIPLINE SPECIFIC ELECTIVE (DSE) BASKET 1								
S. No	Course Code	Course Title	Credit	CA	ETE	ETP	Elective	Term
1	DCAP916	FRONT-END WEB UI FRAMEWORKS AND TOOLS	4	30	40	30	Web Development	4
2	DCAP495	WIRELESS AND MOBILE NETWORK	4	30	40	30	Network Security	4
DISCIPLINE SPECIFIC ELECTIVE (DSE) BASKET 2								
S. No	Course Code	Course Title	Credit	CA	ETE	ETP	Elective	Term
1	DCAP917	FRONT-END JAVASCRIPT FRAMEWORKS	4	30	40	30	Web Development	5
2	DCAP496	CRYPTOGRAPHY AND SECURITY RISK MANAGEMENT	4	30	40	30	Network Security	5
DISCIPLINE SPECIFIC ELECTIVE (DSE) BASKET 3								
S. No	Course Code	Course Title	Credit	CA	ETE	ETP	Elective	Term
1	DCAP918	MULTIPLATFORM MOBILE APP DEVELOPMENT WITH WEB TECHNOLOGIES	4	30	40	30	Web Development	5
2	DCAP497	CYBER SECURITY AWARENESS	4	30	40	30	Network Security	5
DISCIPLINE SPECIFIC ELECTIVE (DSE) BASKET 4								
S. No	Course Code	Course Title	Credit	CA	ETE	ETP	Elective	Term

1	DCAP919	SERVER-SIDE DEVELOPMENT WITH NODEJS	4	30	40	30	Web Development	6
2	DCAP498	DIGITAL FORENSIC	4	30	40	30	Network Security	6

**SKILL ENHANCEMENT COURSES (SEC)**

<b>S. No</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit</b>	<b>CA</b>	<b>ETE</b>	<b>ETP</b>	<b>Elective</b>	<b>Term</b>
1	DPEA204	ANALYTICAL SKILLS	4	30	70	0	SEC-I	4
2	DCAP392	FUNDAMENTALS OF JAVA PROGRAMMING	4	30	40	30	SEC-II	5
3	DCAP460	FUNDAMENTALS OF PYTHON	4	30	40	30	SEC-III	6
4	DCAP512	OPEN SOURCE WEB APPLICATION DEVELOPMENT	4	30	40	30	SEC-IV	6

**GENERIC ELECTIVE (GE) BASKET 1**

<b>S. No</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit</b>	<b>CA</b>	<b>ETE</b>	<b>ETP</b>	<b>Elective Area</b>	<b>Term</b>
1	DACC105	FINANCIAL ACCOUNTING	4	30	70	0	Accounting	3
2	DBSL101	BUSINESS LAW	4	30	70	0	Law & Taxation	3
3	DMGN101	BUSINESS ORGANISATION AND MANAGEMENT	4	30	70	0	General Management	3
4	DMKT201	PRINCIPLES OF MARKETING	4	30	70	0	Sales & Marketing	3
5	DENG112	INDIAN WRITING IN ENGLISH	4	30	70	0	English	3
6	DMTH137	CALCULUS	4	30	70	0	Mathematics	3

**GENERIC ELECTIVE (GE) BASKET 2**

<b>S. No</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit</b>	<b>CA</b>	<b>ETE</b>	<b>ETP</b>	<b>Elective Area</b>	<b>Term</b>
1	DACC204	COST ACCOUNTING	4	30	70	0	Accounting	4
2	DBSL102	COMPANY LAW	4	30	70	0	Law & Taxation	4
3	DECO113	BUSINESS ECONOMICS	4	30	70	0	General Management	4
4	DMGN251	SPREADSHEET MODELLING (USING EXCEL)	4	30	70	0	Sales & Marketing	4
5	DENG113	BRITISH POETRY AND DRAMA 14TH-17TH CENTURIES	4	30	70	0	English	4
6	DMTH159	MULTIVARIATE CALCULUS	4	30	70	0	Mathematics	4

GENERIC ELECTIVE (GE) BASKET 3								
S. No	Course Code	Course Title	Credit	CA	ETE	ETP	Elective Area	Term
1	DACC210	CORPORATE ACCOUNTING	4	30	70	0	Accounting	5
2	DBSL301	INCOME TAX LAW AND PRACTICE	4	30	70	0	Law & Taxation	5
3	DFIN302	FUNDAMENTALS OF FINANCIAL MANAGEMENT	4	30	70	0	General Management	5
4	DMKT309	DIGITAL MARKETING	4	30	70	0	Sales & Marketing	5
5	DENG115	BRITISH LITERATURE 18TH-20TH CENTURIES	4	30	70	0	English	5
6	DMTH256	DIFFERENTIAL EQUATIONS	4	30	70	0	Mathematics	5

GENERIC ELECTIVE (GE) BASKET 4								
S. No	Course Code	Course Title	Credit	CA	ETE	ETP	Elective Area	Term
1	DACC301	MANAGEMENT ACCOUNTING	4	30	70	0	Accounting	6
2	DBSL304	GOODS AND SERVICES TAX AND CUSTOMS LAW	4	30	70	0	Law & Taxation	6
3	DMGN358	E-COMMERCE	4	30	70	0	General Management	6
4	DMKT312	SELLING SKILLS	4	30	70	0	Sales & Marketing	6
5	DENG316	WOMEN'S WRITING	4	30	70	0	English	6
6	DMTH290	REAL ANALYSIS	4	30	70	0	Mathematics	6

**Note:**

1. Students can adopt only one area from discipline specific elective basket that will be applicable for the whole program.
2. Students can adopt only one area from generic elective basket that will be applicable for the whole program.
3. In case of Term Paper student may choose one course against Term Paper from the Generic Elective Basket 1 which is not chosen as Generic Elective (GE).

<b>Course Code</b>	<b>DCAP170</b>	<b>Course Title</b>	<b>FUNDAMENTALS OF INFORMATION TECHNOLOGY</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

### Course Outcomes:

**C01:** understand basic concepts and terminology of information technology.

**C02:** have a basic understanding of personal computers and their operations.

**C03:** understand various software and hardware, various security issues.

**C04:** familiarize students with complete fundamentals and the packages commonly used in computing software

**C05:** gain writing skills and various presentation aspects using word processing software

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Computer Fundamentals:</b> Characteristics & Generation of Computers, Block diagram of Computer Application of IT in various sectors. <b>Data Representation:</b> Binary Number System, Octal, Hexadecimal, decimal and their Conversion.
<b>Unit-2</b>	<b>Memory:</b> Types, Units of memory, RAM,ROM, Secondary storage devices–HDD, Flash Drives, Optical Disks: DVD, SSD <b>I/O Devices</b> –Keyboard, Mouse, LCDs, Scanner, Plotter, Printer & Latest I/O devices in market
<b>Unit-3</b>	<b>Processing Data:</b> Transforming data into information, how computers represent data, How computers process data, Machine cycles, Memory, Registers, The Bus, Cache Memory
<b>Unit-4</b>	<b>Operating Systems:</b> operating system basics, Purpose of the operating system, types of operating system, providing a user interface, Running Programs, Sharing Information, Managing Hardware, Enhancing an OS with utility software.
<b>Unit-5</b>	<b>Data Communication:</b> Local and Global reach of the network, Digital and Analog Transmission, Data communication with standard telephone lines and Modems, Using Digital Data Connections, Wireless networks
<b>Unit-6</b>	<b>Networks:</b> Sharing data anytime anywhere, uses of a network, Common types of a network, Hybrid Networks, how networks are structured, Network topologies and Protocols, Network Media, Network Hardware
<b>Unit-7</b>	<b>Graphics and Multimedia:</b> Understanding graphics File Formats, Getting Images into your Computer, Graphics Software, Multimedia Basics
<b>Unit-8</b>	<b>DataBase Management Systems:</b> The Database, The DBMS, Working with a database, Databases at Work, Common Corporate Database Management Systems
<b>Unit-9</b>	<b>Software Programming and Development:</b> What is computer Program, hardware/Software Interaction, planning a Computer Program, how programs Solve Problems
<b>Unit-10</b>	<b>Programming Languages and Programming Process:</b> Categories of Programming Languages, Machine and Assembly Language, Higher Level Languages, WWW development languages, The SDLC of Programming

<b>Unit-11</b>	<b>Internet:</b> Basic Internet terms: Web Page, Website, Homepage, Browser, URL, Hypertext, ISP, Web Server, HTML, DHTML, XML, Introduction to client side and server side scripting. <b>Applications:</b> WWW, e-mail, Instant Messaging, Internet Telephony, Video conferencing, Web Browser & its environment
<b>Unit-12</b>	<b>Understanding The Need of Security Measures:</b> Basic Security Concepts, Threats to Users, Threats to Hardware, Threat to Data, Cyber Terrorism. <b>Taking Protective Measures:</b> Keeping your System Safe, Protecting Yourself, protecting your Privacy, Managing Cookies, Spyware and other BUGS, keeping your data secure, Backing Up data, Safe guarding your hardware
<b>Unit-13</b>	<b>Cloud Computing and IoT:</b> SaaS, PaaS, IaaS, Public and Private Cloud; Virtualization, Virtual Server, Cloud Storage, Database Storage, Resource Management, Service Level Agreement, Basics of IoT and its applications.
<b>Unit-14</b>	<b>Futuristic World of Data Analytics:</b> Introduction to Big data and analysis techniques Elements, Variables, and Data categorization, Levels of Measurement, Data management and indexing, Introduction to statistical learning and overview of various tools used for data analysis.

#### LABORATORYWORK:

1. **Hardware:** familiarizing with various I/O Peripheral devices, storage devices.
2. **DOS:** Familiarity with DOS, Implementing various internal and external commands in DOS.
3. **MS-Windows:** familiarizing with windows operating system; using built-in accessories; managing files and folders using windows explorer; working with control panel; installing hardware and software.
4. **MS-Office (or any other Office Suite):** meaning and features, its components.
5. **MS-Word (or any other word processor):** Creating Document Files, Saving, Closing Files, Page Settings and Formatting Text. Spell Checking, Thesaurus, Creating Tables, Adding rows, columns. Printing Documents, Setting Print Settings, creating labels and mail merge, taking Printouts
6. **MS-Excel:** Working with worksheet, formulas & functions, Inserting charts, Printing in Excel
7. **MS-PowerPoint:** Views, Designing, viewing, presenting & Printing of Slides.
8. **Internet:** Navigating with Internet Explorer; surfing the net, using search engines; using email facility.

<b>Course Code</b>	<b>DCAP172</b>	<b>Course Title</b>	<b>PROGRAMMING METHODOLOGY</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**C01:** develop programming skills and familiar with programming environment with C Program structure.

**C02:** declaration of variables and constants.

**C03:** understand arrays, its declaration and uses.

**C04:** implement, test, debug, and document programs in C

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction:</b> Introduction to Programming, Program concept, Characteristics of programming, stages in program development, Algorithms, Notations, Flowchart, and Types of programming methodologies.
<b>Unit-2</b>	<b>Constant and Variable:</b> Machine Language, Assembly Language, High Level Languages, C Program Structure, Character Set, Identifiers and Keywords, Constants and Variables.
<b>Unit-3</b>	<b>Unformatted and Formatted I/O:</b> Functions- printf(), scanf(), getchar(), putchar(), gets(), puts(), Expressions.
<b>Unit-4</b>	<b>Data Types &amp; Operators:</b> Various data types - data range, size, Unary and Binary operators, Arithmetic Operators, Relational Operators, Logical Operators, Conditional Operators, Assignment Operator, Bitwise Operators.
<b>Unit-5</b>	<b>Control Structure:</b> Designing structured programs by using Top-Down design, Type conversion and Type modifiers, if statements - simple if, if-else, multiple if, if-else ladder, nested if, switch-case statement, while, do-while & for statements, break and continue statements, goto statement.
<b>Unit-6</b>	<b>Functions:</b> Function Definition and Prototypes, Scope rules - Local and Global scope of functions, Function arguments - passing arguments by value and passing arguments by reference, Return Type of function, Recursion, Library Functions.
<b>Unit-7</b>	<b>Arrays:</b> Declaring arrays in C, Defining and Processing of 1-dimensional and 2-dimensional arrays, Passing array as an argument to function, Multi-dimensional Arrays.
<b>Unit-8</b>	<b>Array Applications:</b> Sorting and Searching, Character Arrays.
<b>Unit-9</b>	<b>Strings:</b> Defining and Initializing strings, Reading and Writing strings, Processing of strings, String Library Functions - strcat(), strcpy(), strcmp(), strlen(), strrev().
<b>Unit-10</b>	<b>Storage Classes:</b> Storage class specifiers, Scope of a variable, Auto, Static, Extern, Register, Static variables and functions, Const Qualifier.
<b>Unit-11</b>	<b>Pointers:</b> Pointer data type, Pointer declaration, Initialization, Accessing values using pointers, Pointer expressions and arithmetic, Operations on Pointers.
<b>Unit-12</b>	<b>Dynamic Memory Management:</b> Dynamic Memory Management functions, malloc(), calloc(), realloc() and free(), Pointers and arrays, Pointers and functions.

<b>Unit-13</b>	<b>Structures and Unions:</b> Structure declaration, definition and initialization, accessing structures in functions, Structures and Pointers, array of structures, nested structures, Self-referential structures, Unions.
<b>Unit-14</b>	<b>File Structure:</b> Categories of files, Opening and closing files, file opening modes, Text and binary files, Reading and writing in files, Appending in files, Creating Header files, Preprocessor Directives and Macros.

### LABORATORY WORK:

**Data Types & Operators:** Various data types - data range, size, Unary and Binary operators, Arithmetic Operators, Relational Operators, Logical Operators, Conditional Operators, Assignment Operator, Bitwise Operators.

**Control Structure:** if statements - simple if, if-else, multiple if, if-else ladder, nested if, switch-case statement, while, do-while & for statements, break and continue statements, goto statement.

**Functions:** Function Definition and Prototypes, Scope rules - Local and Global scope of functions, Function arguments - passing arguments by value and passing arguments by reference, Return Type of function, Recursion, Library Functions.

**Arrays:** Declaring arrays in C, Defining and Processing of 1-dimensional and 2-dimensional arrays, Passing array as an argument to function, Multi-dimensional Arrays.

**Pointers:** Pointer declaration, Initialization, Accessing values using pointers, Pointer expressions and arithmetic, Operations on Pointers.

**Structures and Unions:** Structure declaration, definition and initialization, accessing structures in functions, Structures and Pointers, array of structures, nested structures, Self-referential structures, Unions.

**File Structure:** Opening and closing files, file opening modes, Text and binary files, Reading and writing in files, Appending in files, Creating Header files.

### READINGS:

1. C: THE COMPLETE REFERENCE by HERBERT SCHILDT, MC GRAW HILL.
2. PROGRAMMING IN ANSI C by E. BALAGURUSWAMY, MC GRAW HILL.

<b>Course Code</b>	<b>DMTH136</b>	<b>Course Title</b>	<b>DISCRETE STRUCTURES</b>
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<b>WEIGHTAGES</b>	
<b>CA</b>	<b>ETE (Th.)</b>
30	70

**Course Outcomes:**

**C01:** write formal logical arguments using propositional logic

**C02:** discuss problem solving through the basics of combinatorics.

**C03:** relate basic discrete structures and algorithms.

**C04:** apply the concepts of trees to find the shortest path

**C04:** discuss properties of graphs and be able to relate these to practical examples.

**C05:** determine when a recursive solution is appropriate for a problem

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	Sets, Description of a Set, Types of Sets, Subsets, Power Set, Venn Diagrams, Operation on Sets (Union, Intersection and Difference), Laws of Set Theory, Cartesian product of sets,
<b>Unit-2</b>	Relations, Functions, Some functions and their graphs (Identity, Polynomial, Modulus function and greatest integer function). One-One and onto functions.
<b>Unit-3</b>	Introduction to logic, Propositions and compound propositions, Basic logical operations (Conjunction, Disjunction, Negation), Propositions and truth tables,
<b>Unit-4</b>	Tautologies and contradiction, Logical equivalence, Conditional and biconditional statements.
<b>Unit-5</b>	Introduction to Logic Gates, Combinations of Gates, Implementation of Logic Expressions with Logic Gates and Switching circuits,
<b>Unit-6</b>	Introduction to Recursion, Recurrence Relation, Solving Recurrence Relation, Linear Homogenous Recurrence Relation with constant coefficient and their solution.
<b>Unit-7</b>	Introduction and Basic terminology, Graphs, Multigraphs, Degree of a vertex, Handshaking theorem, Sub graphs, Homeomorphic and Isomorphic graphs
<b>Unit-8</b>	Paths, Connectivity, Connected Components, Distance and Diameter, Cut points and bridges
<b>Unit-9</b>	Eulerian Graphs, Hamiltonian Graphs, Euler theorem, Planar Graphs, Maps, Regions, Euler Formula,
<b>Unit-10</b>	Non planar graphs, Kuratowski's Theorem (without proof). Graph coloring, Chromatic Number of a Graph
<b>Unit-11</b>	Complete graph and its coloring, Regular and Bipartite Graphs and their coloring.
<b>Unit-12</b>	Labelled and Weighted Graph, Shortest Path in weighted Graphs, Dijkstra's Algorithm to find shortest path
<b>Unit-13</b>	Introduction to Tree, Rooted Tree, Binary Tree,
<b>Unit-14</b>	Spanning Tree, Minimum Spanning Tree, Kruskal and Prims Algorithms to find minimum spanning tree

**READINGS:**

1. DISCRETE MATHEMATICS (SCHAUM'S OUTLINES) (SIE) by SEYMOUR LIPSCHUTZ, MARC LIPSON, VARSHA H. PATIL, MCGRAW HILL EDUCATION

<b>Course Code</b>	<b>DENG139</b>	<b>Course Title</b>	<b>ENGLISH COMMUNICATION SKILLS</b>
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<b>WEIGHTAGES</b>	
<b>CA</b>	<b>ETE (Th.)</b>
30	70

**Course Outcomes:**

**C01:** identify deviant use of English both in written and spoken forms and understand the importance of writing in academic life

**C02:** reorganize and correct the errors of usage to write simple sentences without committing errors of spelling and grammar

**C03:** assess their own ability to improve the competence in using the language

**C04:** understand and appreciate English spoken by people from different regions and read independently unfamiliar texts with comprehension

**C05:** use language for speaking with confidence in an intelligible and acceptable manner

**C06:** understand the importance of reading for life and develop an interest for reading

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Grammar:</b> introduction to the sentence structure in English
<b>Unit-2</b>	<b>Grammar:</b> introduction to articles
<b>Unit-3</b>	<b>Grammar:</b> introduction to parts of speech
<b>Unit-4</b>	<b>Grammar:</b> common errors
<b>Unit-5</b>	<b>Listening Skills:</b> introduction to the importance of listening skills
<b>Unit-6</b>	<b>Listening Skills:</b> types of listening – informational, critical, empathetic listening
<b>Unit-7</b>	<b>Listening Skills:</b> problems of listening to unfamiliar dialects
<b>Unit-8</b>	<b>Speaking Skills:</b> aspects of pronunciation, introduction to vowels, consonants and diphthongs
<b>Unit-9</b>	<b>Speaking Skills:</b> fluency in speaking, intelligibility in speaking
<b>Unit-10</b>	<b>Reading Skills:</b> introduction to reading skills, types of texts – narrative, descriptive, extrapolative
<b>Unit-11</b>	<b>Reading Skills:</b> essential skills for reading comprehension – decoding, fluency, vocabulary, reasoning and background knowledge
<b>Unit-12</b>	<b>Writing Skills:</b> introduction to writing skills, cohesion and coherence, expansion of given sentence
<b>Unit-13</b>	<b>Writing Skills:</b> reorganizing jumbled sentences into a coherent paragraph, paragraph writing
<b>Unit-14</b>	<b>Composition:</b> introduction to letter writing, types of letters, notices, complaints, appreciation, conveying sympathies

**READINGS:**

1. OXFORD PRACTICE GRAMMAR by JOHN EASTWOOD, OXFORD UNIVERSITY PRESS
2. TEXTBOOK OF ENGLISH PHONETICS FOR INDIAN STUDENTS by BALASUBRAMANIAN, LAKSHMI PUBLICATIONS
3. OXFORD ADVANCED LEARNER'S DICTIONARY OF ENGLISH by DEUTER, M ET.AL. (, OXFORD UNIVERSITY PRESS
4. INTERMEDIATE GRAMMAR, USAGE AND COMPOSITION by TOCKOO, M. L., A. E. SUBRAMANIAM, P. R. SUBRAMANIAM, ORIENT BLACKSWAN PVT. LTD.

<b>Course Code</b>	<b>DCHE110</b>	<b>Course Title</b>	<b>ENVIRONMENTAL SCIENCES</b>
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<b>WEIGHTAGES</b>	
<b>CA</b>	<b>ETE (Th.)</b>
30	70

**Course Outcomes:**

**CO1:** observe the current environmental issues and associated problems.

**CO2:** illustrate the basic knowledge of environment and its various components.

**CO3:** devise new approaches to reduce various types of environmental pollution.

**CO4:** identify the environment policies and practices.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Multidisciplinary nature of environmental studies, Scope and importance:</b> Concept of sustainability and sustainable development, Land resources: Land degradation, soil erosion and desertification.
<b>Unit-2</b>	<b>Deforestation:</b> Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
<b>Unit-3</b>	<b>Water:</b> Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water, Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs.
<b>Unit-4</b>	<b>Ecosystem, structure and function of ecosystem, Energy flow in an ecosystem:</b> food chains, food webs and ecological succession ecological pyramids, Case studies of the following ecosystems: a) forest ecosystem b) grassland ecosystem c) desert ecosystem d) aquatic ecosystem.
<b>Unit-5</b>	<b>Levels of biological diversity:</b> genetic, species and ecosystem diversity, Biogeographic zones of India, Biodiversity patterns and global biodiversity hot spots, India as a mega diversity nation, Endangered and endemic species in India.
<b>Unit-6</b>	<b>Threats to biodiversity:</b> Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions, Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity, Ecosystem and biodiversity services: ecological, economic, social, ethical, aesthetic and Informational value.
<b>Unit-7</b>	<b>Environmental pollution:</b> Types, causes, effects and controls; Air pollution, Ill-effects of Fireworks.
<b>Unit-8</b>	<b>Environmental pollution:</b> Types, causes, effects and controls: water, soil and noise pollution, Nuclear hazards and human health risks, Pollution case studies.
<b>Unit-9</b>	Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.
<b>Unit-10</b>	<b>Environment Laws:</b> Environment Protection Act, Air (Prevention & Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act.
<b>Unit-11</b>	<b>International agreements:</b> Montreal and Kyoto protocols and Convention on Biological Diversity (CBD), Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context, Solid waste management: Control measures of urban and industrial waste

<b>Unit-12</b>	<b>Human population growth:</b> Impacts on environment, human health and welfare.
<b>Unit-13</b>	<b>Disaster management:</b> floods, earthquake, cyclones and landslides, Environmental movements: Chipko, Silent valley, Bishnoi's of Rajasthan.
<b>Unit-14</b>	<b>Environmental ethics:</b> Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness

**READINGS:**

1. PERSPECTIVE IN ENVIRONMENTAL STUDIES by ANUBHA KAUSHIK, C P KAUSHIK, NEW AGE INTERNATIONAL PUBLISHERS
2. TEXT BOOK OF ENVIRONMENTAL STUDIES by D. DAVE AND S. S. KATEWA, CENGAGE LEARNING

<b>Course Code</b>	<b>DCAP194</b>	<b>Course Title</b>	<b>INFORMATION SECURITY</b>
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<b>WEIGHTAGES</b>	
<b>CA</b>	<b>ETE (Th.)</b>
30	70

**Course Outcomes:**

**CO1:** understand computing environment, how computers work and the strengths and limitations of computers

**CO2:** describe high-level understanding of how information security functions in an organization

**CO3:** describe the importance of information security in the computer-driven world

**CO4:** analyze basic concepts of cryptography and network security

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to Information Systems:</b> Basics of information systems, Importance of information systems, The OSI security Architecture, Security goals, Security attacks, Security services, Security Mechanisms
<b>Unit-2</b>	<b>Security Design Principles:</b> Fundamental of Security Design principles, Attack surfaces and attack trees, A model for network security, Various Standards of security
<b>Unit-3</b>	<b>Introduction to number theory</b> Divisibility and the division algorithms, The Euclidean Algorithm for finding Greatest common Divisor(GCD), Modular Arithmetic( Property of Congruence, Modular arithmetic operations, Properties of modular arithmetic, Properties of prime numbers
<b>Unit-4</b>	<b>Basics of Cryptography:</b> Encryption and Decryption, Possible types of attacks on encrypted messages, Introduction to public key cryptography, Applications for public-key cryptosystems
<b>Unit-5</b>	<b>Cryptography Techniques:</b> Classical Encryption Techniques, Symmetric cipher model, substitution techniques, Transposition techniques
<b>Unit-6</b>	<b>Building Blocks of Information Security:</b> Basic principles of information security, Secrecy, Authenticity, Confidentiality, Integrity, Accuracy, Three Pillars of Information Security: Confidentiality, Integrity and Availability. Information Classification.
<b>Unit-7</b>	<b>User Authentication:</b> electronic user authentication principles, password-based authentication, token-based authentication, biometric authentication, remote user authentication
<b>Unit-8</b>	<b>Access control:</b> access control principles, elements and types, discretionary access control, role based access control, attribute based access control, identity, credentials and access management
<b>Unit-9</b>	<b>System Security:</b> Intruders, Intrusion detection systems, types of Intrusion detection systems, Intrusion Prevention Systems and its types, password management,
<b>Unit-10</b>	<b>Risk Analysis:</b> Risk Management & Risk Analysis. Approaches and Considerations. Risk Management, Internal Factors, External Factors, Steps involve in Risk Management, Risk Analysis, Basic Principles of Risk Assessment, Approaches and Considerations, Acceptance, Avoidance, Transfer, risk reduction
<b>Unit-11</b>	<b>Malicious Software:</b> Types of malicious software's, Advanced persistent threat, Viruses and related threats, The nature of viruses, Types of viruses, Worms, Spam, Email, Trojans, Payload system corruption, attack agents, zombies, bots, key loggers, phishing, spyware, backdoors, rootkit attacks, countermeasures Denial of service attacks,

	distributed denial of service attacks.
<b>Unit-12</b>	<b>Software level security:</b> introduction to operating system security, system security planning, OS hardening, application security, security maintenance
<b>Unit-13</b>	<b>Database and cloud security:</b> Introduction, Database Security Challenges and its need, Database in the context of Business Intelligence, security requirements of databases, database security measures, Nature of database security issues, Securing the contents of Mobile databases, Database security Policy, cloud computing and security risks, cloud security as a service
<b>Unit-14</b>	<b>Firewalls:</b> Digital Signature, Firewalls: Introduction, need of firewalls, Firewall characteristics and access policy, Types of firewalls, Design principles, Characteristics, Configuration

**READINGS:**

1. CRYPTOGRAPHY AND NETWORK SECURITY by ATUL KAHATE, MCGRAW HILLEDCATION
2. INFORMATION SYSTEMS SECURITY by NINA GODBOLE,WILEY
3. NETWORKSECURITYESSENTIALS(APPLICATIONANDSTANDARDS) by WILLIAM STALLINGS,PEARSON

<b>Course Code</b>	<b>DCAP200</b>	<b>Course Title</b>	<b>DATABASE MANAGEMENT SYSTEMS</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**CO1:** understand the database concepts and database management system software.

**CO2:** Identify the basic concepts and various data model used in database design ER modelling concepts and architecture use and design queries using SQL.

**CO3:** Discuss the normalization theory and apply such knowledge to normalization of a database.

**CO4:** Apply and relate the concept of transaction, concurrency control and recovery in database.

**CO5:** Examine recovery system and to be familiar with cloud database and distributed databases.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to fundamentals of DBMS:</b> Database applications, Purpose of database systems, Components of DBMS, DBMS Architecture, Different Data Models, Data Independence, Various types of constraints
<b>Unit-2</b>	<b>Database design and ER model:</b> Overview of Design process, Entity relationship model, constraints, ER Diagrams, ER Design issues, Weak entity sets, extended ER features
<b>Unit-3</b>	<b>Relational Databases:</b> Relational Model, Structure of Relational databases, fundamental, additional and extended relational algebra operations, Views, DDL statements in SQL, DML statements in SQL, JOINS
<b>Unit-4</b>	<b>SQL (DDL):</b> Implementation of Data Definition Language, datatypes, schema definition, Basic structure of SQL Queries- CREATE, ALTER, DROP,RENAME, TRUNCATE
<b>Unit-5</b>	<b>SQL (DML):</b> DML commands - SELECT, INSERT, DELETE and UPDATE operations, implementation of constraints, implementation of joins, Nested subqueries, Complex queries, Views, Joined relations.
<b>Unit-6</b>	<b>Relational Languages:</b> Tuple Relational calculus, Domain relational calculus, Query by Example, Data log, Set Operations – UNION, INTERSECT, EXCEPT, Aggregate Functions, NULL values.
<b>Unit-7</b>	<b>Relational Database Design:</b> Features, Atomic Domains and first normal form, Functional dependency theory decomposition using functional dependencies, decomposition using Multivalued dependencies, More normal forms, database design process.
<b>Unit-8</b>	<b>Transaction Management:</b> Concept of Transaction, Transaction State, Implementation of atomicity and durability, concurrent execution, Serializability, Recoverability, Implementation of Isolation, testing for Serializability.
<b>Unit-9</b>	<b>Concurrency Control:</b> Lock based protocols, Timestamp based protocols, Validation based protocols, Deadlock handling, Insert and Delete operations, Weak levels of consistency

<b>Unit-10</b>	<b>SQL (DCL/TCL):</b> implementation of GRANT, REVOKE, ROLLBACK, COMMIT, SAVEPOINT, implementation of aggregate functions, implementation of inbuilt character functions, implementation of inbuilt numeric functions, implementation of inbuilt date & time functions
<b>Unit-11</b>	<b>Recovery system:</b> Failure classification, storage structure, recovery and atomicity, log-based recovery, recovery with concurrent transactions, buffer management, failure with loss of non-volatile storage.
<b>Unit-12</b>	<b>Distributed Databases:</b> Distributed Databases, Data Fragmentation, Replication and Allocation Techniques, SemiJoin, Homogeneous and Heterogeneous Databases, Distributed Data Storage, Distributed Transactions.
<b>Unit-13</b>	<b>Cloud-Based Databases:</b> From collaborative to the Cloud – A short history, Introduction to Client – Server Computing, Peer-to-Peer Computing, Distributed Computing, Grid Computing, Collaborative Computing, Cloud Computing. Functioning of Cloud Computing, Differences between Distributed computing and Cloud computing.
<b>Unit-14</b>	<b>Introduction to PL/SQL:</b> introduction to PL/SQL blocks, conditional statements, loops, cursors and triggers.

#### LABORATORY WORK:

**SQL (DDL):** Implementation of Data Definition Language, datatypes, schema definition, Basic structure of SQL Queries- CREATE, ALTER, DROP, RENAME, TRUNCATE

**SQL (DML):**DML commands - SELECT, INSERT, DELETE and UPDATE operations, implementation of constraints, implementation of joins, Nested subqueries, Complex queries, Views, Joined relations.

**SQL (DCL/TCL):** implementation of GRANT, REVOKE, ROLLBACK, COMMIT, SAVEPOINT, implementation of aggregate functions, implementation of inbuilt character functions, implementation of inbuilt numeric functions, implementation of inbuilt date & time functions

**Introduction to PL/SQL:** introduction to PL/SQL blocks, conditional statements, loops, cursors and triggers.

#### READINGS:

1. Author: H. F. Korth& A. Silberschatz, Title: Database System Concepts, Publishers: Tata Mc Graw Hill, New Delhi, Year 2006
2. Ivan Bayross, SQL, PL/SQL The Programming Language of Oracle, BPB Publication.
3. Elmasri&Navathe, Fundamentals of Database systems, Addison &Weisely, New Delhi.
4. C. J. Date, Database Systems, Prentice Hall of India, New Delhi.
5. P. Bhatia & G. Singh, Simplified Approach to DBMS, Kalyani Publishers.
6. Martin Gruber, Understanding SQL, BPB Publication, New Delhi.
7. Val Occardi, Relational Database: Theory & Practice, BPB Publication, New Delhi

<b>Course Code</b>	<b>DCAP202</b>	<b>Course Title</b>	<b>OBJECT-ORIENTED PROGRAMMING</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**C01:** familiarize with the basic concepts of object-oriented programming

**C02:** understand the object construction, memory allocation and deallocation

**C03:** develop programs using object-oriented concepts like encapsulation, inheritance and polymorphism

**C04:** analyse the different behaviour of overloaded operations in different situations

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Principles of OOP:</b> introduction, procedural vs object oriented programming, basic concepts of object oriented programming, object oriented languages, benefits of OOP's
<b>Unit-2</b>	<b>Basics of C++:</b> C Vs C++, a simple C++ program, compiling & linking, tokens, keywords, identifiers & constants, data types, reference variables
<b>Unit-3</b>	<b>Operators and type casting:</b> operators in C++, scope resolution operator, member de-referencing operators, type casting: implicit and explicit type casting
<b>Unit-4</b>	<b>Control structures:</b> decision making controls, iterative controls and jumping controls
<b>Unit-5</b>	<b>Pointers and structures:</b> main function, function prototyping, handling pointers, C structures and limitations
<b>Unit-6</b>	<b>Classes and objects:</b> specifying class, a sample C++ program with class, access specifiers, defining member functions, nesting of member functions
<b>Unit-7</b>	<b>More on classes and objects:</b> function definition inside the class and outside the class, private member functions, arrays within class, memory allocation of objects
<b>Unit-8</b>	<b>Handling functions:</b> function calling mechanisms: call by Value, call by address & call by reference, objects as function arguments
<b>Unit-9</b>	<b>More on functions:</b> inline functions, making outside function inline, friend functions
<b>Unit-10</b>	<b>Static members and polymorphism:</b> Static Data Members & Static Functions, Function Overloading
<b>Unit-11</b>	<b>Constructors and destructors:</b> constructors, parameterized constructors, copy constructor and dynamic constructor, multiple constructor in a class
<b>Unit-12</b>	<b>More on constructors and destructors:</b> constructors with default arguments, dynamic initialization of objects, destructors
<b>Unit-13</b>	<b>Inheritance:</b> defining derived classes, single inheritance, making a private member inheritable, multilevel inheritance, hierarchical inheritance, multiple inheritance, hybrid inheritance
<b>Unit-14</b>	<b>File handling:</b> file handling operations: open, close, read and write

**LABORATORY WORK:**

Implementation of C++ Programming Concepts (Classes and objects, inline functions, friend functions, constructor and destructors, function overloading, inheritance, working with files)

**READINGS:**

1. OBJECT ORIENTED PROGRAMMING WITH C++ by E BALAGURUSAMY, MC GRAW HILL
2. LET US C++ by YASHAVANT KANETKAR, BPB PUBLICATIONS
3. OBJECT ORIENTED PROGRAMMING IN C++ by ROBERT LAFORE, GALGOTIA PUBLICATIONS 3.  
THE C++ PROGRAMMING LANGUAGE by BJARNE STROUSTRUP, PEARSON

<b>Course Code</b>	<b>DCAP256</b>	<b>Course Title</b>	<b>COMPUTER NETWORKS</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**CO1:** examine the importance of data communication in daily activities

**CO2:** recognize the different networking devices and their functionalities

**CO3:** utilize the role of protocols in networking and analyse the services and features of the various layers of network

**CO4:** validate the program, date and hardware is available to everyone on the network without regard to the physical location of the resource and the users

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to computer networks:</b> definition, characteristics, applications and classification of computer networks –PAN, LAN, MAN, WAN, internetworks, network topology.
<b>Unit-2</b>	<b>Data communication:</b> data communication components, characteristics, transmission impairments, transmission modes, protocol – its component and functions.
<b>Unit-3</b>	<b>Network models:</b> layered architecture, benefits of layered architecture, OSI reference model, TCP/IP protocol suite, functions of layers in OSI and TCP/IP models.
<b>Unit-4</b>	<b>Physical layer:</b> services of physical layer, transmission medium – wired and wireless, networking devices.
<b>Unit-5</b>	<b>Data link layer - error detection and correction methods:</b> one and two dimensional parity method, hamming code, cyclic redundancy check (crc); framing- character stuffing, bit stuffing.
<b>Unit-6</b>	<b>Data link layer - flow and error control protocols:</b> protocols for noiseless and noisy channels - simplest protocol, stop-and-wait protocol; stop-and-wait ARQ, go-back-n ARQ, selective repeat ARQ.
<b>Unit-7</b>	<b>Data link layer - medium access control protocols:</b> pure ALOHA and slotted ALOHA, persistent and non-persistent CSMA, CSMA/CD, CSMA/CA
<b>Unit-8</b>	<b>Network layer - logical addressing:</b> IPV4 addressing, classful addressing, classless addressing, subnetting, network address translation, IPV6 addressing, address resolution protocol (ARP), reverse address resolution protocol
<b>Unit-9</b>	<b>Network layer - routing: unicast routing:</b> routing characteristics, routing algorithms, comparison of routing algorithms. <b>broadcast and multicast routing:</b> broadcast routing, multicast routing, routing in adhoc networks.
<b>Unit-10</b>	<b>Transport layer - protocols:</b> services of transport layer, connection oriented and connectionless services, connection establishment, connection release, TCP, UDP.
<b>Unit-11</b>	<b>Transport layer - congestion control and QoS:</b> general principles of congestion control, congestion avoidance and prevention policies; quality of service- types of traffic, traffic shaping, leaky bucket algorithm, token bucket algorithm.

<b>Unit-12</b>	<b>Application layer – services and protocols:</b> remote login (TELNET), file transfer protocol (FTP), domain name system (DNS), e-mail - simple mail transfer protocol (SMTP), post office protocol (POP), internet message access protocol (IMAP).
<b>Unit-13</b>	<b>Internet and WWW:</b> internet basics, hypertext transfer protocol (http), world wide web (www), security in internet – IPsec, VPN.
<b>Unit-14</b>	<b>Network Security:</b> goals of network security, principles of cryptography, message integrity, securing e-mail, operational security: firewalls, types of firewalls.

### LABORATORY WORK:

**Network models:** layered architecture, benefits of layered architecture, OSI reference model, TCP/IP protocol suite, functions of layers in OSI and TCP/IP models.

**Network layer - logical addressing:** IPV4 addressing, classful addressing, classless addressing, subnetting, network address translation, IPV6 addressing, address resolution protocol (ARP), reverse address resolution protocol

### READINGS:

1. DATA COMMUNICATION AND NETWORKING by B.A. FOROUZAN, MCGRAW HILL EDUCATION
2. DATA AND COMPUTER COMMUNICATIONS by WILLIAM STALLINGS, PEARSON

<b>Course Code</b>	<b>DENG140</b>	<b>Course Title</b>	<b>ADVANCED ENGLISH COMMUNICATION SKILLS</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** read and understand longer pieces of discourse independently

**C02:** read and compare two texts for evaluating them

**C03:** summarise a text for the benefit of peers orally or in writing

**C04:** write a review of a text read for academic purpose or pleasure

**C05:** understand the purpose and process of communication

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	Reading texts of different genres and of varying length
<b>Unit-2</b>	Different strategies of comprehension
<b>Unit-3</b>	Reading and interpreting non-linguistic texts
<b>Unit-4</b>	Reading and understanding incomplete texts (Cloze of varying lengths and gaps; distorted texts.)
<b>Unit-5</b>	Analysing a topic for an essay or a report
<b>Unit-6</b>	Editing the drafts arrived at and preparing the final draft
<b>Unit-7</b>	Re-draft a piece of text with a different perspective (Manipulation exercise)
<b>Unit-8</b>	Summarise a piece of prose or poetry
<b>Unit-9</b>	Using phrases, idioms and punctuation appropriately
<b>Unit-10</b>	Introduction to communication – principles and process
<b>Unit-11</b>	Types of communication – verbal and non-verbal
<b>Unit-12</b>	Identifying and overcoming problems of communication
<b>Unit-13</b>	Communicative competence
<b>Unit-14</b>	Cross-cultural communication

**READINGS:**

1. Pal, Rajendra et al (2019). English Grammar and Composition. Sultan Chand.
2. Bailey, Stephen (2003). Academic Writing. London and New York, Routledge.
3. Department of English, Delhi University (2006). Fluency in English Part II. New Delhi, OUP
4. Grellet, F (1981). Developing Reading Skills: A Practical Guide to Reading Skills. New York, CUP
5. Hedge, T. (2005). Writing. London, OUP
6. Kumar, S and PushpLata (2015). Communication Skills. New Delhi, OUP
7. Lazar, G. (2010). Literature and Language Teaching. Cambridge, CUP
8. Nuttall, C (1996). Teaching Reading Skills in a Foreign Language. London, Macmillan
9. Raman, Meenakshi and Sangeeta Sharma (2011). Technical Communication: Principles and Practice. New Delhi, OUP

<b>Course Code</b>	<b>DCAP214</b>	<b>Course Title</b>	<b>FUNDAMENTALS OF WEB PROGRAMMING</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**CO1:** understand the website layout creation using HTML language.

**CO2:** apply the website planning, management and maintenance techniques

**CO3:** apply dynamic website creation using Javascript and JQuery

**CO4:** illustrate logic implementation on a web page

**CO5:** understand how to manage versatile data on a web page

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Internet Basic:</b> basic concepts, communicating on the internet, internet domains, establishing connectivity to the internet, client IP address, IP address, TCP/IP
<b>Unit-2</b>	<b>HTML Introduction:</b> introduction, web server, web client/ browser, HTML tags
<b>Unit-3</b>	<b>HTML Command and Structure &amp; Formatting:</b> commonly used HTML commands, structure of HTML program, formatting, text styles, text effects
<b>Unit-4</b>	<b>HTML List and Graphics:</b> HTML lists, types of lists, adding graphics to HTML document
<b>Unit-5</b>	<b>Creating Tables &amp; Frames:</b> creating tables, linking documents, frames
<b>Unit-6</b>	<b>DHTML:</b> cascading style sheets, class, external style sheets
<b>Unit-7</b>	<b>Introduction to JavaScript:</b> javascript and web, <script> tag and browsers compatibility. data types: numeric, text, boolean, type casting, arrays, operators and expressions in javascript
<b>Unit-8</b>	<b>Programming Constructs in JavaScript:</b> programming constructs, conditional and looping statements
<b>Unit-9</b>	<b>Functions in JavaScript:</b> functions, user defined functions, dialog boxes
<b>Unit-10</b>	<b>DOM Model &amp; Browser Objects:</b> understanding DOM model, objects in HTML, browser objects, window, history, location, navigator, document object.
<b>Unit-11</b>	<b>Handling Events Using JavaScript:</b> handling events using javascript
<b>Unit-12</b>	<b>HTML Forms:</b> properties and methods, button, text, text area, checkboxes, radio buttons, select and option elements
<b>Unit-13</b>	<b>Built-in Objects in JavaScript:</b> built-in objects in javascript, string object, math object, date object, user defined objects
<b>Unit-14</b>	<b>Basics of JQuery:</b> introduction to JQuery, JQuery events, animations and effects using JQuery DOM using Javascript :DOM concept in javascript, windows navigator, locations object with methods

**LABORATORY WORK:**

**HTML Command and Structure & Formatting:** commonly used HTML commands, structure of HTML program, formatting, text styles, text effects

**Introduction to JavaScript:** javascript and web, <script> tag and browsers compatibility. data types: numeric, text, boolean, type casting, arrays, operators and expressions in javascript

**HTML Forms:** properties and methods, button, text, text area, checkboxes, radio buttons, select and option elements

**READINGS:**

1. HTML: THE COMPLETE REFERENCE by THOMAS A. POWELL, OSBORNE, MCGRAW HILL EDUCATION
2. WEB ENABLE COMMERCIAL APPLICATION DEVELOPMENT USING HTML, DHTML, JAVASCRIPT, PERL, CGI, BPB PUBLICATIONS, 2000. by IVAN BAYROSS, BPB PUBLICATIONS

<b>Course Code</b>	<b>DCAP267</b>	<b>Course Title</b>	<b>DATA STRUCTURES</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**CO1:** understand how basic data structures are represented in memory

**CO2:** comprehend the computational efficiency of the principal algorithms for searching and sorting

**CO3:** implement various data structures using sequential and linked representations

**CO4:** apply appropriate data structures to solve real world problems efficiently

**CO5:** analyze the alternate implementations of data structures to enhance performance

**CO6:** demonstrate different methods for traversing binary trees

<b>Unit No.</b>	<b>Course Contents</b>
<b>Unit-1</b>	<b>Basic concepts:</b> introduction to data structures and algorithms, data structure operations
<b>Unit-2</b>	<b>Complexity of algorithms:</b> asymptotic notations for complexity, control structures,
<b>Unit-3</b>	<b>Introduction to pointers:</b> advantages, pointer arithmetic, self-referential structures
<b>Unit-4</b>	<b>Arrays:</b> concept of arrays: single dimensional, two dimensional, memory representation of arrays
<b>Unit-5</b>	<b>Operations on arrays:</b> searching, traversal, insertion, deletion, concatenation and merging of two arrays
<b>Unit-6</b>	<b>Linked lists:</b> introduction to linked list, dynamic memory allocation, representation of linked lists in memory, traversing a linked list, searching linked list, insertion and deletion into linked list
<b>Unit-7</b>	<b>Doubly linked lists:</b> traversing a doubly linked list, insertion and deletion from doubly linked lists, circular linked list
<b>Unit-8</b>	<b>Introduction to stacks:</b> representation of stacks, implementation of stacks using sequential and linked representation
<b>Unit-9</b>	<b>Introduction to queues:</b> representation of queues, implementation of queues using sequential and linked representation
<b>Unit-10</b>	<b>More on stacks and queues :</b> circular queues, deque, recursion
<b>Unit-11</b>	<b>Trees:</b> concept of trees, representation of binary trees, binary search trees, traversal: recursive and non-recursive, searching, insertion and deletion in binary search trees

<b>Unit-12</b>	<b>Graphs:</b> terminology of graphs, depth first search, breadth first search
<b>Unit-13</b>	<b>Searching:</b> linear and binary search
<b>Unit-14</b>	<b>Sorting:</b> bubble sort, shell sort, insertion sort, selection sort, merge sort, radix sort.

**Laboratory Work:**

Implementation of data structures concepts (arrays, singly linked list, doubly linked list, stacks, queues, binary search tree, depth first search, breadth first search, sorting and searching)

**Text Books:**

1. DATA STRUCTURES by SEYMOUR LIPSCHUTZ, MCGRAW HILL EDUCATION

**References:**

1. DATA STRUCTURES USING C by REEMA THAREJA, OXFORD UNIVERSITY PRESS
2. DATA STRUCTURE USING C by MANOJ KUMAR, EAGLE PRAKASHAN
3. DATA STRUCTURES USING C by E BALAGURUSAMY, Tata McGraw Hill, India  
DATA STRUCTURE AND ALGORITHM USING C by RS SALARIA, KHANNA PUBLISHERS

<b>Course Code</b>	<b>DCAP560</b>	<b>Course Title</b>	<b>OPERATING SYSTEM</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** understand the services and design of an operating system.

**CO2:** experiment with various process management and memory management techniques in Operating System

**CO3:** evaluate the performance of different disk scheduling techniques

**CO4:** visualize the importance of the software development process

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	Introduction to operating system : Introduction, Types of operating systems, System components
<b>Unit-2</b>	Operating system services, System calls, Types of System Calls
<b>Unit-3</b>	Process : Process concept, Process states, Operations on processes
<b>Unit-4</b>	Process Management : Process control block, Context switching, Process scheduling
<b>Unit-5</b>	Interprocess communication, Threads and Multithreading, a case study on Windows/Linux
<b>Unit-6</b>	CPU Scheduling: Introduction, Types of scheduling, Scheduling Criteria.
<b>Unit-7</b>	Scheduling Algorithms, a case study on Windows/Linux
<b>Unit-8</b>	Process Synchronization : Background, Critical section problem, Semaphores, Concept of serializability
<b>Unit-9</b>	Deadlocks : Deadlock Characterization, Methods for handling deadlocks, Deadlock Prevention, Deadlock avoidance, Recovery from Deadlock, a case study on Windows/Linux
<b>Unit-10</b>	Memory Management : logical versus physical address space, Address Binding, Dynamic Loading & Dynamic Linking
<b>Unit-11</b>	Memory Management: Overlays, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging
<b>Unit-12</b>	Memory Management: Page Replacement Algorithms, Allocation of frames, Thrashing, Working-set model, a case study on Windows/Linux
<b>Unit-13</b>	Protection: Introduction, File Access Methods, Access Matrix.
<b>Unit-14</b>	Disk Management : Disk structure, disk scheduling, FCFS scheduling, SSTF scheduling, SCAN scheduling, C-SCAN scheduling, a case study on Windows/Linux

**READINGS:**

1. OPERATING SYSTEMS CONCEPTS BY A SILBERSCHARTZ AND GALVIN, ADDISON-WESLEY
2. OPERATING SYSTEMS CONCEPTS AND DESIGN by MILAN MILANKOVIC, MCGRAW HILL EDUCATION
3. MODERN OPERATING SYSTEM by ANDREW S. TANENBAUM, PRENTICE HALL
4. THE DESIGN OF THE UNIX OPERATING SYSTEM by MAURICE J. BACH, PEARSON
5. BEGINNING LINUX PROGRAMMING by NEIL MATTHEW, WILEY
6. OPERATING SYSTEMS : PRINCIPLES AND DESIGN by CHOUDHURY, PABITRA PAL, PHI Learning Pvt Ltd

<b>Course Code</b>	<b>DCAP509</b>	<b>Course Title</b>	<b>SOFTWARE ENGINEERING</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE (Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** apply theoretical foundation of software engineering in practical software development

**C02:** analyze the need of software maintenance activities

**C03:** discuss the software life cycle models

**C04:** apply software engineering practices to create complex software designs

**C05:** identify the importance of the software development process

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to software engineering:</b> define software engineering, software process, software engineering practices
<b>Unit-2</b>	<b>Software process models:</b> software development life cycle (SDLC), classical software development lifecycle model, prototyping model, V model, incremental Model, introduction to agile method of software development
<b>Unit-3</b>	<b>Requirement engineering:</b> requirement engineering, requirement eliciting/gathering, negotiating requirement, validating requirement, requirement analysis, stakeholder analysis
<b>Unit-4</b>	<b>Software Requirement Specification:</b> software requirement specification document, characteristics of a good SRS, functional and non-functional requirement
<b>Unit-5</b>	<b>Design:</b> design process, design concepts, coupling, cohesion, data flow diagram (DFD), flow chart, architectural design, component-based design, object-oriented design, class-based components, use case diagram, class diagram, activity diagram
<b>Unit-6</b>	<b>User interface design:</b> golden rules, interface design models, interface design process, interface design activities
<b>Unit-7</b>	<b>Standards:</b> good coding practices, coding standards, code reusability, documentation, documentation standards
<b>Unit-8</b>	<b>Software testing:</b> test design, test planning, test case definition, test case template
<b>Unit-9</b>	<b>Testing strategies:</b> black box testing, white box testing, sanity testing, smoke testing
<b>Unit-10</b>	<b>Testing levels:</b> unit testing, integration testing, system testing, acceptance testing, regression testing
<b>Unit-11</b>	<b>Bugs:</b> bug/defect definition, bugs life cycle, bug tracking, bug tracking tool (bugzilla overview)
<b>Unit-12</b>	<b>Software maintenance:</b> software maintenance, software supportability, reengineering, business process reengineering, software reengineering, restructuring, economics of reengineering
<b>Unit-13</b>	<b>Product metrics:</b> measure, metrics and indicators, measurement principles, function-based metrics, metrics for specification quality
<b>Unit-14</b>	<b>Software process improvement:</b> approaches to SPI, maturity models, SPI process

**REFERENCES:**

1. AN INTEGRATED APPROACH TO SOFTWARE ENGINEERING by PANKAJ JALOTE, NAROSA PUBLISHING HOUSE
2. SOFTWARE ENGINEERING: A PRACTITIONER'S APPROACH by ROGER S. PRESSMAN, MCGRAW HILL  
EDUCATION
3. FUNDAMENTALS OF SOFTWARE ENGINEERING by RAJIB MALL, PRENTICE HALL

<b>Course Code</b>	<b>DCAP916</b>	<b>Course Title</b>	<b>FRONT-END WEB UI FRAMEWORKS AND TOOLS</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**CO1** :: associate the front-end web framework

**CO2** :: define applications with front end web frameworks

**CO3** :: reframe the web applications using front-end web framework

**CO4** :: compose programs with HTML and CSS based design templates for typography

<b>Unit No.</b>	<b>Course Contents</b>
<b>Unit-1</b>	<b>Introduction to bootstrap:</b> Introduction to Bootstrap 4 and UI Development
<b>Unit-2</b>	<b>GIT:</b> Configuring GIT, Creating a repository, GIT Basic Commands, Linking GIT with the Cloud Repository, What is a Full Stack developer, Starting a GIT basics project
<b>Unit-3</b>	<b>NodeJS and NPM:</b> Getting Started with NodeJS and NPM, Setting Up Bootstrap, Front-End Frameworks
<b>Unit-4</b>	<b>Responsive Design:</b> Responsive Design, Grid system, Using Flex
<b>Unit-5</b>	<b>Navigation:</b> Navigability, Navigation bar and breadcrumbs
<b>Unit-6</b>	<b>Navigability Elements:</b> Pagination, Labels, Badges, Typographic elements
<b>Unit-7</b>	<b>Bootstrap CSS:</b> Tables, Buttons, Images
<b>Unit-8</b>	<b>Forms:</b> Using Icons and Fonts, Forms, Showing content
<b>Unit-9</b>	<b>Tabs and Pills:</b> Working with tabs and pills
<b>Unit-10</b>	<b>Collapse and Modals:</b> Working with Collapse, Working with accordions, Displaying content with modals
<b>Unit-11</b>	<b>Tooltips:</b> Using tooltips, Using popovers, Working with carousel
<b>Unit-12</b>	<b>JQuery:</b> JQuery Basics, Selectors, Event Handling
<b>Unit-13</b>	<b>SASS:</b> Working with SASS, Working with Less
<b>Unit-14</b>	<b>NPM Scripts:</b> Implementing Tools with NPM Scripts, Grunt, Task Automator, Gulp

**Practical:**

1.	Experiment to configure the GIT and basic GIT commands.
2.	Experiment to implement a basic GIT project.
3.	Experiment to introduce the NodeJS and NPM and configuring the bootstrap.
4.	Experiment to create the responsive designs.
5.	Experiment to work with navigability elements.
6.	Experiment to work with forms and images.
7.	Experiment to work with tabs and pills.
8.	Experiment to work with tooltip, popovers and carousels.
9.	Experiment to work with JQuery and SASS.
10.	Experiment to work with NPM scripts, Grunt, Gulp and Task animator.

**Text Book:**

1. BOOTSTRAP RESPONSIVE WEB DEVELOPMENT by JAKE SPURLOCK, O'REILLY.

**Reference Book:**

1. LEARNING BOOTSTRAP by ARAVIND SHENOY, ULRICH SOSSOU, PACKT PUBLISHING

<b>Course Code</b>	<b>DCAP495</b>	<b>Course Title</b>	<b>WIRELESS AND MOBILE NETWORK</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

<b>Sr. No.</b>	<b>Topics</b>
<b>1.</b>	<b>Introduction to wireless and Mobile Networks :</b> Transmission Fundamentals, Communication Networks, Protocols and the TCP/IP Suite, The Cellular revolution, The global cellular networks
<b>2.</b>	<b>Cellular Wireless Networks :</b> Principles of Cellular Networks, First Generation Analog, Second Generation TDMA, Second Generation CDMA, Third Generation Systems
<b>3.</b>	<b>Modulation Techniques :</b> Signal Encoding, Digital Data Analog Signals, Analog Data Digital Signals, Analog Data Analog Signals
<b>4.</b>	<b>Spectrum Modulation Techniques :</b> Spread Spectrum Modulation, Frequency Hopping Spread Spectrum, CDMA
<b>5.</b>	<b>Multiple Access in Wireless System :</b> Multiple Access Scheme, Frequency Division Multiple Access
<b>6.</b>	<b>Multiple Access Technology :</b> Time Division Multiple Access, Code Division Multiple Access, Space Division Multiple Access
<b>7.</b>	<b>Mobile Adaptive Computing :</b> Mobile Adaptive Computing, Mobility Management, Data Dissemination and Management
<b>8.</b>	<b>Wireless LAN Technology :</b> Overview of LAN, Infrared LANs, Spread Spectrum LANs, Narrowband Microwave LANs
<b>9.</b>	<b>Wi-Fi and IEEE802.11:</b> IEEE 802.11 Architecture and Services, IEEE 802.11 Medium Access Control.
<b>10.</b>	<b>Wireless LAN Standards:</b> IEEE 802.11 Physical Layer, Wi-Fi Protected Access.
<b>11.</b>	<b>Introduction to Mobile Middleware :</b> Middleware for Application Development, Adaptation and Agents, Service Discovery Middleware, Finding Needed Services
<b>12.</b>	<b>Wireless Application Protocol and Mobile IP :</b> Mobile IP395, Wireless Application Protocol, Internet Control Message Protocol, Message Authentication
<b>13.</b>	<b>Wireless Security:</b> Introduction to wireless security and Approaches to Security in wireless system.
<b>14.</b>	<b>Security in Wireless Networks:</b> Security in Wireless Personal Area Network, Security in Wireless Local Area Networks, Security in Wireless Metropolitan Area Networks (802.16), Security in Wide

Text Books:

1. WIRELESS COMMUNICATIONS & NETWORKS by WILLIAM STALLINGS, PEARSON

Reference Books:

1. PRINCIPLES OF WIRELESS NETWORKS by KAVEH PAHLAVAN, PEARSON
2. FUNDAMENTALS OF WIRELESS NETWORKING by RON PRICE, MCGRAW HILL EDUCATION
3. WIRELESS NETWORKS FIRST-STEP by JIM GEIER, CISCO PRESS

<b>Course Code</b>	<b>DCAP917</b>	<b>Course Title</b>	<b>FRONT-END JAVASCRIPT FRAMEWORKS</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**CO1** :: associate client-side Javascript frameworks and the MVC design pattern

**CO2** :: define single page applications in AngularJS for typography

**CO3** :: construct a functional front-end web application using AngularJS

**CO4** :: compose web contents using reusable components

<b>Unit No.</b>	<b>Course Contents</b>
<b>Unit-1</b>	<b>Introduction:</b> what is Angular, architecture, development environment
<b>Unit-2</b>	<b>Angular Projects/Programs:</b> your first Angular app, structure of Angular projects, webpack, promise
<b>Unit-3</b>	<b>TypeScript fundamentals:</b> declaring variables, types, type assertions, arrow functions
<b>Unit-4</b>	<b>Classes and Objects in Angular:</b> interfaces, classes, objects, constructors, access modifiers, access modifiers in constructor parameters, properties, modules
<b>Unit-5</b>	<b>Angular fundamentals:</b> building blocks of angular apps, components, generating components using Angular CLI, templates directives, services, dependency injection
<b>Unit-6</b>	<b>Displaying data and handling events:</b> property binding, attribute binding, adding bootstrap class binding, style binding, template variables, two-way binding, pipes
<b>Unit-7</b>	<b>Directives:</b> commonly used angular directives,
<b>Unit-8</b>	<b>Building re-usable components:</b> component API
<b>Unit-9</b>	<b>Template-driven forms:</b> building a bootstrap form, types of forms, ngModel, adding validation, specific validation errors, styling invalid input fields, cleaner templates ngForm, ngModelGroup
<b>Unit-10</b>	<b>Form Handling in Angular:</b> control classes and directives, disabling the submit button, working with check boxes, working with drop-down lists, working with radio buttons
<b>Unit-11</b>	<b>Consuming HTTP services:</b> JSONPlaceholder, getting data, creating data, updating data deleting data, handling errors
<b>Unit-12</b>	<b>Routing and navigation:</b> routing in a nutshell, configuring routes. routerOutlet,
<b>Unit-13</b>	<b>Authentication and authorization:</b> application overview, architecture, JSON web tokens, starter code. implementing login, implementing logout

**Unit-14****Deployment:** preparing for deployment, deploying to GitHub pages, deploying to firebase

Text Books:

1. LEARNING ANGULARJS A GUIDE TO ANGULARJS DEVELOPMENT by KEN WILLIAMSON, O'REILLY

References:

1. ANGULARJS: UP AND RUNNING- ENHANCED PRODUCTIVITY WITH STRUCTURED WEB APPS by BRAD GREEN, SHYAM SESHADRI, O'REILLY

<b>Course Code</b>	<b>DCAP496</b>	<b>Course Title</b>	<b>CRYPTOGRAPHY AND SECURITY RISK MANAGEMENT</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

C01 :: describe computer and network security fundamental concepts and principles

C02 :: create concepts with different cryptographic algorithms

C03 :: identify the different functionalities in a risk management process

C04 :: understand the different system as well as security attacks

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Computer Security and Privacy</b> : Introduction to security and privacy, Security Threats, assets, vulnerabilities, Software security, User Authentication and its types, Network Security
<b>Unit-2</b>	<b>Introduction to cryptography</b> : Symmetric & asymmetric encryption, Concept of Block Cipher and Stream Cipher
<b>Unit-3</b>	<b>Cryptocurrency</b> : Introduction to cryptocurrency and bitcoin, Decentralization, Mechanics of Bitcoin, Storage and Usage of Bitcoins, Bitcoin mining, Bitcoin anonymity and its future
<b>Unit-4</b>	<b>Introduction to Risk Management</b> : Information security fundamentals, Security design principles, Information security challenges, Risk management and its cycle
<b>Unit-5</b>	<b>Risk Assessment and Analysis Techniques</b> : Risk profiling and formulating, Security services and controls, Risk Assessment techniques
<b>Unit-6</b>	<b>Building and Running a Risk Management Program</b> : Threat and Vulnerability Management, A Blueprint for Security
<b>Unit-7</b>	<b>PUBLIC KEY CRYPTOGRAPHY AND RSA</b> : Principles Public key crypto Systems, Diffie Hellman Key Exchange, RSA algorithm, Key Management, , Elliptic Curve Arithmetic, Elliptic Curve Cryptography
<b>Unit-8</b>	<b>MESSAGE AUTHENTICATION AND HASH FUNCTIONS</b> : Authentication Requirement, Authentication Function, Message Authentication Code, Hash Function, Security of Hash Function and MACs.
<b>Unit-9</b>	<b>DIGITAL SIGNATURE</b> : Digital Signature, Authentication Protocol, Digital Signature Standard.
<b>Unit-10</b>	<b>IP SECURITY</b> : Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management
<b>Unit-11</b>	<b>AUTHENTICATION APPLICATION</b> : Kerberos, X.509 Authentication Service, Public Key Infrastructure.
<b>Unit-12</b>	<b>EMAIL SECURITY</b> : Pretty Good Privacy (PGP) and S/MIME.
<b>Unit-13</b>	<b>WEB SECURITY</b> : Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET), Intruders, Viruses and related threats.
<b>Unit-14</b>	<b>FIREWALL</b> : Firewall Design principles, Trusted Systems.

**Text Books:**

1. CRYPTOGRAPHY AND NETWORK SECURITY: PRINCIPLES AND PRACTICE by WILLIAM STALLINGS, PEARSON
2. SECURITY RISK MANAGEMENT, BUILDING AN INFORMATION SECURITY RISK MANAGEMENT PROGRAM FROM THE GROUND UP by EVAN WHEELER, SYNGRESS (ELSEVIER)

**References:**

1. CRYPTOGRAPHY AND NETWORK SECURITY by ATUL KAHATE, MCGRAW HILL EDUCATION

<b>Course Code</b>	<b>DCAP918</b>	<b>Course Title</b>	<b>MULTIPLATFORM MOBILE APP DEVELOPMENT WITH WEB TECHNOLOGIES</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**CO1** :: develop cross-platform mobile apps for phones and tablets.

**CO2** :: apply web development skills to build apps that are indistinguishable from native iOS or Android projects.

**CO3** :: develop mobile applications targeting multiple platforms with a single codebase.

**CO4** :: analyse the integration of angular and ionic.

<b>Unit No.</b>	<b>Course Contents</b>
<b>Unit-1</b>	<b>Introduction to Ionic course:</b> introduction, what is ionic, look at the ionic platform,
<b>Unit-2</b>	<b>Angular and Ionic:</b> what is angular, our first ionic app
<b>Unit-3</b>	<b>Angular basics module introduction:</b> understanding components, installing Angular with the CLI installing the IDE
<b>Unit-4</b>	<b>Angular Project Structure:</b> understanding the folder structure
<b>Unit-5</b>	<b>Components:</b> the app component, creating our first component
<b>Unit-6</b>	<b>Ionic components:</b> basics module introduction, core app building blocks, Ionic components, setting up a non-angular ionic project,
<b>Unit-7</b>	<b>Ionic Components:</b> basic ionic components, component categories, Ionic grid, adding icons, using slots, CSS utility attributes, Ionic elements,
<b>Unit-8</b>	<b>JavaScript and Ionic:</b> JavaScript logic and layout, controller components
<b>Unit-9</b>	<b>Angular and Ionic:</b> why use angular, creating and analyzing a new ionic angular project, how both works
<b>Unit-10</b>	<b>Additional Angular Features:</b> adding and loading a new page, integrating angular features
<b>Unit-11</b>	Building native apps with capacitor module introduction, general information,
<b>Unit-12</b>	<b>Creating Apps:</b> creating an android / iOS app, wrap up
<b>Unit-13</b>	Debugging error messages & console.log (), browser DevTools & breakpoints,
<b>Unit-14</b>	<b>UI Debugging:</b> debugging the UI & performance debugging android / iOS apps

Text Books:

1. LEARNING IONIC – BUILD REAL TIME AND HYBRID MOBILE APPLICATIONS WITH IONIC by ARVIND RAVULAVARU, PACKT PUBLISHING

References:

1. MOBILE APP DEVELOPMENT WITH IONIC 2 CROSS-PLATFORM APPS WITH IONIC, ANGULAR, AND CORDOVA by CHRIS GRIFFITH, O'REILLY

2. HYBRID MOBILE DEVELOPMENT WITH IONIC - BUILDING HIGHLY INTERACTIVE MOBILE APPS by GAURAV SAINI, PACKT PUBLISHING

<b>Course Code</b>	<b>DCAP497</b>	<b>Course Title</b>	<b>CYBER SECURITY AWARENESS</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**CO1 ::** Utilize the basic knowledge about computer security, basic cyber-attack skills and corresponding detection and defense techniques

**CO2 ::** Identify an in-depth understanding of the root cause of cyber-attacks

**CO3 ::** Identify how to exploit a simple vulnerable service and how to patch a service

<b>Unit No.</b>	<b>Course Contents</b>
<b>Unit-1</b>	<b>Cyber security overview:</b> introduction, security from a global perspective, vulnerability naming schemes, zero-day vulnerabilities, attacks on the power grid and utility networks
<b>Unit-2</b>	<b>Introduction to cyber-crime:</b> classification of cyber-crimes, reasons for commission of cyber-crimes, kinds of cyber-crime, domain name system protection, router security, cyber stalking, forgery and counterfeiting, software piracy and crime related to IPRS, cyber terrorism, phishing, computer vandalism, computer hacking,
<b>Unit-3</b>	<b>Malicious Software:</b> Malware and its types, adware, spyware, browser hijacking software, virus, worms, trojan horse, scareware
<b>Unit-4</b>	<b>Security Design Principles:</b> Fundamental of Security Design principles, Attack surfaces ad attack trees, A model for network security, Various Standards of security
<b>Unit-5</b>	<b>Cyber threats and their defense:</b> email and phishing defensive measures, web-based attacks, database protection, botnet defensive measures
<b>Unit-6</b>	<b>Cyber Attacks:</b> Creating and distributing viruses over internet, spamming, cross site scripting, online auction fraud, cyber-squatting, logic bombs, web jacking, internet time thefts, denial of service attack, salami attack, data diddling, email spoofing
<b>Unit-7</b>	<b>Vulnerabilities and exploitation:</b> techniques to gain a foothold, web exploit tools, social engineering, DNS amplification attack
<b>Unit-8</b>	<b>User Authentication:</b> electronic user authentication principles, password-based authentication, token-based authentication, biometric authentication, remote user authentication, authentication with hash, encryption, antivirus, steganography
<b>Unit-9</b>	<b>Digital Signatures:</b> Model of Digital Signature, importance of digital signature, Encryption with Digital Signature,
<b>Unit-10</b>	<b>Safe Browsing Guidelines:</b> Safe browsing guidelines for social networking sites, general tips on using social networking platforms safely, posting personal details, friends, followers and contacts, status updates, sharing online content, revealing your location, sharing videos and photos, instant chats, joining and creating groups, events and communities, email security tips
<b>Unit-11</b>	<b>Securing Passwords:</b> Generating secure password, guideline for setting secure password using password manager, what is a password manager? Why you should use it? How does it work? Some popular password managers. enabling two-step verification, securing

	computer using free antivirus
<b>Unit-12</b>	<b>Firewalls:</b> introduction to firewalls, stateless packet filtering vs stateful packet filtering, gateways and its applications, types of firewall, architecture of firewall, emerging firewall technology, design principles, characteristics, configuration
<b>Unit-13</b>	<b>Fundamentals of cryptography:</b> introduction to cryptography and its importance, block ciphers vs stream ciphers, public key cryptography characteristics
<b>Unit-14</b>	<b>Intrusion detection/prevention system:</b> introduction, types of intrusion detection, honeypots, detection of polymorphic worms, distributed intrusion detection system and standards

Text Books:

1. INTRODUCTION TO COMPUTER NETWORKS AND CYBERSECURITY by CHWAN-HWA (JOHN) WU, J. DAVID IRWIN, CRC PRESS

References:

1. CYBER SECURITY ESSENTIALS by JAMES GRAHAM, RYAN OLSON, RICK HOWARD, CRC PRESS
2. NETWORK SECURITY ESSENTIALS (APPLICATION AND STANDARDS) by WILLIAM STALLINGS, PEARSON

<b>Course Code</b>	<b>DCAP919</b>	<b>Course Title</b>	<b>SERVER SIDE DEVELOPMENT WITH NODE.JS</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**C01:** write and launch Node apps

**C02:** construct Express web servers and APIs

**C03:** integrate Node apps with Mongoose and MongoDB

**C04:** demonstrate deployment of Node apps to production

<b>Unit No.</b>	<b>Course Contents</b>
<b>Unit-1</b>	<b>Getting setup:</b> Installing Node, what is Node, why should I use Node, installing Atom, Hello World example.
<b>Unit-2</b>	<b>Node.js Fundamentals:</b> using require, requiring your own files, using 3rd party modules
<b>Unit-3</b>	<b>Introduction to nodemon and its use:</b> restarting app with Nodemon, getting input from user, simplified input with Yargs.
<b>Unit-4</b>	<b>Working with JSON:</b> introduction to JSON and reading and writing contents with JSON files
<b>Unit-5</b>	<b>Note App:</b> adding and saving notes, refactoring for reusability, removing a note, reading notes and reusability
<b>Unit-6</b>	<b>Debugging node.js applications:</b> debugging node.js applications, debugging via chrome dev tools, listing notes
<b>Unit-7</b>	<b>Concepts of advanced Yargs:</b> requiring arguments and advanced Yargs, arrow functions.
<b>Unit-8</b>	<b>Web Servers:</b> hello express, creating a web server, rendering templates with data,
<b>Unit-9</b>	<b>Concepts of GitHub:</b> advanced templating, express middleware, adding version control (git), setting up GitHub & SSH key.
<b>Unit-10</b>	<b>Application Deployment:</b> deploying your apps, adding a new feature and deploying.
<b>Unit-11</b>	<b>Concept of MongoDB :</b> MongoDB, Mongoose, and REST APIs: installing MongoDB and RoboMongo (windows)
<b>Unit-12</b>	<b>Building a NoSQL vocabulary:</b> building a NoSQL vocabulary
<b>Unit-13</b>	<b>Data writing using MongoDB:</b> connecting to Mongo and writing data, the ObjectId, fetching data, setting up the repo, deleting documents, updating data

<b>Unit-14</b>	<b>Mongoose setup:</b> the Mongoose ORM, setting up mongoose, validators, types and defaults, installing postman.
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**Text Books:**

1. NODE.JS IN PRACTICE by ALEX YOUNG, MARC HARTER, BEN NOORDHUIS, WILEY

**References:**

1. WEB DEVELOPMENT WITH MONGODB AND NODE.JS by JASON KROL, PACKT PUBLISHING, PACKT PUBLISHING
2. WEB DEVELOPMENT WITH NODE AND EXPRESS by TODD BROWN, O'REILLY

<b>Course Code</b>	<b>DCAP498</b>	<b>Course Title</b>	<b>DIGITAL FORENSIC</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**C01** :: analyze and conduct digital investigations that confirms to accepted professional standards.

**C02** :: identify potential security breaches of computer data that suggest violations of legal, ethical, moral, policy and/or societal standards

**C03** :: review and access relevant technical and legal information and emerging industry trends

**C04** :: apply a solid foundation in file systems, hardware and mobile devices for digital investigation of information resources from unauthorized activities.

<b>Unit No.</b>	<b>Course Contents</b>
<b>Unit-1</b>	Key technical concepts: Bits, bytes, numbering system, file extensions, data types
<b>Unit-2</b>	Memory concepts: Storage and memory concepts, computing environment, file systems
<b>Unit-3</b>	Introduction to Digital Forensics: introduction, need and uses of digital forensics, scope of digital forensics
<b>Unit-4</b>	Role of forensic examiner: Role of forensic examiner in judicial system, Lockard's Exchange Principle, Documenting Crime Scene
<b>Unit-5</b>	Collecting evidence: Crime Scenes and Evidence, various digital forensic tools, Disk Clonin
<b>Unit-6</b>	Crime scene investigation: Chain of Custody, Live System Versus Dead System, Hashing
<b>Unit-7</b>	Challenges and concerns of Digital Forensic: Standards and controls, Cloud Forensics, Solid State Drives
<b>Unit-8</b>	Windows System Artifacts: Deleted Data, Hibernation File, Registry, Print Spooling, Metadata, Restore Points and Shadow Copy concept, Link Files
<b>Unit-9</b>	Antiforensics: Hiding Data, Passwords Attacks, Steganography, Data Destruction
<b>Unit-10</b>	Legal Aspects in Forensics: Electronic Discovery, Searches with warrants, Expert Testimony, Searches without warrants
<b>Unit-11</b>	Internet and Email Forensics: Functioning of internet, Role of Web Browser in Digital Forensics, Email Forensics

<b>Unit-12</b>	Social media as evidence in digital forensics: Role of social networking sites in Digital Forensics, various criminal techniques
<b>Unit-13</b>	Network Forensics: Network Security Tools, Incident Response in Networks, Network Evidences and Investigation
<b>Unit-14</b>	Mobile Device Forensics: Cell Phone Evidence, Cell Phone Forensics Tools, Global Positioning System (GPS)

References:

1. The basics of digital forensics: the primer for getting started in digital forensics by John Sammons, Syngress (Elsevier)
2. Digital forensics and incident response by Gerard Johansen, Packt publishing

<b>Course Code</b>	<b>DPEA204</b>	<b>Course Title</b>	<b>ANALYTICAL SKILLS</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE (Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** apply the basic concepts of reasoning and quantitative aptitude

**C02:** apply the learned concepts to solve the company specific reasoning and quantitative aptitude tests

**C03:** analyze the problem and use logic to interpret and handle different situations

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Number system:</b> Types of numbers, rules of divisibility, multiplicity and squaring of numbers, HCF and LCM of numbers
<b>Unit-2</b>	<b>Average:</b> Average of numbers, Arithmetic Mean, Real life examples of average, Application based questions
<b>Unit-3</b>	<b>Number series:</b> Series Completion, Analogy, Classification
<b>Unit-4</b>	<b>Alphabet series:</b> Series Completion, Analogy, Classification
<b>Unit-5</b>	<b>Coding-Decoding:</b> Letter Coding, Direct Letter Coding, Number / Symbol Coding, deciphering message word codes, number and symbol codes for messages
<b>Unit-6</b>	<b>Percentage:</b> Concept of Percentage, Comparison based questions, Application based questions
<b>Unit-7</b>	<b>Profit and Loss:</b> Profit or Loss, Cost price, Selling price, Calculation of profit and loss percent, Application based questions, conceptual formulae
<b>Unit-8</b>	<b>Simple interest:</b> concept of simple interest, general formulas, application based questions
<b>Unit-9</b>	<b>Compound interest:</b> basic concepts and formula based questions, difference between simple interest and compound interest
<b>Unit-10</b>	<b>Alphabet Test:</b> Alphabetical order of words, Letter-word problems, Word formation by unscrambling letters
<b>Unit-11</b>	<b>Number Test:</b> Number Test, Position switching of numbers
<b>Unit-12</b>	<b>Ranking and Time Sequence Test:</b> Ranking Test, Time Sequence Test
<b>Unit-13</b>	<b>Direction Sense Test :</b> direction puzzle, sense the directions correctly
<b>Unit-14</b>	<b>Blood Relation :</b> Coded Relations, relation based puzzle

**READINGS:**

1. A MODERN APPROACH TO NON-VERBAL REASONING by R S AGGARWAL, S Chand Publishing
2. QUANTITATIVE APTITUDE FOR COMPETITIVE EXAMINATIONS by R S AGGARWAL, S Chand Publishing
3. QUANTITATIVE APTITUDE by ABHIJIT GUHA, Tata McGraw Hill, India

<b>Course Code</b>	<b>DCAP392</b>	<b>Course Title</b>	<b>Fundamentals of Java Programming</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes: Through this course students should be able to**

**CO 1:** Perceive the importance of using object-oriented programming concepts in Java.

**CO 2:** Understand the accessibility of fields and methods of an object and use of String and StringBuilder classes

**CO3:** Develop the user defined exceptions to control unexpected situations.

**CO4:** Facilitate the input and output operations on file.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction:</b> introduction to object-oriented programming, features of Java Language, java classes, objects, the main method, access control
<b>Unit-2</b>	<b>Methods:</b> defining fields and methods, method arguments and return values, declaring, instantiating and initializing objects, variables and its types, control flow constructs.
<b>Unit-3</b>	<b>Encapsulation &amp; Polymorphism:</b> encapsulation, polymorphism, overloading a method
<b>Unit-4</b>	<b>Constructors:</b> constructors & its types, overloading constructor, static methods and variables
<b>Unit-5</b>	<b>String manipulations:</b> working with strings: String, String Buffer and String Builder classes.
<b>Unit-6</b>	<b>Inheritance &amp; Interfaces:</b> overview of inheritance, working with subclasses and super classes, overriding methods in the super class.
<b>Unit-7</b>	<b>More on Inheritance:</b> Creating and extending abstract classes, using Interfaces
<b>Unit-8</b>	<b>Nested classes:</b> nested classes, inner classes, wrapper classes
<b>Unit-9</b>	<b>Packages:</b> built in packages in Java, user defined packages,
<b>Unit-10</b>	<b>More on Packages:</b> creating and importing packages, adding classes to packages, introduction to Java API
<b>Unit-11</b>	<b>Exception Handling:</b> introduction to exception, built in and user defined exceptions, catching and throwing exceptions
<b>Unit-12</b>	<b>More on Exception handling:</b> propagation of exceptions handling multiple exceptions, throws vs throw.
<b>Unit-13</b>	<b>File handling:</b> basics of input and output in Java, stream classes, read and write data from the console
<b>Unit-14</b>	<b>More on File Handling:</b> file stream classes, using streams to read and write files, random access file.

**Laboratory Work:**

Implementation of Java Programming Concepts (Classes and objects, constructor, method overloading, string manipulations, inheritance, exception handling and working with files)

**Text Books:**

1. Programming with JAVA by E. Balagurusamy, Mc Graw Hill publication

**Reference Books:**

1. JAVA: The Complete Reference by Herbert Schildt, Mcgraw Hill Education
2. Core Java: An Integrated Approach by Dr. R. Nageswara Rao, Dreamtech press publication

<b>Course Code</b>	<b>DCAP460</b>	<b>Course Title</b>	<b>FUNDAMENTALS OF PYTHON</b>
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<b>WEIGHTAGE</b>		
<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes: Through this course students should be able to**

**CO1 ::** understand the properties and applications of python programming language

**CO2 ::** apply programming constructs of python to develop programs

**CO3 ::** implement the input and output operations on files

**CO4 ::** analyse real-life situation specific problems and perceive solutions

<b>Unit No.</b>	<b>Topics</b>
<b>Unit-1</b>	<b>Introduction to python:</b> installation and setting up path, working with python, basic syntax
<b>Unit-2</b>	<b>Python basics:</b> understanding python variables, understanding python blocks, applications of python
<b>Unit-3</b>	<b>Data types and operators:</b> declaring and using numeric data types: int, float, complex, use of string data type, use of tuple data type, python basic operators
<b>Unit-4</b>	<b>Program flow control:</b> conditional blocks using if, else and elif, simple for loops in python
<b>Unit-5</b>	<b>Program flow control:</b> use of while loops in python, loop manipulation using pass, continue, break and else
<b>Unit-6</b>	<b>Handling strings:</b> accessing strings, string length, string traversal, string comparison, find function, for loop using string
<b>Unit-7</b>	<b>Lists:</b> accessing lists, operations, slices, deletion, for loop using list
<b>Unit-8</b>	<b>Tuples:</b> accessing tuples, operations, working, functions and methods
<b>Unit-9</b>	<b>Sets:</b> access set items, add set items, remove set items, set methods
<b>Unit-10</b>	<b>Dictionaries:</b> accessing values in dictionaries, working with dictionaries, properties, functions, for loop using dictionaries
<b>Unit-11</b>	<b>Functions:</b> defining a function, calling a function, types of functions, function arguments
<b>Unit-12</b>	<b>Text files:</b> printing on screen, reading data from keyboard, opening and closing file, reading and writing files

<b>Unit-13</b>	<b>Classes and objects:</b> creating classes, creating instance objects, accessing attributes
<b>Unit-14</b>	<b>OOP features:</b> overview of OOP Terminology, constructor

**Laboratory Work:**

Implementation of Java Programming Concepts (Classes and objects, constructor, method overloading, string manipulations, inheritance, exception handling and working with files)

**Text Books:**

1. Programming with JAVA by E. Balagurusamy, Mc Graw Hill publication

**Reference Books:**

1. JAVA: The Complete Reference by Herbert Schildt, Mcgraw Hill Education
2. Core Java: An Integrated Approach by Dr. R. Nageswara Rao, Dreamtech press publication

<b>Course Code</b>	<b>DCAP512</b>	<b>Course Title</b>	<b>OPEN SOURCE WEB APPLICATION DEVELOPMENT</b>
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<b>CA</b>	<b>ETE(Th.)</b>	<b>ETE (Pr.)</b>
<b>30</b>	<b>40</b>	<b>30</b>

**Course Outcomes:**

**C01:** develop dynamic web applications using PHP

**C02:** apply database concepts for effectively manage data using server site script

**C03:** summarize the different aspects of server site and client site scripts

**C04:** apply the parsing technique to read data from other sources

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>My SQL:</b> current and future versions of mysql, installing mysql. basic security guidelines. privilege system and working with user privileges
<b>Unit-2</b>	<b>Apache Server:</b> versions of apache. choosing appropriate installation method. installing on windows. apache configuration file structure. apache log file. starting apache for first time
<b>Unit-3</b>	<b>PHP:</b> versions of php. installation of php. php.ini basics. testing installation
<b>Unit-4</b>	<b>Building Blocks of PHP:</b> variables, data types, operators & expressions, constants, switching flow, loops, code blocks and browser output
<b>Unit-5</b>	<b>Functions:</b> meaning, calling, dEFINing a function. return value from user-dEFINed function. saving state with 'static' function. testing for existence of function
<b>Unit-6</b>	<b>Arrays:</b> what are arrays, creating arrays, array related functions
<b>Unit-7</b>	<b>Objects:</b> creating an object. object inheritance
<b>Unit-8</b>	<b>Working with String, Dates &amp; Time:</b> formatting string with php. using date and time functions with php. other string, date/time functions
<b>Unit-9</b>	<b>Forms:</b> creating simple input form. accessing form input with user dEFINed arrays, html and php code on a single page. using hidden fields to save state. redirecting user. working with file upload
<b>Unit-10</b>	<b>Cookies:</b> introducing cookies, setting cookies, deleting cookies with php, session function overview, starting session, working with session variables. destroying sessions and unsetting variables
<b>Unit-11</b>	<b>Files and Directories:</b> include files with include(). validating files. creating files, deleting files, opening a file for reading, writing, appending

<b>Unit-12</b>	<b>Images:</b> understanding image creation process, necessary modifications to php, drawing a new image, modifying existing images, image creation from user input
<b>Unit-13</b>	<b>Stored Procedures:</b> what are transactions, what are stored procedures
<b>Unit-14</b>	<b>Connecting to MySQL with PHP:</b> working with mysql data

**READINGS:**

2. TEACH YOURSELF PHP, MYSQL & APACHE, BY: MELONI, PEARSON EDUCATION
3. OPEN SOURCE DEVELOPMENT WITH LAMP: USING LINUX, APACHE, MYSQL, PERL & PHP BY: JAMES LEE, PEARSON EDUCATION
4. PHP: A BEGINNER'S GUIDE BY: VASWANI, VIKRAM, BY: TATA MC-GRAW HILL

<b>Course Code</b>	<b>DACC105</b>	<b>Course Title</b>	<b>FINANCIAL ACCOUNTING</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** compare the importance of Generally Accepted Accounting Principles in relation to IFRS

**C02:** analyze transactions in accounting and compute the value of assets

**C03:** prepare financial statements in accordance with appropriate standards

**C04:** solve the problems related to hire purchase and dissolution of partnership

**C05:** describe the main elements of branch accounting

**C06:** record the business transactions in various types of vouchers using accounting software and generating accounting reports.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to accounting-</b> accounting as an information system, users of financial accounting information, need of financial information, qualitative characteristics, advantages and limitations of accounting, branches of accounting, cash basis and accrual basis of accounting.
<b>Unit-2</b>	<b>Accounting principles-</b> nature of financial accounting principles – Basic concepts and conventions: entity, money measurement, going concern, cost, realization, accruals, periodicity, consistency, prudence (conservatism), materiality and full disclosures.
<b>Unit-3</b>	<b>Business Income-</b> measurement of business income-net income: the accounting period, the continuity doctrine and matching concept, objectives of measurement, revenue recognition, recognition of expenses.
<b>Unit-4</b>	<b>Financial accounting standards-</b> concept, benefits, procedure for issuing accounting standards in India, salient features of First-Time Adoption of Indian Accounting Standard (Ind-AS) 101, International Financial Reporting Standards (IFRS): - Need and procedures.
<b>Unit-5</b>	<b>Accounting Process-</b> recording of a business transaction in journal, ledger posting, preparation of trial balance including adjustments.
<b>Unit-6</b>	<b>Depreciation accounting-</b> concept of depreciation, factors in the measurement of depreciation, methods of computing depreciation: straight line method and diminishing balance method.
<b>Unit-7</b>	<b>Inventory Valuation-</b> meaning, significance of inventory valuation, inventory record systems-periodic and perpetual, methods: FIFO, LIFO and Weighted Average and salient features of IND AS2.
<b>Unit-8</b>	<b>Final Accounts-</b> conceptual framework of capital and revenue expenditures and receipts, preparation of financial statements of non-corporate business entities.
<b>Unit-9</b>	<b>Dissolution of Partnership Firm-</b> accounting of dissolution of the partnership firm including insolvency of partners, sale to a limited company and piecemeal distribution
<b>Unit-10</b>	<b>Accounting for Hire-Purchase and Installment Systems-</b> Journal entries and ledger

	accounts in the books of hire vendors and hire purchaser for large value items including default and repossession.
<b>Unit-11</b>	<b>Branch accounting 1-</b> concept of dependent branches, accounting aspects, debtors system, stock and debtors system, branch final accounts system and whole sale basis system,
<b>Unit-12</b>	<b>Branch accounting 2-</b> independent branches, concept and accounting treatment and preparation of consolidated profit and loss account and balance sheet.
<b>Unit-13</b>	<b>Computerized Accounting Systems 1-</b> computerized accounts by using any popular accounting software, creating a company, configure and features settings
<b>Unit-14</b>	<b>Computerized Accounting Systems 2-</b> creating accounting ledgers and groups, creating stock items and groups, vouchers entry, generating reports, selecting and shutting a company.

### READINGS:

1. Charles T. Horngren and Donna Philbrick, Introduction to Financial Accounting, Pearson Education.
2. Financial Accounting by P.C. Tulsian, Pearson
3. Financial Accounting by Hanif and Mukherjee, MCgraw Hill Education
4. Advanced Accountancy by S.N. Maheshwari and S.K. Maheshwari, Vikas Publishing House

<b>Course Code</b>	<b>DBSL101</b>	<b>Course Title</b>	<b>BUSINESS LAW</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** apply the statutory provisions related to Contract Act in business organisations.

**CO2:** apply the statutory provisions related to Sales of Goods Act in business enterprises.

**CO3:** develop understanding of the various provisions related to Limited Liability Partnership Act.

**CO4:** analyze the legal issues related to Negotiable Instruments.

**CO5:** apply statutory provisions related to IPR laws and Consumer Protection Act.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	The Indian Contract Act , 1872: meaning and essentials of contract, kinds of contract, offer and acceptance
<b>Unit-2</b>	The Indian Contract Act , 1872: free Consent, consideration
<b>Unit-3</b>	The Indian Contract Act , 1872: contractual capacity, performance of contract
<b>Unit-4</b>	The Indian Contract Act , 1872: discharge of contract, remedies for breach of contract
<b>Unit-5</b>	Special Contracts: contingent contract, quasi contract, contract of indemnity and guarantee
<b>Unit-6</b>	Special Contracts: contract of bailment, contract of agency
<b>Unit-7</b>	The Sale of Goods Act, 1930: meaning of contract of sale, sale and agreement to sell, transfer of property in goods including sale by a non-owner
<b>Unit-8</b>	The Sale of Goods Act, 1930: meaning and types of conditions, meaning and types warranties
<b>Unit-9</b>	The Sale of Goods Act, 1930: doctrine of caveat emptor, unpaid seller and his rights
<b>Unit-10</b>	Limited Liability Partnership Act, 2008: meaning and essential features of LLP, incorporation of LLP, types of partners, relationship of partners, difference between partnership, Company and LLP
<b>Unit-11</b>	Consumer protection Act, 1986: meaning and definitions, procedure of lodging a complaint, redressal machinery under the act
<b>Unit-12</b>	Negotiable Instruments Act, 1881: meaning and characteristics of negotiable instruments, classification of negotiable instruments, comparison between promissory note, bill of exchange and cheque
<b>Unit-13</b>	Negotiable Instruments Act, 1881: meaning and comparison of holder and holder in due course, privileges of holder in due course, types of endorsements, crossing of cheque, bouncing of cheque
<b>Unit-14</b>	Intellectual property rights: patents, copyrights and trademarks, requirements and procedure for filing a patent, intellectual property infringement

## **READINGS:**

1. A TEXT BOOK OF MERCANTILE LAW by P.P.S. GOGNA, S. CHAND & COMPANY
2. ELEMENTS OF MERCANTILE LAW by N.D. KAPOOR, S. CHAND & COMPANY
3. A MANUAL OF BUSINESS LAWS by S.N MAHESHWARI, S.K. MAHESHWARI, 4.IMALAYA PUBLISHING HOUSE PVT. LTD
5. MERCANTILE LAW by S S GULSAN, EXCEL BOOKS
6. MERCANTILE LAW by M C KUCHCHAL, VIKAS PUBLISHING HOUSE
7. LEGAL ASPECTS OF BUSINESS by DANIEL ALBUQUERQUE, OXFORD & IBH

<b>Course Code</b>	<b>DMGN101</b>	<b>Course Title</b>	<b>BUSINESS ORGANIZATION AND MANAGEMENT</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** enumerate the concept of business organization

**C02:** analyze the significance of management functions and important organizational behaviour elements at different levels of organization

**C03:** develop and sharpen understanding of how different management approaches can be used to enhance organization effectiveness

**C04:** integrate skills to align individual and organizational objectives

**C05:** assess the application of management theories in real life decision making

**C06:** evaluate the managerial issues in different functional areas of organization

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Foundation of Indian business</b> : small and medium enterprises, problems and government policy, India's experience of liberalization and globalization, technological innovations and skill development, make in India movement, social responsibility and ethics, emerging opportunities in business, franchising, outsourcing, and e-commerce
<b>Unit-2</b>	<b>Business enterprises</b> : limited liability partnership, choice of form of organization, forms of business organization, sole proprietorship, joint Hindu family firm, partnership firm, joint stock company, cooperative society, government - business interface, rationale and forms of public enterprises, international business, multinational corporations
<b>Unit-3</b>	<b>Management and organization</b> : the process of management: planning, organizing- basic considerations, departmentation, functional, project, matrix and network, delegation and decentralization of authority, groups and teams
<b>Unit-4</b>	<b>Decision making and control system:</b> decision making process and strategy formulation, control concept and process
<b>Unit-5</b>	<b>Leadership:</b> leadership concept and styles, trait and situational theory of leadership
<b>Unit-6</b>	<b>Motivation:</b> motivation concept and importance, Maslow need hierarchy theory, Herzberg two factors theory
<b>Unit-7</b>	<b>Communication:</b> communication process and communication barriers in an organization
<b>Unit-8</b>	<b>Functional area of marketing management:</b> marketing management marketing concept, marketing mix product life cycle, pricing policies and practices
<b>Unit-9</b>	<b>Functional area of financial management:</b> financial management concept and objectives, sources of funds equity shares debentures venture capital and lease finance, securities market role of SEBI
<b>Unit-10</b>	<b>Functional area of human resources management:</b> human resource management concept and functions, basic dynamics of employer employee relations
<b>Unit-11</b>	<b>Organizational culture:</b> characteristics and functions of organizational culture, types

	and levels of organizational culture, dimensions and elements of organizational culture, creating and sustaining organizational culture
<b>Unit-12</b>	<b>Organizational change:</b> concepts and process of change, managing resistance to change
<b>Unit-13</b>	<b>Conflict management:</b> functional and dysfunctional conflict, levels and process of conflict, conflict resolution and management styles
<b>Unit-14</b>	<b>Stress management:</b> stress and stress symptoms, types and causes of stress, managing stress

### READINGS:

1. ESSENTIALS OF MANAGEMENT by KOONTZ AND WEIHRICH, Tata McGraw Hill, India
2. BUSINESS ORGANIZATION AND MANAGEMENT, C.B GUPTA, SULTANCHAND AND SONS
3. BUSINESS ORGANISATION AND MANAGEMENT by CR BASU, Tata McGraw Hill, India

<b>Course Code</b>	<b>DMKT201</b>	<b>Course Title</b>	<b>PRINCIPLES OF MARKETING</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

- CO1:** enumerate the concepts of marketing and adopting the marketing concepts in different business scenarios
- CO2:** describe the dynamic nature of the environment and enhance ability to apply marketing models and theories for taking better and informed marketing decisions
- CO3:** analyse various situations and decisions involving segmentation, targeting and positioning; decisions involving price and marketing communications
- CO4:** apply the knowledge, concepts, tools necessary to understand challenges and issues of marketing in a growing international and global context

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Marketing management today:</b> Marketing scope and concept, evolution of marketing, selling vs marketing, marketing process and marketing mix
<b>Unit-2</b>	<b>The marketing environment:</b> Analyzing the marketing environment, customer lifecycle and its stages, customer acquisition and retention and competitive analysis
<b>Unit-3</b>	<b>Market planning and research:</b> Approaches to market planning and its process, marketing research process and marketing information system
<b>Unit-4</b>	<b>Buying behaviour:</b> Consumer markets and consumer buyer Behaviour, business markets and business buyer Behaviour
<b>Unit-5</b>	<b>Segmentation and targeting:</b> Market segmentation, targeting and positioning, market measurement and demand forecasting
<b>Unit-6</b>	<b>Product management:</b> Managing product, product differentiation and positioning, new product development and product life cycle
<b>Unit-7</b>	<b>Brand management:</b> Managing brands and brand equity
<b>Unit-8</b>	<b>Pricing decisions:</b> Meaning and significance of price, factors influencing pricing, pricing methods and pricing strategies
<b>Unit-9</b>	<b>Distribution management:</b> Physical distribution and marketing logistics, marketing channels, creating and managing dealer network, retailing and wholesaling
<b>Unit-10</b>	<b>Integrated marketing communication:</b> sales promotions, advertising, public relations, sales management, personal selling, direct marketing and digital marketing
<b>Unit-11</b>	<b>Customer relationship management:</b> Marketing strategy, customer service and customer relationship management process
<b>Unit-12</b>	<b>Creating sustainable competitive value and growth:</b> Marketing organization, marketing performance and control
<b>Unit-13</b>	<b>Broadening horizons:</b> Services Marketing, rural marketing and retail management
<b>Unit-14</b>	<b>Contemporary issues in marketing:</b> Sustainable marketing, social responsibility, marketing ethics and global marketing strategies for Indian firms

**READINGS:**

1. **MARKETING MANAGEMENT** by PHILIP KOTLER AND KEVIN LANE KELLER, Pearson Education India
2. **MARKETING MANAGEMENT** by RAJAN SAXENA, Mc Graw Hill Education
3. **MARKETING MANAGEMENT INDIAN CONTEXT GLOBAL PERSPECTIVE** by V.S. RAMASWAMY AND S. NAMAKUMARI, SAGE PUBLICATIONS

<b>Course Code</b>	<b>DENG112</b>	<b>Course Title</b>	<b>INDIAN WRITING IN ENGLISH</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

### Course Outcomes:

**C01:** employ an insight about the oeuvre of Indian writers

**C02:** compare the historical context in which these texts were written

**C03:** illustrate the various writing dimensions of Indian writers

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Nissim Ezekiel:</b> <i>Night of the Scorpion</i> : Ezekiel's position in Indian poetry, Ezekiel's contribution in Post - Colonial writings, major thematic concerns, rural versus urban India
<b>Unit-2</b>	<b>Nissim Ezekiel:</b> <i>Goodbye Party for Miss Pushpa T.S.</i> : poetic craftsmanship, symbolism and imagery, major thematic concerns
<b>Unit-3</b>	<b>R. K. Narayan:</b> <i>Swami and Friends</i> : Narayan as one of the leading figures of Indian Literature in English
<b>Unit-4</b>	<b>R. K. Narayan:</b> <i>Swami and Friends</i> : the friction of British Colonial India
<b>Unit-5</b>	<b>R. K. Narayan:</b> <i>Swami and Friends</i> : irony and humour of childhood, the evolution of self, the portraiture of adolescence
<b>Unit-6</b>	<b><i>Train to Pakistan</i></b> : the trauma of partition as faced by the Indian subcontinent
<b>Unit-7</b>	<b><i>Train to Pakistan</i></b> : the intermingling of history and literature, third-person narrative
<b>Unit-8</b>	<b><i>Train to Pakistan</i></b> : social structure and cultural understanding, character-analysis
<b>Unit-9</b>	<b>Mulk Raj Anand:</b> <i>Untouchable</i> : plot, characterization, themes, narrative technique
<b>Unit-10</b>	<b>Mulk Raj Anand:</b> themes, narrative technique
<b>Unit-11</b>	<b>Kiran Desai:</b> <i>The Inheritance of Loss</i> : plot, characterization
<b>Unit-12</b>	<b>Kiran Desai:</b> <i>The Inheritance of Loss</i> : themes, narrative technique
<b>Unit-13</b>	<b>Meenakshi Mukherjee:</b> <i>The Perishable Empire</i> : Essays on Indian Writing in English (Select Sections) : the Indian imagination in English, historical, social and literary reasons for growth of Indian Writing, emergence of novel in the sub-continent, post-colonial and post-modernist tendencies in (later) Indian Writing in English
<b>Unit-14</b>	<b>Meenakshi Mukherjee:</b> <i>The Perishable Empire</i> : Essays on Indian Writing in English (Select Sections): emergence of novel in the sub-continent, post-colonial and post-modernist tendencies in (later) Indian Writing in English

### READINGS:

1. THE INHERITANCE OF LOSS by KIRAN DESAI, PENGUIN BOOKS INDIA
2. UNTOUCHABLE by MULK RAJ ANAND, PENGUIN BOOKS INDIA

<b>Course Code</b>	<b>DMTH137</b>	<b>Course Title</b>	<b>CALCULUS</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** assimilate the notions of limit of a sequence and convergence of a series of real numbers

**C02:** describe the limit and examine the continuity of a function at a point

**C03:** understand the concept of various mean value theorems

**C04:** demonstrate tracing of curves in Cartesian and polar coordinate systems

**C05:** apply derivative tests in optimization problems appearing in social sciences, physical sciences, life sciences and a host of other disciplines

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	Real numbers, Sequences of real numbers, Convergence of sequences and series, Bounded and monotonic sequences
<b>Unit-2</b>	Definite integral as a limit of sum, Integration of irrational algebraic functions and transcendental functions
<b>Unit-3</b>	Reduction formulae, Definite integrals
<b>Unit-4</b>	Epsilon-delta definition of limit of a real valued function, Limit at infinity and infinite limits
<b>Unit-5</b>	Continuity of a real valued function, Properties of continuous functions, Intermediate value theorem, Geometrical interpretation of continuity, Types of discontinuity, uniform continuity
<b>Unit-6</b>	Differentiability of a real valued function, Geometrical interpretation of differentiability, Relation between differentiability and continuity, Differentiability and monotonicity
<b>Unit-7</b>	Chain rule of differentiation; Darboux's theorem, Rolle's theorem
<b>Unit-8</b>	Lagrange's mean value theorem, Cauchy's mean value theorem and their geometrical interpretations
<b>Unit-9</b>	Successive differentiation and Leibnitz theorem
<b>Unit-10</b>	Maclaurin's and Taylor's theorems for expansion of a function, Taylor's theorem in finite form with Lagrange, Cauchy forms of remainder
<b>Unit-11</b>	Maxima and minima of a function
<b>Unit-12</b>	Curvature, Asymptotes of general algebraic curves, Parallel asymptotes, Oblique Asymptotes
<b>Unit-13</b>	Symmetry, Concavity and convexity, Points of inflection, Tangents at origin, Multiple points, Position and nature of double points
<b>Unit-14</b>	Tracing of Cartesian, polar and parametric curves

**READINGS:**

- George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). Thomas' Calculus (14th edition). Pearson Education.
- Howard Anton, I. Bivens & Stephan Davis (2016). Calculus (10th edition). Wiley India.

3. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith (2011). Calculus (3rd edition).

<b>Course Code</b>	<b>DACC204</b>	<b>Course Title</b>	<b>COST ACCOUNTING</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** understand various cost concepts and costing techniques

**C02:** classify various techniques of inventory control and methods of pricing material issues.

**C03:** analyze cost accounting techniques to evaluate and project business performance.

**C04:** analyze various managerial issues based on cost information.

**C05:** describe and recognize the peculiarities involved in the costing of service sector

**C06:** use the various cost accounting techniques in rational decision making.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to cost accounting:</b> importance, objectives and advantages of cost accounting, limitations, difference between cost accounting and financial accounting, cost centers and cost classification, role of cost accountant, elements of cost, single or output costing, preparation of cost sheet
<b>Unit-2</b>	<b>Major components of cost:</b> techniques of material control, concepts and objectives of material control, methods of pricing of material issues, treatment of material losses, labor cost and various wage plans, labor turnover, idle time, overtime, fringe benefits
<b>Unit-3</b>	<b>Overhead cost:</b> Classification, allocation, apportionment and absorption of overheads, under- and over absorption, capacity levels and costs, capacity levels and costs, treatments of special items of overheads
<b>Unit-4</b>	<b>Process costing:</b> Meaning and features of process costing, abnormal losses and abnormal gain, Inter-process profits, Preparation of process cost accounts, equivalent production, joint product and by-products
<b>Unit-5</b>	<b>Job and batch costing:</b> applicability of job and batch costing in industries, objectives of job costing, job costing procedures, batch costing procedures, economic bath quantity (EBQ)
<b>Unit-6</b>	<b>Contract costing:</b> features of contract costing, contract costing and job costing distinction, escalation clause, notional and estimated profits preparation of contract accounts in case of complete, incomplete and near to completion contracts
<b>Unit-7</b>	<b>Service costing:</b> characteristics of service sector, units of cost in different service sectors, costing methods used in service sector, pricing of service sector, costing methods used in service sector, pricing of service sector
<b>Unit-8</b>	<b>Standard costing and variance analysis:</b> objectives of standard cost and standard costing, advantages and limitations of standard costing, setting standards, meaning of variance analysis, material variances, labor variances
<b>Unit-9</b>	<b>Book Keeping in Cost Accounting:</b> Integral and non-integral systems, reconciliation of

	cost and financial accounts
<b>Unit-10</b>	<b>Marginal Costing and CVP Analysis:</b> concept, nature and importance of Marginal Costing, CVP Analysis: P/V ratio, break-even point and Margin of Safety, applications of Marginal Costing for decision making in organizations: make or buy decisions and product mix decision
<b>Unit-11</b>	<b>Life cycle costing:</b> concept of LCC, elements and categories of project life cycle costs, LCC process, analysis of alternative courses of action in life cycle costing, optimization of project life cycle costs, practical applications of LCC, benefits of LCC
<b>Unit-12</b>	<b>Product life-cycle costing:</b> characteristics, uses, activities and essential features of product life-cycle costing, costs in product life-cycle costing, cost control and Product life-cycle costing, costs associated with different stages of product life-cycle costing, economic value added to customer (EVC), experience curve and product life-cycle costing
<b>Unit-13</b>	<b>Activity Based Costing:</b> identification of activities, creation of cost pools, determination of activity cost drivers, calculation of the activity cost driver rate and charging the cost of activities to products
<b>Unit-14</b>	<b>Uniform cost and inter-firm comparison:</b> objectives, benefits and limitations of uniform costing, requisites for installation of uniform costing, objectives and advantages of inter-firm comparisons

#### READINGS:

1. COST AND MANAGEMENT ACCOUNTING by M N ARORA, HIMALAYA PUBLISHINGHOUSE PVT. LTD
2. COST ACCOUNTING by JAWAHAR LAL, SEEMA SRIVASTAVA, M.G.Hills
3. MANAGEMENT ACCOUNTING by PARESH SHAH, OXFORD UNIVERSITY PRESS
4. PRINCIPLES AND PRACTICE OF COST ACCOUNTING by BHATTACHARYYA, ASISHK., PHI Learning Pvt Ltd

<b>Course Code</b>	<b>DBSL102</b>	<b>Course Title</b>	<b>COMPANY LAW</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** apply the legal provisions involved in the formation of the company

**CO2:** analyse the legal provisions applicable for raising share capital, borrowing power, charges and its management

**CO3:** interpret and recognize the legal issues involved in day-to-day company management and CSR activities

**CO4:** examine the validity to various meetings held in the company

**CO5:** illustrate the practical aspects related to duties, appointment and removal of directors, Committee formulation, transparency and disclosure

**CO6:** identify the grounds and application of provisions related to winding up of company under Companies Act and IBC and recognize the administration machinery of companies

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to Companies Act, 2013</b> : Nature and types of company, Lifting the corporate veil, Difference between company, partnership and limited liability partnership
<b>Unit-2</b>	<b>Incorporation of Company</b> : Legal provisions related to incorporation of company by MCA, Legal position of promoter
<b>Unit-3</b>	<b>Company Documents</b> :Memorandum of Association, Articles of Association, Doctrine of constructive Notice, Doctrine of Indoor management
<b>Unit-4</b>	<b>Prospectus</b> : Types of prospectus, Legal consequences of mis-statement in prospectus
<b>Unit-5</b>	<b>Raising of Capital</b> : Share and share capital, Alteration of share capital
<b>Unit-6</b>	<b>Company management</b> : Types of directors, Appointment of directors, Removal of directors, Resignation by directors, Remuneration of directors, Position of directors, Powers and duties
<b>Unit-7</b>	<b>Borrowing powers of a company:</b> Ultra vires the company, Ultra vires the directors
<b>Unit-8</b>	<b>Charges:</b> Creation of Charges; Registration, Modification and Satisfaction of Charges; Register of Charges; Inspection of charges; Punishment for contravention; Rectification by Central Government in Register of charges.
<b>Unit-9</b>	<b>Board Committees</b> :Committees of Board of Directors- Audit Committee, Nomination and Remuneration Committee, Stakeholders RelationshipCommittee, Corporate Social Responsibility Committee, Ethic committee , Risk Committee, Corporate compliance committee
<b>Unit-10</b>	<b>Corporate Social Responsibility:</b> Applicability of CSR; Types of CSR Activities; CSR Committee and Expenditure; Net Profit for CSR; Reporting requirements.
<b>Unit-11</b>	<b>Transparency and Disclosures:</b> Board's Report; Annual Return; Annual Report; Website disclosures; Policies

<b>Unit-12</b>	<b>Company Meetings</b> : Types of meetings and essentials of valid meeting
<b>Unit-13</b>	<b>Winding up of companies</b> : Meaning and modes of winding up- Compulsory winding up, winding up under IBC act-CIRP and Voluntary winding up
<b>Unit-14</b>	<b>Other Legal Aspects</b> :Insider-Trading, Whistle-Blowing – Insider-Trading; meaning and legal provisions; Whistle-blowing: Concept and Mechanism.Administration of Company Law [including National Company Law Tribunal(NCLT), National Company Law Appellate Tribunal (NCLAT), Special Courts]

**READINGS:**

1. A TEXT BOOK OF COMPANY LAW (CORPORATE LAW) by P.P.S.GOGNA, S. CHAND & COMPANY
2. ELEMENTS OF COMPANY LAW by N.D.KAPOOR, SULTAN CHAND & SONS (P) LTD.
3. LEGAL ASPECTS OF BUSINESS by DANIEL ALBUQUERQUE, OXFORD & IBH
4. A HANDBOOK ON CORPORATE AND OTHER LAWS by MANISH BHANDARI, NOT MENTIONED

<b>Course Code</b>	<b>DEC0113</b>	<b>Course Title</b>	<b>BUSINESS ECONOMICS</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** discuss the interplay of business and economics

**C02:** analyze the economic functionality from micro to macro level

**C03:** describe the role of government in augmenting business using appropriate economic policy measures

**C04:** establish an ethical understanding and perspective to business situations

**C05:** outline the operations of markets under varying competitive conditions and prices as stabilize mechanisms.

**C06:** identify the causes and consequences of unemployment, inflation and economic growth

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Business and economics:</b> introduction to business and economics, meaning business economics, forms of economic analysis, basic economic concepts, the basic economic questions and opportunity cost, production possibility curve
<b>Unit-2</b>	<b>Economic system:</b> scarcity and economic system, the market economic system, the command economic system, the mixed economy
<b>Unit-3</b>	<b>The price mechanism:</b> introduction to demand, supply and equilibrium, price determination about by the interaction of demand and supply
<b>Unit-4</b>	<b>Movements of curve price mechanism:</b> Disequilibrium and excess supply, along the curve and shifts of the curve, conditions of demand and supply, changes in equilibrium price and quantity
<b>Unit-5</b>	<b>Concept of elasticity:</b> introduction to elasticity concept, elasticity of demand, measuring of price elasticity, factors affecting elasticity of demand
<b>Unit-6</b>	<b>Industry and market structure analysis:</b> form and structure of market, perfect competition, monopoly, monopolistic competition, oligopoly.
<b>Unit-7</b>	<b>Production analysis:</b> analogy concept, precepts and techniques, technique and technology, stages of production, production strategy, production functions.
<b>Unit-8</b>	<b>Revenue and cost analysis:</b> Cost concept, revenue concept, average revenue, marginal revenue and total revenue, relationship among cost, revenue and production
<b>Unit-9</b>	<b>Macroeconomics environment of business:</b> introduction to business environment, economic environment of business, non-economic environment of business, economic and non-economic environment interaction,
<b>Unit-10</b>	<b>Income determination:</b> Circular flow of money, national income and measurement of national income
<b>Unit-11</b>	<b>National income equilibrium:</b> concept of equilibrium, consumption and savings,

	investment theory, government sector, foreign sector,
<b>Unit-12</b>	<b>Inflation:</b> concept of inflation, determination of equilibrium, multiplier concept, inflationary and deflationary gap
<b>Unit-13</b>	<b>Macroeconomic problems of fluctuations and growth:</b> introduction, recession, inflation, demand-cost inflation, unemployment, business cycle
<b>Unit-14</b>	<b>Theories of Business cycle:</b> trade theory, investment theory, monetary theory, innovation theory, causes behind fluctuations in business cycle.

**READINGS:**

1. Principles of Economics By Deviga Vengedasalam and Karunakaran Madhavan, Oxford University Press.
2. . Business Economics By Manab Adhikary, Excel Books
3. Economics for Business By Ian Fraser, John Gionea and Simon Fraser,

<b>Course Code</b>	<b>DMGN251</b>	<b>Course Title</b>	<b>SPREADSHEET MODELLING (USING EXCEL)</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** demonstrate working knowledge of organizing and displaying large business data

**CO2:** analyze complex business data with spreadsheet applications

**CO3:** examine managerial problems using spreadsheet modeling

**CO4:** apply macros for automating tasks in spreadsheet

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to Spreadsheets:</b> history and importance of spreadsheet, navigating a spreadsheet, crafting formulas, common errors in spreadsheets, differences between Sheets and Excel
<b>Unit-2</b>	<b>Basic functions and utilities:</b> data entry, introduction to fill handles, managing rows and columns, protecting worksheets and workbooks
<b>Unit-3</b>	<b>Spreadsheet Calculations:</b> Introduction to range, absolute and relative references, formulas and functions, calculation across sheets
<b>Unit-4</b>	<b>Formatting Spreadsheets:</b> formatting the excel sheet, introduction to borders, alignment tools, introduction to number formats
<b>Unit-5</b>	<b>Data Analysis:</b> find and replace functions, text functions, filtering, sorting, conditional formatting
<b>Unit-6</b>	<b>Spreadsheet Printing:</b> introduction to spreadsheet printing, print preview and adjustments, orientation, margins and scale, headers and footers
<b>Unit-7</b>	<b>Charts and Graphs:</b> basic chart types, move and resize charts, change chart styles and types, Modification in chart elements
<b>Unit-8</b>	<b>Elementary Modelling:</b> IF statement analysis, nested if, COUNTIF and COUNTIFS, SUMIF and SUMIFS, AVERAGEIF and AVERAGEIFS
<b>Unit-9</b>	<b>Lookup Functions:</b> Vlookup, Hlookup, Index and match function
<b>Unit-10</b>	<b>Pivot Table and its Applications:</b> introduction to pivot table, filter data using slicers in multiple pivot table, visualize aggregate data using pivot table
<b>Unit-11</b>	<b>VBA Macros programming I:</b> create and record macro in spreadsheet, Msg box, declaring variables, writing a subroutine and function in VBA
<b>Unit-12</b>	<b>VBA Macros programming II:</b> IF Then statement, Case statement, For loop, While loop and Do until, worksheet and range object
<b>Unit-13</b>	<b>Sensitivity Analysis:</b> goal seek, data table, scenario Analysis
<b>Unit-14</b>	<b>Simulation and Optimization:</b> Monte Carlo simulations, introduction to solver, linear programming for optimization, Intrinsic value calculation models

**READINGS:**

1. MICROSOFT EXCEL 2016: DATA ANALYSIS AND BUSINESS MODELING by WINSTON, WAYNE L., PHI

<b>Course Code</b>	<b>DENG113</b>	<b>Course Title</b>	<b>BRITISH POETRY AND DRAMA 14TH-17TH CENTURIES</b>
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<b>WEIGHTAGES</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** assess the ability to appreciate the poetry and drama of 14 th to 17 th century.

**CO2:** formulate connections between literary works and their cultural context.

**CO3:** deduce the various elements of poetry.

**CO4:** dramatize the poetry and drama of 14th and 17th century

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	Edmund Spenser: 'Easter': Religious background to the poem
<b>Unit-2</b>	Edmund Spenser: 'Easter': Divine love vs Human love, Felicity and Temperance, Figures of speech
<b>Unit-3</b>	William Shakespeare: 'Sonnet 18': Mutability and imperfection, Immortality and personification of death, Metaphors and symbols, Shakespeare's art as the antidote of time and change
<b>Unit-4</b>	John Donne: The Good-Morrow: The Meditative voice, Metaphysical conceits, Donne's cosmographical glosses and interpretations, Thematic exploration
<b>Unit-5</b>	Dryden: Happy the Man: Brevity in dEFINing happiness, Owing disappointments and failures as much as successes, Eternal truths for personal happiness, The speaker an opportunist, impressionistic critic, or muddled thinker
<b>Unit-6</b>	Sir Philip Sidney: "Astrophil and Stella 84: Highway, since you my chief Parnassus be": The language of courtship, The Petrarchan elements, The lyric poem, Biographical elements
<b>Unit-7</b>	Thomas Wyatt: "I Abide and Abide and better Abide" : Sir Thomas Wyatt and the sonnet tradition, The art of Thomas Wyatt, The Petrarchan tradition, Thematic Exploration
<b>Unit-8</b>	John Webster: The Duchess of Malfi: The Perversion of Justice, The Static Protagonist in 'The Duchess of Malfi'
<b>Unit-9</b>	John Webster: The Duchess of Malfi: The Wheel of Fortune, Tragedy of Identity
<b>Unit-10</b>	Oliver Goldsmith: She stoops to conquer: The irony of the title, "Low" and not "Sentimental" comedy
<b>Unit-11</b>	Oliver Goldsmith: She stoops to conquer: Conflicting philosophies: high- bred aristocrats vs. low-bred common folk; city life vs. country life
<b>Unit-12</b>	Oliver Goldsmith: She stoops to conquer: wealth vs poverty, A masterpiece of dramatic irony, The characters of the play as comic archetypes
<b>Unit-13</b>	William Wordsworth: My Heart Leaps Up: As a Pantheist, Paradox: Child is the Father of Man, Life is moral nature is immortal, "Common speech" and Romanticism
<b>Unit-14</b>	John Keats: Ode to Autumn: Autumn as a sleeping reaper, Temporality, mortality, and change, Simple, uncomplaining summation of the entire human condition, Autumn with ample beauty to celebrate

**READINGS:**

1. SHE STOOPS TO CONQUER by OLIVER GOLDSMITH, PEACOCK PUBLICATIONS
2. A GLOSSARY OF LITERARY TERMS by M.H. ABRAMS (AUTHOR), GEOFFREY GALT HARPHAM (AUTHOR), CENGAGE LEARNING
3. THE DUCHESS OF MALFI by KAJAL SENGUPTA, ORIENT BLACKSWAN PVT. LTD.

<b>Course Code</b>	<b>DMTH159</b>	<b>Course Title</b>	<b>MULTIVARIATE CALCULUS</b>
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<b>WEIGHTAGES</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** learn conceptual variations while advancing from one variable to several variables in calculus.

**CO2:** describe the limit and examine the continuity of a function at a point.

**CO3:** get in depth knowledge of techniques for the evaluation of multiple integrals.

**CO4:** learn various applications of double and triple integrals.

**CO5:** realize importance of Green, Gauss and Stokes' theorems in other branches of mathematics.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	Functions of several variables, Limit and continuity of functions of two and three variables
<b>Unit-2</b>	Partial differentiation, Total differentiability and differentiability, Sufficient condition for differentiability, Chain rule for one and two independent parameters, Tangent planes
<b>Unit-3</b>	Jacobian, Euler's theorem for homogeneous functions, Taylor's theorem for functions of two variables and more variables
<b>Unit-4</b>	Extrema of functions of two and three variables, Method of Lagrange multipliers, constrained optimization problems
<b>Unit-5</b>	Double integration over rectangular region, Double integration over nonrectangular region, Double integrals in polar co-ordinates
<b>Unit-6</b>	Triple integrals, Triple integral over a parallelepiped and solid regions, Change of order of integration
<b>Unit-7</b>	Change of variables in double integrals and triple integrals, Cylindrical and spherical co-ordinates
<b>Unit-8</b>	Area and volume by using double integral, Volume by using triple integral
<b>Unit-9</b>	Limit, continuity and differentiability of vector functions
<b>Unit-10</b>	Gradient of a scalar field and directional derivatives, maximal and normal property of the gradient, Tangent planes
<b>Unit-11</b>	Definition of vector field, divergence and curl of vector field
<b>Unit-12</b>	Line integrals, Applications of line integrals: Mass and Work
<b>Unit-13</b>	Fundamental theorem for line integrals, Conservative vector fields, independence of path, Green's theorem
<b>Unit-14</b>	Surface integrals, Integrals over parametrically defined surfaces, Stoke's theorem, The Gauss divergence theorem

**READINGS:**

1. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). Thomas' Calculus (14th edition). Pearson Education.

- 2 James Stewart (2012). Multivariable Calculus (7th edition). Brooks/Cole. Cengage.  
 3. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith (2011). Calculus (3rd edition).  
 Pearson Education. Dorling Kindersley (India) Pvt. Ltd

<b>Course Code</b>	<b>DACC210</b>	<b>Course Title</b>	<b>CORPORATE ACCOUNTING</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

- CO1:** identify and illustrate issues relating to raising of funds through internal and external sources  
**CO2:** apply the accounting provisions for redemption of preference shares and debentures  
**CO3:** solve the accounting problems using the provisions of amalgamation and its accounting treatment  
**CO4:** illustrate thorough knowledge of cash flow statement and the ability to apply them to solve problems  
**CO5:** appraise the conceptual framework and provisions of managerial remuneration  
**CO6:** apply the accounting provisions related to preparation of final accounts of companies

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Accounting for share capital</b> : introduction to share capital, pro-rata allotment of shares, forfeiture of shares, reissue of forfeited shares
<b>Unit-2</b>	<b>Right issue</b> : provisions related to issue of right shares, accounting treatment <b>Bonus issue</b> : legal provisions for issue of bonus shares, accounting entries
<b>Unit-3</b>	<b>Redemption of preference shares</b> : concept, legal provisions for redemption, accounting entries
<b>Unit-4</b>	<b>Redemption of debentures</b> : redemption of debentures through sinking fund, purchase from open Market <b>Buyback of shares</b> : concept of buyback of shares, legal provisions for buyback of shares
<b>Unit-5</b>	<b>Underwriting of shares</b> : concept, liability of underwriters <b>Managerial remuneration</b> : provisions related to managerial remuneration
<b>Unit-6</b>	<b>Final accounts of companies</b> : form and content of profit and loss account, form and content of balance sheet as per sixth schedule, accounting treatment
<b>Unit-7</b>	<b>Valuation of shares</b> : introduction, need for valuation of shares, methods for valuation of shares
<b>Unit-8</b>	<b>Cash flow statement</b> : concept, preparation of cash flow statement
<b>Unit-9</b>	<b>Amalgamation I</b> : introduction to amalgamation, types of amalgamation, methods of purchase consideration, amalgamation in the nature of merger, accounting treatment
<b>Unit-10</b>	<b>Amalgamation II</b> : amalgamation in the nature of purchase, accounting treatment in the books of transferor company, accounting treatment in the books of transferee company
<b>Unit-11</b>	<b>Internal reconstruction</b> : alteration of share capital, procedure of reducing share capital, accounting entries

<b>Unit-12</b>	<b>Statement of changes in equity</b> : introduction, financial statement presentation, IFRS for SMEs, changes in accounting policies, format of changes in equity
<b>Unit-13</b>	<b>Accounts of Holding Companies/Parent Companies</b> : Preparation of consolidated balance sheet with one subsidiary company, Relevant provisions of Accounting Standard: 21 (ICAI)
<b>Unit-14</b>	<b>Accounts of Banking Companies:</b> Difference between balance sheet of banking and non-banking companies, prudential norms, asset structure of a commercial bank, non-performing assets (NPA)

#### **READINGS:**

1. CORPORATE ACCOUNTING by JAIN S.P., NARANG K.L., KALYANI PUBLISHERS
2. CORPORATE ACCOUNTING by S.N. MAHESHWARI, S.K. MAHESHWARI, VIKAS PUBLISHING HOUSE
3. CORPORATE ACCOUNTING by P.C. TULSIAN, Tata McGraw Hill, India
4. CORPORATE ACCOUNTING by A. MUKHERJEE, H HANIF, MCGRAW HILL EDUCATION

<b>Course Code</b>	<b>DBSL301</b>	<b>Course Title</b>	<b>INCOME TAX LAW AND PRACTICE</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** memorize and describe the basic principles of direct tax laws

**C02:** apply the rules associated with the calculation of income under the head salaries, house property, business or profession, capital gains and other sources

**C03:** demonstrate the various statutory deductions available to individuals

**C04:** examine the regulatory guidelines related to computation of total income and income tax of individuals

**C05:** apply critical thinking and problem-solving skills to resolve income tax issues

**C06:** use the provisions of the Income-tax act for e-filing of Income-tax returns

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to Basic concepts of Income tax law:</b> Income, agricultural income, person, assessee, assessment year, previous year, gross total income, total income.
<b>Unit-2</b>	<b>Identification of Residential status;</b> Scope of total income on the basis of residential status, Residential status of person, Incidence of Tax, Exempted incomes under section 10
<b>Unit-3</b>	<b>Concepts of revenue and capital receipts and expenditures:</b> Capital receipts Vs. Revenue receipts, Tests of distinction, Capital expenditure Vs. Revenue expenditure
<b>Unit-4</b>	<b>Computation of income under the head salaries:</b> Computation of salary income, Allowances, Perquisites.
<b>Unit-5</b>	<b>Computation of income under the head house property :</b> Basic terminology, Determination of annual value under different situations, Deductions u/s 24
<b>Unit-6</b>	<b>Computation of income under the head capital gains:</b> Meaning and types of capital gain, Basis of charge, Computation, Exemptions u/s 54
<b>Unit-7</b>	<b>Computation of income under the head business &amp; profession:</b> Difference between business and profession, Allowable and disallowed expenses, , Computation of Book Profits and total income under the head Business and Profession
<b>Unit-8</b>	<b>Provisions of depreciation:</b> Concept, Conditions and rates, Methods and computation
<b>Unit-9</b>	<b>Computation of income from other sources:</b> General incomes, Specific incomes <b>Agricultural income:</b> Integration of agricultural income with non-agricultural income, Tests, Definition
<b>Unit-10</b>	<b>Clubbing of income:</b> Assessability of income from assets transferred to spouse, sons, wife or another person for the benefit of spouse. Assessment of Individual's income in different cases
<b>Unit-11</b>	<b>Set off and carry forward of losses:</b> Set-off inter head provisions, Set-off intra head provisions, Carry forward provisions

<b>Unit-12</b>	<b>Deductions from total income</b> :Provisions relevant to Deductions under section 80C to 80U; Rebates and relief
<b>Unit-13</b>	<b>Assessment of individuals:</b> Computation of total income after set-off of losses less deductions under sections 80C to 80U, Rounding off of income as well as tax, Computation of total income and tax liability
<b>Unit-14</b>	<b>Filing of return</b> : Meaning of PAN, Provisions of PAN, Filing Application of PAN under Income Tax Act, E-filing of ITR forms & TDS, Provision & Procedures of Compulsory On-Line filing of returns for specified assesses

**READINGS:**

1. Singhania, Vinod K. and Monica Singhania. Students' Guide to Income Tax, University Edition. Taxmann Publications Pvt. Ltd., New Delhi.
2. Ahuja, Girish and Ravi Gupta. Systematic Approach to Income Tax. Bharat Law House, Delhi.

<b>Course Code</b>	<b>DFIN302</b>	<b>Course Title</b>	<b>FUNDAMENTALS OF FINANCIAL MANAGEMENT</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** analyze the role of financial management and the key strategies and techniques used to manage cash, marketable securities, accounts receivable and inventory.

**C02:** identify the major sources of short-term and long-term financing available to the firm.

**C03:** observe concept of time value of money and effect of dividend policy on the value of firm.

**C04:** interpret the capital structure decisions of the firm.

**C05:** develop the understanding of Company Capital budgeting methods and decisions.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Financial Management:</b> introduction to financial management, scope and applications of finance, financial goal profit maximization/wealth maximization
<b>Unit-2</b>	<b>Financial Management Functions:</b> Finance function, role of finance manager, Controller and Treasury functions in respect to Financial Management
<b>Unit-3</b>	<b>Sources of finance:</b> short term sources, medium term sources, long term sources of finance
<b>Unit-4</b>	<b>Time value of money:</b> concept, meaning of TVM , future value of cash flow, present value of cash flow, future value of annuity, present value of annuity, perpetuity, difference between annuity and perpetuity
<b>Unit-5</b>	<b>Practical Applications of Time value of Money:</b> Numerical aspects to understand Perpetuity, Annuity of single cash flow, Compound Interest, Simple Interest
<b>Unit-6</b>	<b>Cost of capital:</b> introduction, Relevance of cost of capital, components of cost of capital-cost of debt, cost of preference capital, cost of equity capital, weighted average cost of capital, CAPM techniques
<b>Unit-7</b>	<b>Capital structure:</b> introduction, concept of optimum capital structure, relevance theories of capital structure, irrelevance theories of capital structure
<b>Unit-8</b>	<b>Capital budgeting:</b> introduction, nature of capital budgeting, capital budgeting decisions types, non discounting techniques, discounting techniques
<b>Unit-9</b>	<b>Leverage:</b> Meaning, Types of Leverage, Financial leverage, Operating Leverage, Combined Leverage
<b>Unit-10</b>	<b>Dividend theory:</b> introduction, objectives of dividend policy, forms of dividend, dividend relevance, dividend irrelevance
<b>Unit-11</b>	<b>Working capital management:</b> introduction to working capital, working capital determinants, operating cycle, liquidity and profitability trade-off

<b>Unit-12</b>	<b>Inventory management:</b> introduction, objectives, need, inventory management techniques, ABC Analysis
<b>Unit-13</b>	<b>Cash management:</b> introduction, objectives, need, techniques for cash collection
<b>Unit-14</b>	<b>Receivables management:</b> introduction, nature of credit policy, credit policy variables

**READINGS:**

1. ESSENTIALS OF FINANCIAL MANAGEMENT by PANDEY I. M, VIKAS PUBLISHING HOUSE
2. BASIC FINANCIAL MANAGEMENT by KHAN M Y, JAIN P K, Mcgraw Hill Education
3. FINANCIAL MANAGEMENT THEORY AND PRACTICE by GUPTA SHASHI, K, SHARMA R.K, Kalyani publishers
4. FUNDAMENTALS OF FINANCIAL MANAGEMENT by SHARAN VYUPTKESH, Pearson

<b>Course Code</b>	<b>DMKT309</b>	<b>Course Title</b>	<b>DIGITAL MARKETING</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** apply and analyse digital marketing activities in achieving business objectives.

**C02:** to develop skills relevant to marketing campaigns for enhancing business reach.

**C03:** examine marketing metrics and collect consumer data using digital media.

**C04:** improve the brand identity and develop customer base using real world techniques.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to Digital Marketing-</b> Digital vs. Traditional Marketing, Digital Marketing Channels, ROI between Digital and traditional marketing, Creating initial digital marketing plan and Content Management.
<b>Unit-2</b>	<b>Search Engine Basics-</b> Introduction to Search Engines and Websites, Difference between Blog, Portal and Website, Static and Dynamic Websites.
<b>Unit-3</b>	<b>Keyword Research</b> - Keyword Research, Types of Keywords, Business Analysis & Categorization, Google Keyword Planner, Market Research and Analysis, New Keyword Ideas and Finalizing the Keywords List.
<b>Unit-4</b>	<b>On page Webmaster Tools-</b> Introduction to On page Webmaster Tools, Verification Process in GWMT, Selecting Target Location, On page Analysis Methodology and Fundamental On-page Factors.
<b>Unit-5</b>	<b>Optimisation Techniques</b> - Website Speed, Domain name in SEO, URL Optimization, Title and Meta Tag Optimization, Sitemaps Generation, Using Robot.txt in Site URL, Redirecting Techniques, Canonical Links and Rich Snippets.
<b>Unit-6</b>	<b>Off Page Optimization-</b> Link Building, Types of Linking Methods, Linking Building Methodology, Links Analysis Tools, Directory Submissions, Social Bookmarking, Blogging & Commenting and Guest Blogging.
<b>Unit-7</b>	<b>Search Engine Optimization-</b> Local SEO, Importance of Local SEO, Local SEO Ranking Signals, Local SEO Negative Signals, Citations and Local Submissions, Website Position Analysis and Website Monthly Reports.
<b>Unit-8</b>	<b>Paid Marketing Techniques-</b> Google Account setup, Account Structure, Campaigns settings, AdGroup setup, Keyword Match Types, Keyword Research Tools and Understanding Ad Auction.
<b>Unit-9</b>	<b>Bidding and Quality Score-</b> Factors to improve Quality Score, Types of CPC's, Bidding strategies, Bidding strategies, Ad Guidelines and Ad Extensions
<b>Unit-10</b>	<b>Display Advertising-</b> Benefits of Display Advertising, Creating a Display Campaign,

	Bidding Strategies, Targeting Option in Display Network, Examples of Good and Bad Ads, Display Ad Builder and Conversion Tracking.
<b>Unit-11</b>	<b>Web Analytics and reporting-</b> Key Performance Metrics [KPI] in Analytics, Traffic reports and Behaviour reports
<b>Unit-12</b>	<b>Social Media Marketing-</b> Introduction to SMM, Facebook Marketing, Facebook Advertising and Email Marketing.
<b>Unit-13</b>	<b>Budgeting and implementation-</b> Digital Marketing Budget, resource planning, cost estimation, cost budgeting, cost control for effective planning and Implementing digital marketing techniques
<b>Unit-14</b>	<b>Visual Marketing-</b> Visual Perception, Choosing the Right Image, Visual marketing tools , Planning and Organizing the content and Blogging to brand yourself

### READINGS:

1. Ryan, D. (2014 ). Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation, Kogan Page Limited.
2. The Beginner's Guide to Digital Marketing (2015). Digital Marketer. Pulizzi,J.(2014) Epic Content Marketing, Mcgraw Hill Education.

<b>Course Code</b>	<b>DENG115</b>	<b>Course Title</b>	<b>BRITISH LITERATURE 18TH-20TH CENTURIES</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** identify the main images and symbols in the texts

**CO2:** evaluate the scenario in the genre of 18th century plays

**CO3:** relate literary texts to significant social, cultural, political and historical issues

**CO4:** analyse the literary texts to explore the themes and the main issues

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	William Congreve - <i>The Way of the World</i> : Plot, characterization.
<b>Unit-2</b>	William Congreve - <i>The Way of the World</i> : Themes, narrative technique.
<b>Unit-3</b>	Jonathan Swift - <i>Gulliver's Travels (Three)</i> : Plot, characterization.
<b>Unit-4</b>	Jonathan Swift - <i>Gulliver's Travels (Three)</i> : Themes, narrative technique.
<b>Unit-5</b>	Jonathan Swift - <i>Gulliver's Travels (Four)</i> : Plot, characterization.
<b>Unit-6</b>	Jonathan Swift - <i>Gulliver's Travels (Four)</i> : Themes, narrative technique
<b>Unit-7</b>	Samuel Johnson- ' <i>London</i> ': Introduction, critical appreciation.
<b>Unit-8</b>	Samuel Johnson- ' <i>London</i> ': Stylistic features, themes.
<b>Unit-9</b>	Thomas Gray - ' <i>Elegy Written in a Country Churchyard</i> ': Introduction, stylistic features.
<b>Unit-10</b>	Thomas Gray - ' <i>Elegy Written in a Country Churchyard</i> ': Critical appreciation, themes.
<b>Unit-11</b>	Laurence Sterne- <i>The Life and Opinions of Tristram Shandy, Gentleman</i> : Plot, characterization.
<b>Unit-12</b>	Laurence Sterne- <i>The Life and Opinions of Tristram Shandy, Gentleman</i> : Themes, narrative technique.
<b>Unit-13</b>	Dreams-Children - <i>A Reverie by Charles Lamb</i> : Introduction, summary
<b>Unit-14</b>	Dreams-Children - <i>A Reverie by Charles Lamb</i> : Themes, critical analysis.

**READINGS:**

1. THE WAY OF THE WORLD by WILLIAM CONGREVE, DOVER PUBLICATIONS
2. GULLIVER'S TRAVELS (PENGUIN CLASSICS) by SWIFT, JONATHAN, PENGUIN BOOKS INDIA

<b>Course Code</b>	<b>DMTH256</b>	<b>Course Title</b>	<b>DIFFERENTIAL EQUATIONS</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** understand the genesis of ordinary differential equations

**C02:** illustrate the solution of exact differential equations

**C03:** develop the solution of homogeneous and non-homogeneous equations

**C04:** discuss solution of higher order differential equations by using various methods

**C05:** analyze and compute the series solutions of a linear differential equation of an arbitrary order

**C06:** formulate mathematical models in the form of ordinary differential equations.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	Definition, formation and solution of differential equations, Equations in which variables are separable, Homogeneous equations, Linear differential equations and equations reducible to linear form.
<b>Unit-2</b>	Exact differential equations of first order, integrating factors, rules to find integrating factor.
<b>Unit-3</b>	First order higher degree equations solvable for x, y, p, Clairaut's equation, introduction to singular solutions, Picard's method of successive approximations.
<b>Unit-4</b>	Basic theory of linear differential equations, Solutions of homogeneous linear ordinary differential equations with constant coefficients.
<b>Unit-5</b>	Wronskian and its properties, Solutions of non-homogeneous linear ordinary differential equations with constant coefficients.
<b>Unit-6</b>	Method of variation of parameters, method of undetermined coefficients, Solution of the Cauchy-Euler equation,
<b>Unit-7</b>	Genesis of Partial differential equations (PDE), Concept of linear and non-linear PDEs, Methods of solution of Simultaneous differential equations of the form: $dx/P(x,y,z) = dy/Q(x,y,z) = dz/R(x,y,z)$ ,
<b>Unit-8</b>	Lagrange's method for PDEs of the form: $P(x,y,z)p+Q(x,y,z)q=R(x,y,z)$ , where $p=\partial z/\partial x$ and $q=\partial z/\partial y$ ; Solutions passing through a given curve.
<b>Unit-9</b>	Solution of non-homogeneous reducible equations using Lagrange's method for first order equations.
<b>Unit-10</b>	Reducible and irreducible homogeneous equations and their solutions in various possible cases,
<b>Unit-11</b>	Orthogonal trajectories of one-parameter families of curves in a plane, Minimum velocity of escape from Earth's gravitational field.
<b>Unit-12</b>	Newton's law of cooling, Malthusian and logistic population models.

<b>Unit-13</b>	Free and forced mechanical oscillations of a spring suspended vertically carrying a mass at its lowest tip
<b>Unit-14</b>	Phenomena of resonance, LCR circuits, surfaces orthogonal to a given system of surfaces.

**READINGS:**

1. DIFFERENTIAL EQUATIONS by SHIPLEY L. ROSS, JOHN WILEY & SONS
2. ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS by DR. M.D. RAISINGHANIA, S Chand Publishing
3. IAN N. SNEDDON (2006). ELEMENTS OF PARTIAL DIFFERENTIAL EQUATIONS. DOVER PUBLICATIONS.
4. ERWIN KREYSZIG (2011). ADVANCED ENGINEERING MATHEMATICS (10TH EDITION). J. WILEY & SONS

<b>Course Code</b>	<b>DACC301</b>	<b>Course Title</b>	<b>MANAGEMENT ACCOUNTING</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

### Course Outcomes:

**CO1** :: analyze the financial statement of various companies

**CO2** :: use of ratio analysis to evaluate the performance and resolve the issues of various entities

**CO3** :: prepare cash, sales, flexible and production budgets

**CO4** :: apply the concepts of marginal costing for decision making in organizations

**CO5** :: use the various techniques of profitability analysis to interpret the performance of the organization

**CO6** :: dEFINE the meaning of transfer pricing and various methods of calculating transfer pricing

**CO7** :: focus on the applicability of transfer pricing methods in industry

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to Management Accounting</b> : Meaning and Nature of Management Accounting, Objectives, Scope and Limitations of Management Accounting, Distinction between Management Accounting, Financial Accounting & Cost Accounting
<b>Unit-2</b>	<b>Management Discussion and Analysis Report</b> : Management discussion and analysis report, Directors report, Auditors report, Corporate Governance report, Concept of IFRS
<b>Unit-3</b>	<b>Financial Statement Analysis</b> : Meaning of Financial Statement Analysis, Objectives and Importance, Comparative Statement Analysis (Horizontal Analysis), Common Size Statement Analysis (Vertical Analysis)
<b>Unit-4</b>	<b>Ratio Analysis I</b> : Meaning and Scope of Ratio Analysis, Advantages and Limitations, Users of Ratios, Liquidity Ratios, Efficiency Ratios
<b>Unit-5</b>	<b>Ratio Analysis II</b> : Solvency Ratios, Profitability Ratios, Leveraged Ratios, Du Pont Control Chart
<b>Unit-6</b>	<b>Profitability analysis</b> : Income measurement analysis, Revenue analysis, Cost of Sales analysis, Expense analysis, Variation analysis
<b>Unit-7</b>	<b>Risk and Return</b> : Calculating return, Types of risk, Relationship between risk and return
<b>Unit-8</b>	<b>Budgeting</b> : Concept of Budgeting, Meaning of Budgetary Control, Budgeting Process, Advantages and Limitations of Budgeting, Types of Budgets, Preparation of Cash Budget, Flexible Budget, Sales Budget and Production Budget, Zero Base Budgeting
<b>Unit-9</b>	<b>Absorption Costing and Marginal Costing</b> : Need for Marginal Costing, Difference Between Absorption Costing and Marginal Costing, Marginal Cost Equation, Break-Even Analysis, CVP Analysis, Effects of Certain Changes on P/V Ratio
<b>Unit-10</b>	<b>Decision Making</b> : Steps in Decision Making Process, Concept of Relevant Costs and Benefits, Various short term decision making situations – profitable product mix,

	Acceptance or Rejection of special / export offers, Make or buy, Addition or Elimination of a product line, sell or process further, operate or shut down. Pricing Decisions: Major factors influencing pricing decisions, various methods of pricing
<b>Unit-11</b>	<b>Artificial Intelligence and Analytics</b> : Finance and Accounting transformation by AI
<b>Unit-12</b>	<b>Transfer Pricing</b> : Concept of Transfer Pricing, Types of Transfer Pricing, Methods for Calculating Transfer Price
<b>Unit-13</b>	<b>Management Information System:</b> Meaning, Objectives, characteristics, nature and scope, advantages and limitations, Introduction to Reporting, Meaning and Objective of Preparing Reports, Kinds of Reports, Elements and Types of reports, Levels of Management and Reporting
<b>Unit-14</b>	<b>Responsibility Accounting</b> : Meaning and Prerequisites, Steps involved in Responsibility Accounting, Advantages and Limitations of Responsibility Accounting, Types of Responsibility Centers

#### **READINGS:**

#### **Text Books:**

1. COST AND MANAGEMENT ACCOUNTING by M.N.ARORA, VIKAS PUBLISHING HOUSE

#### **References:**

1. MANAGEMENT ACCOUNTING by DEBARSHI BHATTACHARYYA, PEARSON
2. MANAGEMENT ACCOUNTING by MY KHAN, PK JIAN, MCGRAW HILL EDUCATION
3. COST & MANAGEMENT ACCOUNTING by MN ARORA, HIMALAYA PUBLISHING HOUSE PVT. LTD
4. COST & MANAGEMENT ACCOUNTING by MN ARORA, VIKAS PUBLISHING HOUSE

<b>Course Code</b>	<b>DBSL304</b>	<b>Course Title</b>	<b>GOODS AND SERVICES TAX AND CUSTOMS LAW</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

- C01** :: describe provisions of goods and services tax and customs law in India
- C02** :: calculate the tax payable under GST and custom duty
- C03** :: analyze taxation cases using the provisions of GST and customs law in actual practice
- C04** :: examine the provisions relevant to registration and filing of GST return
- C05** :: determine taxable event and valuation under GST
- C06** :: describe the provisions of reverse charge and composition scheme under GST

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Overview of GST</b> : basic terminology, benefits, taxes subsumed in GST, structure, GST council, GST network
<b>Unit-2</b>	<b>Taxable event in GST</b> : supply of goods & services, place of supply, time of supply, mixed & composite supplies, classification of goods & services
<b>Unit-3</b>	<b>Valuation under GST</b> : transaction value, valuation rules
<b>Unit-4</b>	<b>Input tax credit</b> : requirements, eligible and ineligible input tax credit, reversal of ITC, recovery of ITC
<b>Unit-5</b>	<b>Reverse charge</b> : general provisions, procedure of reverse charge, supply of goods & services liable for reverse charge
<b>Unit-6</b>	<b>Composition scheme</b> : eligibility, procedure to avail the scheme, effective date, validity & withdrawal from scheme, switch over
<b>Unit-7</b>	<b>Registration under GST</b> : requirements & procedure for registration, persons liable for registration, voluntary registration, cancellation of registration
<b>Unit-8</b>	<b>Tax invoice</b> : tax invoice in respect of goods, tax invoice in respect of services, contents of tax invoice
<b>Unit-9</b>	<b>Tax payment under GST</b> : electronic payment of tax & other dues, sequence of

	discharge of tax, interest on delayed payment of tax
<b>Unit-10</b>	<b>Filing of GST Return</b> : Types of GST returns, Taxpayers liable to file return, Due dates for GST returns, Procedure to file GST return online
<b>Unit-11</b>	<b>Overview of customs law</b> : basic concepts, charge of duty, types of customs duty, valuation of customs duty
<b>Unit-12</b>	<b>Procedures in customs law</b> : import procedure, export procedure
<b>Unit-13</b>	<b>Officers of customs</b> : classes of officers, appointment of officers, powers of officers, searches, seizure and arrest, offences, penalties
<b>Unit-14</b>	<b>Baggage rules</b> : basic terms, general free allowance

**READINGS:**

1. GST LAW & PRACTICE WITH CUSTOMS & FTP by V.S. DATEY, TAXMANN PUBLISHER
2. GOODS AND SERVICES TAX by H.C. MEHROTRA & V.P. AGARWAL, SAHITYA BHAWANPUBLICATIONS

<b>Course Code</b>	<b>DMGN358</b>	<b>Course Title</b>	<b>E-COMMERCE</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** identify different kinds of e-commerce sites and the differentiation strategy behind them

**CO2:** develop value in an online setting and design a suitable payment system

**CO3:** develop a website, taking care of its security and reliability

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Electronic business- understanding new internet economy and business:</b> objectives of e-business, transition from traditional business to e-business, e-business and e-commerce, advantages of e-business
<b>Unit-2</b>	<b>E-business models:</b> e-business structure, evolution of e-business and its stages, e-business models based on functionality, e-business models based on transactions
<b>Unit-3</b>	<b>E-business competitive and business strategy:</b> competitive advantage and competitive strategy, role of technology in building competitive advantage, building competitive advantage through e-business
<b>Unit-4</b>	<b>E-market:</b> electronic market, internet advertising, e-business advertising- types, classification of e-markets
<b>Unit-5</b>	<b>Value creation and business strategies in e-age:</b> value drivers of e-business, e-business strategies and strategic challenges, e- business value chain
<b>Unit-6</b>	<b>E-business applications:</b> characteristics, classification, current trends in e business
<b>Unit-7</b>	<b>E-procurement and e-fulfillment:</b> e-procurement model, e-procurement process, e-procurement infrastructure, e-SCM, e-SCM evolution
<b>Unit-8</b>	<b>Creating e-business plan:</b> why should a business plan be written, elements of e-business plan, phases/aspects of e-business plan, what should be avoided while writing an e-business plan
<b>Unit-9</b>	<b>Building and launching e-business:</b> e-business launching considerations, checklist for launching an e-business, challenges in e-business transition, types of changes in e-businesses, stages of e business process reengineering in e-business change
<b>Unit-10</b>	<b>Online payment systems:</b> traditional payment methods, online payment system characteristics, online payment methods, security and risk handling in online payments, fraud detection in online payments
<b>Unit-11</b>	<b>Design and development of a business website:</b> prerequisites for designing in-house websites, steps involved in website development, security issues involved in websites
<b>Unit-12</b>	<b>Constructing e-business enterprise Applications:</b> trends, problems due to lack of integration, cross-functional integrated applications, integrated application frameworks
<b>Unit-13</b>	<b>Enterprise resource planning (ERP) for e-business:</b> basics of ERP, ERP decision, ERP applications, ERP implementation

**Unit-14****Security and reliability of e-business:** risk analysis- information classification, computer viruses, worms and Trojans, other threats, e-business security policy**READINGS:**

1. E- BUSINESS by PARAG KULKARNI, SUNITA JAHIRABADKAR, PRADIP CHANDE, OXFORD UNIVERSITY PRESS
2. ELECTRONIC COMMERCE: A MANAGER'S GUIDE by RAVI KALAKOTA, ANDREW B.WHINSTON, PEARSON

<b>Course Code</b>	<b>DMKT312</b>	<b>Course Title</b>	<b>SELLING SKILLS</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** use selling concepts and skills to critically handle sales situations

**CO2:** demonstrate product information persuasively in order to developing an effective sales personality

**CO3:** develop skills for overcoming the objections and evolving sales closing techniques

**CO4:** formulate relationship marketing strategies and to devise approaches to retain customers

**CO5:** develop value added selling strategies that enhance personal selling

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Developing a personal selling philosophy:</b> relationship selling opportunities, evolution of selling models that complement the marketing concept
<b>Unit-2</b>	<b>Developing a relationship strategy:</b> creating value with a relationship strategy, communication styles: a key to adaptive selling today
<b>Unit-3</b>	<b>Ethics: The foundation for relationship in selling:</b> making ethical decisions, factors influencing the ethics of salespeople
<b>Unit-4</b>	<b>Developing a product strategy:</b> creating product solutions, product-selling strategies that add value
<b>Unit-5</b>	<b>Developing a customer strategy:</b> the buying process and buyer behavior, developing and qualifying a prospect base
<b>Unit-6</b>	<b>Developing a presentation strategy:</b> approaching the customer with adaptive selling, determining customer needs with a consultative questioning strategy
<b>Unit-7</b>	<b>Creating consultative presentation:</b> negotiating buyer concerns, formal integrative negotiation
<b>Unit-8</b>	<b>Adapting the close and confirming partnership:</b> guidelines for closing the sale, recognize the closing clues, specific methods for closing the sale
<b>Unit-9</b>	<b>Servicing the sale:</b> building long term partnerships with customer service, current development in customer service
<b>Unit-10</b>	<b>Building partnership:</b> customer service methods to strengthen the partnership, partnering with unhappy customers
<b>Unit-11</b>	<b>Opportunity Management:</b> a four dimensional process, time management, time consuming activities, time management methods
<b>Unit-12</b>	<b>The key to greater sales productivity:</b> territory management, records management, stress management
<b>Unit-13</b>	<b>Management of sales force:</b> applying leadership skills to sales management, recruitment and selection of salespeople
<b>Unit-14</b>	<b>Orientation and Training:</b> sales force motivation, compensation plan, assessing sales

**READINGS:**

1. SELLING TODAY: PARTNERING TO CREATE VALUE by GERALD L. MANNING, MICHAEL HEARNE & BARRY L. REECE, PEARSON
2. ABC'S OF RELATIONSHIP SELLING THROUGH SERVICE by CHARLES M. FUTRELL, Tata McGraw Hill, India
3. THE SPIN SELLING FIELDBOOK by NEIL RACKHAM, Tata McGraw Hill, India

<b>Course Code</b>	<b>DENG316</b>	<b>Course Title</b>	<b>WOMEN'S WRITING</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**CO1:** identify different terms related to women's writing

**CO2:** develop critical thinking

**CO3:** analyze different themes in the text and match with real life events

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	<b>Introduction to Women's Writing:</b> The confessional mode in women's writing, sexual politics, race, caste and gender.
<b>Unit-2</b>	<b>Introduction to Women's Writing:</b> Difference feminism, discrimination, empowerment
<b>Unit-3</b>	<b>Emily Dickinson 'I cannot live with you':</b> Introduction to the poet, the metaphor of a love relationship, a model for human existence
<b>Unit-4</b>	<b>Emily Dickinson 'I cannot live with you':</b> Traditional resurrection, a critical appreciation of the poem
<b>Unit-5</b>	<b>Eunice De Souza 'Advice to Women', 'Bequest':</b> Introduction to the poet, analysis of the poem, : a critical appreciation, themes.
<b>Unit-6</b>	<b>Eunice De Souza 'Advice to Women', Sylvia Plath 'Daddy':</b> Introduction to the Sylvia Plath, analysis of the poem, a critical appreciation of the poem, themes.
<b>Unit-7</b>	<b>Alice Walker 'The Color Purple':</b> Introduction to Alice Walker, background, character analysis.
<b>Unit-8</b>	<b>Alice Walker 'The Color Purple':</b> Plot construction, themes, critical analysis
<b>Unit-9</b>	<b>Terms pertaining to women's writing:</b> Gender identity, sexual harassment, gender harassment.
<b>Unit-10</b>	<b>Terms pertaining to women's writing:</b> Superwoman syndrome, womanism.
<b>Unit-11</b>	<b>Katherine Mansfield 'Bliss':</b> Introduction to Katherine Mansfield, background, character analysis.
<b>Unit-12</b>	<b>Katherine Mansfield 'Bliss':</b> Plot construction, themes, critical analysis
<b>Unit-13</b>	<b>Mahashweta Devi 'Draupadi':</b> Introduction to Mahashweta Devi, background, character analysis.
<b>Unit-14</b>	<b>Mahashweta Devi 'Draupadi':</b> Plot construction, themes, critical analysis.

**READINGS:**

1. A GLOSSARY OF LITERARY TERMS by M.H. ABRAMS, CENGAGE LEARNNG
  2. THE COLOR PURPLE by ALICE WALKER, ORION PUBLISHING
  3. BREAST STORIES by MAHASWETA DEVI, SEAGULL PUBLICATION
- THE COLLECTED SHORT STORIES OF KATHERINE MANSFIELD by KATHERINE MANSFIELD, W B

<b>Course Code</b>	<b>DMTH290</b>	<b>Course Title</b>	<b>REAL ANALYSIS</b>
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<b>WEIGHTAGE</b>	
<b>CA</b>	<b>ETE(Th.)</b>
<b>30</b>	<b>70</b>

**Course Outcomes:**

**C01:** review the algebraic and order structure of the real line with examples of different sets.

**C02:** analyze the role of Cauchy's criteria for convergence of the sequences in the advanced topics of analysis.

**C03:** apply their understanding of how real numbers are constructed by the sequences of rational numbers.

**C04:** practice the concept of convergence for infinite series using various tests.

**C05:** learn some of the properties of Riemann integrable functions, and the applications of the fundamental theorems of integration.

<b>Unit No.</b>	<b>Content</b>
<b>Unit-1</b>	Algebraic and order properties of $\mathbb{R}$ , absolute value of a real number; bounded above and bounded below sets, supremum and infimum of a nonempty subset of $\mathbb{R}$ .
<b>Unit-2</b>	The completeness property of $\mathbb{R}$ , Archimedean property, density of rational numbers in $\mathbb{R}$ .
<b>Unit-3</b>	Definition and types of intervals, nested intervals property, neighborhood of a point in $\mathbb{R}$ , open, closed and perfect sets in $\mathbb{R}$ .
<b>Unit-4</b>	Connected sets in $\mathbb{R}$ connected sets and continuous functions, compact subsets of $\mathbb{R}$ , compact sets and continuous functions.
<b>Unit-5</b>	Bounded and monotonic sequences, convergent sequence and its limit, limit theorems, monotone convergence theorem.
<b>Unit-6</b>	Subsequences, Bolzano-Weierstrass theorem, limit superior and limit inferior, Cauchy sequence, Cauchy's convergence criterion.
<b>Unit-7</b>	Convergence and divergence of infinite series of positive real numbers, necessary condition for convergence, Cauchy criterion for convergence.
<b>Unit-8</b>	Tests for convergence of positive term series, basic comparison test, limit comparison test, D'Alembert's ratio test, Cauchy's $n^{\text{th}}$ root test, Cauchy integral test.
<b>Unit-9</b>	Alternating series, Leibniz test, Absolute and conditional convergence, Rearrangement of series and Riemann's rearrangement theorem.
<b>Unit-10</b>	Riemann integrability of bounded functions, examples of R-integrable and non-integrable functions, necessary and sufficient condition for Riemann integrable function (Statement only), Algebra of Riemann integrable functions.
<b>Unit-11</b>	Integrability of continuous and monotonic functions, Darboux theorems, fundamental theorem of integral calculus, first mean value theorem.
<b>Unit-12</b>	Uniform continuity, pointwise and uniform convergence of sequence and series of functions, Weierstrass's M-test.
<b>Unit-13</b>	Uniform convergence and continuity, uniform convergence and differentiability, uniform convergence and integration.

**READINGS:**

1. Robert G. Bartle & Donald R. Sherbert, Introduction to Real Analysis (4th edition). Wiley India.
2. Walter Rudin, Principles of Mathematical Analysis, Mc Graw Hill.
3. K. A. Ross, Elementary Analysis: The Theory of Calculus (2nd edition). Springer.
4. T. M. Apostol, Mathematical Analysis: A Modern Approach to Advanced Calculus. Pearson Education.