Study Scheme: M.Sc. (IT)-I
SEMESTER- I
Academic Session- 2025-26 Onwards

CORE COURSES:

S. No.	Paper Code	Title of Paper	L+T	P	External Marks	Internal Marks	Total	Credits
1	MSIT1101T MAJ CC	Computer Fundamentals and Office Automation	4 + 1	0	70	30	100	5
2	MSIT1102T MAJ CC	Computer Programming using C	4 + 1	0	70	30	100	5
3	MSIT1103T MAJ CC	Mathematical Foundation of Computer Science	4 + 1	0	70	30	100	5
4	MSIT1104P MAJ LAB	Programming Lab – I (Based on MSIT1101T)	0	4	35	15	50	2
5	MSIT1105P MAJ LAB	Programming Lab – II (Based on MSIT1102T)	0	4	35	15	50	2
6	MSIT1106T CBC	E1-Data Science	4 + 1	0	70	30	100	5
		E2-Cyber Security						

DISCIPLINE SPECIFIC SKILL COURSES:

S. No.	Paper Code	Title of Paper	L+T	P	External Marks	Internal Marks	Total	Credits
1	MSIT1107P	Programming Lab- Word Documentation	0	4	35	15	50	2
2	MSIT1108P	Web Designing using HTML	0	4	35	15	50	2
TOTAL					**420**	**180**	**600**	**28**

Total Credits: MAJ CC TH 15 + MAJ LAB 4 + CBC 5 + Discipline Specific 4 = 28

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MSIT1101T: CC- COMPUTER FUNDAMENTALS AND OFFICE AUTOMATION

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Understand Computer Fundamentals: Explain the block diagram of a computer, characteristics of computers, and different generations of computers.
- Classify Computer Categories: Differentiate between various types of computers such as super computers, mainframes, network servers, workstations, desktops, notebooks, tablets, handheld PCs, and smart phones.
- Identify Input and Output Devices: Describe the functionalities of input devices (e.g., keyboard, mouse, touch screen, OCR) and output devices (e.g., monitors, printers, plotters).
- Comprehend Memory and Storage Devices: Explain memory hierarchy, types of primary memory (RAM, ROM, Cache), and secondary storage devices (HDD, CD, DVD, Flash memory).
- Distinguish Software Types: Differentiate between system software, application software, and firm- ware, including operating systems, language translators, and utility programs.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for Candidates
Candidates are required to attempt five questions in all, selecting two questions each from section A and B and compulsory question of section C.

SECTION A

Computer Fundamentals: Block diagram of a computer, characteristics of computers and generations of computers. Categories of Computers - Supercomputer, mainframe computer, network server, Workstation, Desktop computers, notebook computer, Tablet PC, handheld PC, smart phone.
Memories: Memory Hierarchy, Primary Memory – RAM, ROM, Cache memory. Secondary Storage Devices - Hard Disk, Compact Disk, DVD, Flash memory.
Software: Types of Software- System Software, Application Software, Firmware. Type of

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System Software: Operating Systems, Language Translators, Utility Programs, Communications Software.

Computer Network: Network types, network topologies.

Internet Related Concepts: Internet, World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Web Search Engine, Net Surfing, web portal, Wiki, Blog.

SECTION B

Introduction to Word Processing :Word Processing concepts, Use of Templates, Working with word document: Editing text, Find the replace text, Formatting, spell check, Auto correct, Auto text; Bullets and numbering, Tabs, Paragraph formatting, Indent, Page formatting, Header and footer. Tables: Inserting, Filling and formatting a table; Inserting Pictures and Video; Mail Merge: Including linking with Database; Printing documents.

Preparing Presentations: Basics of presentations, Slides, Fonts, Drawing, Editing; Inserting: Tables, Images, texts, Symbols Media; Design; Transition; Animation; and Slide show. Applying a Theme, Working with Preset Placeholders, Customizing and Creating Layouts, Managing Slide Masters, Managing Themes, Printing Slides. Building Animation Effects, Transitions, and Support Materials: Under- standing Animation and Transitions, Assigning Transitions to Slides.

Preparing Spreadsheets: Creating and Editing Worksheets and Workbooks.

Exploring the types of Data. Date and Time, Modifying Cell Contents, Applying Number Formatting, Cell Range Operations, Controlling the Worksheet View, Copying and Moving Ranges, Using Names to Work with Ranges, Adding Comments to Cells. Formula and Functions, sorting and filtering data, graphs and charts.

Text/Reference Books:

- Peter Nortorn, Introduction to Computers, Seventh Edition
- V. Rajaraman, Fundamentals of Computers, PHI.
- Larry E. Long and Nancy Long, Computers: Information Technology in Perspective, PHI.
- N. Subramanian, Introduction to Computers, Tata McGraw-Hill.
- ਸੂਚਨਾ ਤਕਨਾਲੋਜੀ ਦੇ ਬੁਨਿਆਦੀ ਤੱਤ, Madaan Publishing House, Patiala

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MSIT1102T: CC– COMPUTER PROGRAMMING USING C

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Control the sequence of the program and give logical outputs
- Implement strings in your C program
- Store different data types in the same memory
- Manage I/O operations in your C program
- Repeat the sequence of instructions and points for a memory location
- Apply code reusability with functions and pointers

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for Candidates
Candidates are required to attempt five questions in all, selecting two questions each from section A and B and compulsory question of section C.

SECTION A

Programming Process: Problem definition, Algorithm development, Flowchart, Coding, Compilation and debugging.
Basic structure of C program: History of C, Structure of a C program, Character set, Identifiers and key- words, constants, variables, data types.
Operators and expressions: Arithmetic, Unary, Logical, Relational operators, assignment operators, Conditional operators, Hierarchy of operations type conversion.
Control statements: Branching statements (if, if else, switch), loop statements (for, while and do-while), jump statements (break, continue, goto), nested control structures.

SECTION B

Functions: Library functions and user defined functions, prototype, definition and call, formal and actual arguments, local and global variables, methods of parameter passing to functions, recursion.
I/O functions: Formatted & unformatted console I/O functions
Arrays: – One dimensional and Two dimensional arrays, Declaration, initialization, reading values into an array, displaying array contents.
Strings: Input/output of strings, string handling functions (strlen, strcpy, strcmp, strcat & strrev)

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Pointers: Pointer data type, pointer declaration, initialization.

Text / Reference Books :

- E.Balagurusamy,"Programming in C", Tata McGraw Hill.
- Kamthane,"Programming with ANSI andTurbo C",Pearson Education
- Rajaraman. V, "Fundamentals of Computers", PHI
- Kanetkar,"Let Us C",BPB Publications.
- 'ਸੀ' ਭਾਸ਼ਾ ਵਿੱਚ ਪ੍ਰੋਗਰਾਮਿੰਗ, Madaan Publishing House, Patiala

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MSIT1103T: CC-MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Be familiar with the basic terminology of functions, relations, and sets and demonstrate knowledge of their associated operations.
- Master to solve advanced mathematical problems, apply various methods of mathematical proof, and communicate solutions in writing.
- Master to comprehend advanced mathematics, and present the material orally and in writing.
- Utilize the knowledge of computing and mathematics appropriate to the discipline.
- Evaluate mathematical principles and logic design.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.
Use of non-programmable scientific calculator is allowed.

SECTION A

Logic: Propositions, Implications, Precedence of Logical Operators, translating English Sentences, System Specifications. Propositional Equivalences, Predicates and Quantifiers, Nested Quantifiers, Order of Quantifiers, Sets, Power Set, Set Operations
Functions: One-to-One Functions and Onto Functions, Inverse and Composition of Functions, Floor Function, Ceiling Function.
Algorithms, Searching Algorithms, Sorting, Growth of Functions, Big-O Notation, Big-Omega and Big- Theta Notation, Complexity of Algorithms, Mathematical Induction.

SECTION-B

Permutations and combinations and its applications
The Pigeon hole Principle, Basic of Counting
Relations and their properties, n-any relations and their applications, representing relations, closure of relation, equivalence relations, partial ordering.
Graphs: Introduction, terminology, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamiltonian Paths, Shortest Path Problems, Planar Graphs.

Text/Reference Books:

- Rosen, K.H: Discrete Mathematics and Its Applications, TMH Publications.
- Discrete and Combinational Mathematics, Ralph P. Grimaldi, Pearson Education.
- Elements of Discrete Mathematics, C. L. Luie, TMH Publications.
- Discrete Mathematical Structures with Applications to Computer Science, J. P. Tremblay& R. P. Manohar, MGH Publications.
- Discrete Mathematical Structures, B. Kotman, R.C. Busbay, S. Ross, PHI.

MSIT1103T: CC-MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Be familiar with the basic terminology of functions, relations, and sets and demonstrate knowledge of their associated operations.
- Master to solve advanced mathematical problems, apply various methods of mathematical proof, and communicate solutions in writing.
- Master to comprehend advanced mathematics, and present the material orally and in writing.
- Utilize the knowledge of computing and mathematics appropriate to the discipline.
- Evaluate mathematical principles and logic design.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.
Use of non-programmable scientific calculator is allowed.

SECTION A

Logic: Propositions, Implications, Precedence of Logical Operators, translating English Sentences, System Specifications. Propositional Equivalences, Predicates and Quantifiers, Nested Quantifiers, Order of Quantifiers, Sets, Power Set, Set Operations
Functions: One-to-One Functions and Onto Functions, Inverse and Composition of Functions, Floor Function, Ceiling Function.
Algorithms, Searching Algorithms, Sorting, Growth of Functions, Big-O Notation, Big-Omega and Big- Theta Notation, Complexity of Algorithms, Mathematical Induction.

SECTION-B

Permutations and combinations and its applications
The Pigeon hole Principle, Basic of Counting
Relations and their properties, n-any relations and their applications, representing relations, closure of relation, equivalence relations, partial ordering.
Graphs: Introduction, terminology, Representing Graphs and Graph Isomorphism, Connectivity,

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Euler and Hamiltonian Paths, Shortest Path Problems, Planar Graphs.

Text/Reference Books:

- Rosen, K.H: Discrete Mathematics and Its Applications, TMH Publications.
- Discrete and Combinational Mathematics, Ralph P. Grimaldi, Pearson Education.
- Elements of Discrete Mathematics, C. L. Luie, TMH Publications. .
- Discrete Mathematical Structures with Applications to Computer Science, J. P. Tremblay& R. P. Manohar, MGH Publications.
- Discrete Mathematical Structures, B. Kotman, R.C. Busbay, S. Ross, PHI.

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MSIT1104P- PROGRAMMING LAB- I

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 hrs
Maximum Pass Marks: 35%
Lectures to be delievered: 55-60 Hrs
L: 0 T: 0 P: 4

This laboratory course will mainly comprise based on subject MSIT1101T (Computer Fundamentals and Office Automation & Window Applications)

The breakup of marks for the practical will be as under:

i.	**Internal Assessment**	**30% Marks**
ii.	**Viva Voce (External Evaluation)**	**30% Marks**
iii.	**Project file, Project Execution (External Evaluation)**	**30% Marks**
iv.	**Attendance**	**10% Marks**

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MSIT1105P- PROGRAMMING LAB- II

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 hrs
Maximum Pass Marks: 35%
Lectures to be delievered: 55-60 Hrs
L: 0 T: 0 P: 4

This laboratory course will mainly comprise based on subject MSIT1102T (Computer Programming using C).

The breakup of marks for the practical will be as under:

i.	**Internal Assessment**	**30% Marks**
ii.	**Viva Voce (External Evaluation)**	**30% Marks**
iii.	**Project file, Project Execution (External Evaluation)**	**30% Marks**
iv.	**Attendance**	**10% Marks**

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MSIT1106T:E1- DATA SCIENCE

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Understand to clean, transform, and preprocess data for analysis.
- Create effective visualizations to communicate data insights.
- Apply machine learning algorithms to solve real-world problems.
- Understand to develop and evaluate data models to predict outcomes.
- Able to communicate data insights effectively to stakeholders.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION- A

Introduction to Data Science: Meaning of Data Science, Relationship between Big Data and Data Science, Benefits and uses of data science and big data. Facets of data: Structured versus Unstructured data, natural language, machine-generated data, graph-based data, audio, image and video data.
Data Science Process: Goal setting, retrieving data, data preparation, data cleansing and transformation, exploratory data analysis, data visualization, Model building and performance evaluation, presentation. Data set and its features,
Meaning of the terms: observations and variables, Discrete and continuous variables, quantitative and qualitative variables, dependent and independent variables.
Variables classified on scale: Nominal, Ordinal, Interval and Ratio variables.

SECTION-B

Data Visualization and Presentation: What is visualization, Benefits of data visualization, Visual elements: Charts—histograms, scatter plots, time series plots, Graphs, 3D Visualization and Presentation; Techniques of data visualization in data science: Univariate and bivariate techniques, Tools of data Visualization.
Dimensionality reduction: Principle of parsimony, Feature selection methods: forward selection and back- ward selection procedure, stepwise selection procedure.

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Splitting the dataset: Praining versus testing datasets, Concepts of overfitting and under-fitting.
Data Science and Ethical Issues: Discussions on privacy, security, ethics.

Text/Reference Books:

- S.J. Russell and P. Norvig: *Artificial Intelligence: A Modern Approach*, Pearson.
- Sinan Ozdemir, *Principles of Data Science*, Packt Publishing.
- E. Rich, K. Knight, S.B. Nair: *Artificial Intelligence*, Tata McGraw Hill Ed Pvt. Ltd.
- Joel Grus: *Data Science from Scratch*, O'Reilly.
- Foster Provost & Tom Fawcett: *Data Science for Business*, O'Reilly.
- Roger D. Peng & Elizabeth Matsui: *The Art of Data Science*, Lean Publishing.

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MSIT1106T: E2 - CYBER SECURITY

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- After the completion of the course, the students will be able to:-
- Understand Cyber security Fundamentals: Grasp core concepts like confidentiality, integrity, and availability (CIA triad), along with key principles of information security.
- Identify Threats and Vulnerabilities: Recognize common cyber threats (e.g., malware, phishing, ransom ware) and vulnerabilities in systems, networks, and applications.
- Implement Security Measures: Learn to apply security controls, such as firewalls, encryption, and access controls, to protect systems and data.
- Risk Assessment and Management: Develop skills to assess risks, conduct vulnerability analyses, and create mitigation strategies for organizations.
- Network Security Proficiency: Understand network protocols, secure network design, and techniques to detect and prevent intrusions

Instructions for the Paper-Setter

The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates

Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION-A

Cyber Attacks: Introduction, Types. Assets: Identification, Accountability. Vulnerability and Threats, Risk Management, Qualitative Risk Assessment, Information Security Framework: Introduction, Policies, Standards, Baselines, Guidelines and Procedures.
Security: Basics, User Access Controls, Authentication, Access Control: Framework, Techniques and Technologies, Training and Awareness and Its types, Technical Security Controls: Preventive, Detective, Corrective. Protection form malicious attacks.
Networks and Communication: Data Communication, Characteristics and components. Data flow. Computer Network, Categories, Protocol, External Services, Cloud Computing: Introduction, Models, Benefits, Challenges, Private, Public Clouds,
Software Engineering Life Cycle: Stages, Models: Waterfall, Iterative, Spiral, VModel, Big Bang, Agile, RAD, Prototype

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SECTION-B

Authentication: Authentication Vs Authorization, Methods and Protocols: Kerberos, SSL, Protocol, Pass- word Authentication, Challenge-Handshake Authentication (CHAP), MSCHAP. Extensible Authentication, Remote Authentication.

Service Set Identification (SSID), Encryption Methods: Wire Equivalent Privacy, WPA, WPA2, MAC Filtering, Wireless Routers, Creating Wireless Network, WLAN

Investigation Techniques and Cyber Forensics, Types of Investigation, Evidence and Analysis, Steps for Forensics Investigation, Forensics Tools, Investigation, Common Types of Email Abuse, Tracking Location of Email Sender, Scam or Hiex Emails and Websites, Fake Social Media Profile, Cryptography: Objectives, Type, OS Encryption, Public key Cryptography

Text / Reference Books:

- Cyber Security: Fundamentals, Principles, and Practicesl , Dr. Krishan Kumar Goyal and Prof. Amit Garg
- Introduction to Cyber Security: Guide to the World of Cyber Securityl, Anand Shinde
- Cyber Security and Cyber Lawsl, Nilakshi Jain
- Cyber security Essentialsl, William Stallings

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MSIT1107P: WORKSHOP ON WORD DOCUMENTATION

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 hrs
Maximum Pass Marks: 35%
Lectures to be delievered: 55-60 Hrs
L: 0 T: 0 P: 4

Course Outcomes:

- Use the basic functions of Microsoft Word effectively.
- Apply different text formats to a Word document.
- Insert and format images in a Word document.
- Create and edit tables in Microsoft Word.
- Use spelling and grammar-checking tools in Word.

Course covered the following practical:

1. **Introduction to the Word Interface**
   - Exploring ribbon, tabs, and toolbars
   - Creating, saving, and opening a document
2. **Text Formatting and Paragraph Styling**
   - Changing font type, size, color, and style
   - Line spacing, indentation, and alignment
3. **Creating and Using Bullets and Numbering**
   - Multilevel lists
   - Customizing bullet symbols
4. **Page Layout and Margins**
   - Setting page orientation (portrait/landscape)
   - Using page borders and shading
5. **Working with Tables**
   - Creating, modifying, and formatting tables
   - Merging/splitting cells, adding borders and colors
6. **Inserting and Formatting Images**
   - Inserting pictures, clip art, and shapes
   - Wrapping text and applying effects
7. **Working with Columns**
   - Splitting text into multiple columns
   - Using column breaks
8. **Creating Flyers or Posters**
   - Designing a promotional flyer with text and images
   - Using text boxes and WordArt
9. **Using Headers, Footers, and Page Numbers**
   - Customizing header/footer content
   - Inserting date, time, and page numbers

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10. Creating a Brochure (Bi-fold or Tri-fold)

- Using columns, sections, and page setup
- Adding images and formatted text boxes

11. Creating a Resume or Bio-data

- Using templates or custom layout
- Inserting sections for education, skills, experience

12. Mail Merge Operations

- Creating a letter and merging with a recipient list
- Generating labels or certificates

13. Creating Certificates

- Inserting borders, logos, and decorative fonts
- Using shapes and alignment tools

14. Creating a Newsletter

- Combining text, headings, images, and columns
- Using drop caps and design elements

15. Final Project: Design a Complete Document

- Example: College Magazine Cover Page, Invitation Card, Event Schedule
- Applying all learned formatting and design tools

Assessment Criteria

- Accuracy and formatting
- Creative use of features (tables, images, styles, etc.)
- Layout design and presentation
- Completion and organization of content

The breakup of marks for the practical will be as under:

i.	**Internal Assessment**	**30% Marks**
ii.	**Viva Voce (External Evaluation)**	**30% Marks**
iii.	**Lab Record, Program Development and Execution (External Evaluation)**	**30% Marks**
iv.	**Lab Attendance**	**10% Marks**

Vdl

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MSIT1108P: WEB DESIGNING USING HTML

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 hrs
Maximum Pass Marks: 35%
Lectures to be delievered: 55-60 Hrs
L: 0 T: 0 P: 4

Course Objectives:

- To introduce students to the fundamentals of web design and structure of websites, enabling them to understand the role of HTML in creating web pages.
- To develop the ability to create and format simple web pages using HTML elements, including text, images, links, lists, and tables.
- To equip students with the skills to design web page layouts and build user input forms, using appropriate HTML tags and attributes.
- To provide hands-on experience in building a basic multi-page website, incorporating fundamental design principles and basic CSS styling.

Course covered the following practical:

SECTION – A

1. **Introduction to Web Designing & HTML Basics**
   - Definition and importance of web designing
   - Difference between website and web application
   - Types of websites: Static vs. Dynamic
   - Structure of a website
2. **Understanding HTML**
   - Introduction to HTML (Hyper Text Markup Language)
   - Structure of an HTML document
   - HTML tags, elements, and attributes
   - Creating and saving an HTML file
3. **Basic HTML Elements**
   - Headings, paragraphs, line breaks, and horizontal rules
   - Formatting text: bold, italic, underline
   - Lists: ordered and unordered
   - Creating hyperlinks (internal and external)
4. **Working with Images and Multimedia**
   - Inserting images using <img> tag
   - Adding audio and video to web pages
   - Using alternative text for accessibility

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SECTION – B

5. **Tables and Layout**
   - Creating tables using <table>, <tr>, <td>, <th>
   - Merging cells using rowspan and colspan
   - Basic page layout using and
   - Introduction to HTML5 semantic elements: <header>, <footer>, <section>, <article>
6. **Creating Forms in HTML**
   - Form tag and its attributes
   - Input elements: text, password, radio, checkbox, dropdown
   - Submit and reset buttons
   - Grouping controls using <fieldset> and <legend>
7. **Introduction to Styling with CSS (Basic)**
   - What is CSS and why is it used?
   - Inline CSS vs. Internal CSS
   - Changing text color, background, and alignment
   - Basic box model: padding, margin, border
8. **Practical Assignments and Mini Project**
   - Creating a personal webpage
   - Designing a simple static website with multiple pages
   - Project: Basic layout of a college website (Home, About, Contact pages)

Text/Reference Books:

- Thomas A. Powell , —HTML: The Complete Referencel, Osborne/McGraw-Hill
- Deitel, Deitel and Nieto: Internet & WWW. How to program, 2nd Edition, Pearson Education Asia.
- E Stephen Mack, JananPlatt: HTML 4.0, No Experience Required, 1998, BPB Publications.
- "HTML Complete" by Sybex, BPB Publications, 2001.
- Bayross, "Web Enabled Commercial Applications Development Using HTML, DHTML, Java Script, Perl CGI," Third Edition, BPB Publications.

The breakup of marks for the practical will be as under:

i.	**Internal Assessment**	**30% Marks**
ii.	**Viva Voce (External Evaluation)**	**30% Marks**
iii.	**Lab Record, Program Development and Execution (External Evaluation)**	**30% Marks**
iv.	**Lab Attendance**	**10% Marks**

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SEMESTER –II

MSIT1201T: CC - RELATIONAL DATABASE MANAGEMENT SYSTEM

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Understand fundamental concepts of DBMS
- Design relational databases:
- Apply normalization techniques:
- Use SQL for data manipulation:
- Implement transaction management and concurrency control.
- Demonstrate knowledge of indexing and query optimization.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION – A

Introduction: Database Approach, Characteristics of a Database Approach, Database System Environment. Roles in Database Environment: Database Administrators, Database Designers, End Users, Application Developers. Database Management Systems: Definition, Characteristics, Advantages of Using DBMS Approach, Classification of DBMS Architecture: Data Models, Database Schema and Instance, Three Schema Architecture, Data Independence — Physical and Logical data Independence.
Database Conceptual Modeling by E-R model: Concepts, Entities and Entity Sets, Attributes, Mapping Constraints, E-R Diagram, Weak Entity Sets, Strong Entity Sets.
Relational Data Model: Concepts and Terminology. Constraints: Integrity Constraints, Entity and Referential Integrity constraints, Keys: Super Keys, Candidate Keys, Primary Keys, Secondary Keys and Foreign Keys.
Database Design: Problems of Bad Database Design. Normalization: Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive Dependency, Normal Forms—INF, 2NF, 3NF, BCNF, Multi-valued Dependency, Join Dependency and Higher Normal Forms-4NF,5NF.

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SECTION – B

SQL Fundamentals: Introduction to SQL: Syntax and structure, **Data Definition Language (DDL):** CREATE, ALTER, DROP, **Data Manipulation Language (DML)**: INSERT, UPDATE, DELETE; **Advanced SQL Queries:** SELECT statements: WHERE, ORDER BY, GROUP BY; Joins: INNER, OUTER, CROSS,
SELF; Subqueries and Common Table Expressions (CTEs).
SQL Queries: .Applying Integrity Constraints. Functions, Procedures and Packages. Using Cursors and Triggers.
PL/SQL: Introduction to PL/SQL, Cursors- Implicit & Explicit, Procedures, Functions & Packages, Database Triggers.

Text / Reference Books:

- Elmasry Navathe, "Fundamentals of Database System", Pearson Education.
- "Oracle SQL Complete Reference",Tata McGraw-Hill.
- T. Connolly, C Begg,"Database Systems", Pearson Education.
- JeffreyD.UIlman,"Principles of Database Systems", Galgotia Publications.
- Henry F.Korth ,A. Silberschhatz, "Database Concepts", Tata McGrawHill.

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MSIT1202T: CC – WEB DEVELOPMENT USING PYTHON AND DJANGO

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Understand Python Syntax and Semantics
- Describe the basic structure of Python programs
- Use variables, data types, operators, and expressions correctly
- Apply Control Flow Constructs
- Work with Data Structures
- Define and Use Functions

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION-A

Introduction to Python: History of Python, Strength and Weakness, Different Versions, Installing Python, Setting up in local environment, IDLE, Executing from file, command line from interactive mode, Python Identifiers and reserved key words.
Python syntax: Variables and Variables type, Data types, Data Types Conversion, Operators (Arithmetic, Comparison, Assignment, Bitwise, Logical, Membership, Identity),Operators Precedence, Python Decision making (if, if else, nested if else), Python loops (while, for, nested loops), Break and continue statements.
Python Collections or Sequence: Sequence introduction, Number operations, String Operations, List, Tuple, Dictionary, Set.
Python Functions: Function introduction, User defined functions, Functions with parameters, Keywords and optional parameters, Scope of variables (Global and Local), Anonymous function — Lambda, In-build function, List comprehension.

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SECTION – B

Django framework: Creating a Django project, creating and deploy Django apps. Django project layout and **MVC architecture:** model, views and templates. redirecting URLs, handling get and post requests, creating and handling JSON file formats, user authentication using auth, working with sessions, working with AJAX, implementing API routing, deploying application.
Database Queries: Understand basic Structured Query Language (SQL), introduction to compatible database models PostGreSQL, SQLite, MySQL. setting up database connectivity, working with Django ORM.

Text/ Reference Books

- Paul Gries, Jennifer Campbell, Jason Montojo, Practical Programming, "An Introduction to Computer Science Using Python 3.6", Shroff Publications and Distributors.
- John V Guttag, "Introduction to Computation and Programming Using Python", Revised and expanded Edition, MIT Press , 2013
- Mastering Django , Nigel George, December 2016, Packt Publishing, ISBN: 9781787281141
- "Learning Django Web Development", Sanjeev Jaiswal and Ratan Kumar, Packt Publishing Limited, ISBN: 9781783
- Paul Gries, Jennifer Campbell and Jason Montojo, Practical Programming : An Introduction to Computer Science using Python 3", Second edition, Pragmatic Programmers, LLC,2013.
- Rossum, Introduction To Python, Shroff Publication sand Distributors.

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MSIT1203T: CC- COMPUTER ORGANIZATION AND ARCHITECTURE

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Understand the functional units of a computer system.
- Analyze and design digital logic circuits used in computers.
- Explain the principles of instruction set architecture (ISA).
- Analyze CPU architecture and data path design.
- Understand memory hierarchy and its impact on performance.
- Explore input/output systems and their interfacing.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION-A

Concepts about bits, bytes and word, Number System: Number conversions, Arithmetic operations, Integer and floating point representation. Character codes (ASCII, EBCDIC, BCD, 8421, Excess-3). Boolean expression - Minimization of Boolean expressions - Minterm - Maxterm - Sum of Products (SOP) - Product of Sums (POS) - Karnaugh map Minimization - Don't care conditions - Quine-Mc Cluskey method of minimization.
Basic Gates, Combinational logic design: half-adder, full-adder, half-subtractor, full subtractor, binary parallel adder, Multiplexer/De-multiplexer, decoder, encoder.
Sequential circuits: concept, flip-flops (D, RS, JK, JK-Master-Slave, T), counters (Ripple, Asynchronous, Synchronous, Decade, Mod-5), Instruction codes, Instruction formats, Instruction cycle, Addressing modes.

SECTION-B

Register Transfer Language, Arithmetic, Logic and Shift micro-operations, Arithmetic Logic Shift unit.
Control Memory: Design of control unit, Micro programmed and Hard wired control unit (overview only), Features of RISC and CISC.
Memory organization: Concepts of semiconductor memory, CPU-memory interaction,

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organization of memory modules. Cache memory and related mapping and replacement policies, Virtual memory.

I/O organization: I/O interface, Modes of data transfer. Programmed I/O, Interrupt initiated I/O, DMA.

Text/ Reference Books:

- M. M. Mano, "Computer System Architecture", Prentice-Hall of India.
- S. Tanenbaum, "Structured Computer Organisation", Prentice-Hal lof India.
- William Stallings, "Computer Organization and Architecture", Pearson Education.

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MSIT1204P –PROGRAMMING LAB-III

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 hrs
Maximum Pass Marks: 35%
Lectures to be delievered: 55-60 Hrs
L: 0 T: 0 P: 4

This laboratory course will mainly comprise based on subject MSIT1201T (RDBMS)

The breakup of marks for the practical will be as under:

i.	**Internal Assessment**	**30% Marks**
ii.	**Viva Voce (External Evaluation)**	**30% Marks**
iii.	**Project file, Project Execution (External Evaluation)**	**30% Marks**
iv.	**Attendance**	**10% Marks**

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MSIT1205P-PRAGRAMMING LAB-IV

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 hrs
Maximum Pass Marks: 35%
Lectures to be delievered: 55-60 Hrs
L: 0 T: 0 P: 4

This laboratory course will mainly comprise based on subject MSIT1202T (Web Development using Python and Django)

The breakup of marks for the practical will be as under:

i.	**Internal Assessment**	**30% Marks**
ii.	**Viva Voce (External Evaluation)**	**30% Marks**
iii.	**Project file, Project Execution (External Evaluation)**	**30% Marks**
iv.	**Attendance**	**10% Marks**

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MSIT1206T: E3- DATA WAREHOUSING AND DATA MINING

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Understand the concepts of data warehousing, including data warehouse architecture, design, and implementation.
- Understand the concepts of data mining, including types of data mining, techniques, and algorithms.
- Able to analyze and interpret data mining results, and communicate insights to stakeholders.
- Understand the importance of data quality and governance in data warehousing and data mining.
- Hands-on experience with data warehousing and data mining tools and technologies, such as ETL tools, data visualization tools, and data mining software.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION-A

Introduction and Design: Overview and Concepts: Data Warehousing Components, Building a Data Warehouse, Data Warehouse Architecture, Infrastructure and Metadata. Data Design and Data Representation: Principles of Dimensional Modeling, Data Extraction, Transformation and Loading, Data Quality, Online Analytical Processing (OLAP)–OLAP and Multidimensional Data Analysis.
Data Mining – Pre-processing: Steps in Data mining process, Data Mining Functionalities, Architecture of a Typical Data Mining Systems, Classification of Data Mining Systems, Knowledge Discovery in Databases (KDD), KDD Process, Data Preprocessing, Data Cleaning, Data Transformation, Data Compression and Dimension Reduction, Principal Component Analysis, Binning Methods.

SECTION-B

Data Mining Techniques: Association Rule Mining, Classification and Prediction: Efficient and

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Scalable Frequent Item set Mining Methods, Mining, Various Kinds of Association Rules, Association Rules, Market Basket Analysis, Apriori Algorithm, Tree Based Algorithms. Classification by Decision Tree Introduction, Bayesian Classification, Rule Based Classification, Classification by Back propagation, Support Vector Ma- chines, Lazy Learners, Prediction Techniques, Regression Models.

Clustering & Introduction to Web Mining: Data Mining Algorithms: Clustering. Partitioned Algorithms, Hierarchical Algorithms, Density Based, Algorithms, Grid Based Algorithms, Web Content Mining, Web Structure Mining, Web Usage Mining, Spatial Mining, Multimedia Data Mining, Text Mining.

Text/Reference Books:

- J. Han and M. Kamber, "Data Mining Tools and Techniques", Morgan Kaufmann Publishers.
- M.H. Dunham, "Data Mining Introductory and Advanced Topics", Pear son Education.
- Pang-Ning Tan, Michael Steinbach and Vipin Kumar, "Introduction to Data Mining", Pearson Education.
- Parch, "Data warehousing - concepts, Techniques", Products and Applications, Prentice Hall of India.
- Alex Berson and Stephen J. Smith, "Data Warehouse sing, Data Mining & OLAP", Tata McGraw Hill Edition, Tenth Reprint.

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MSIT1206T: E4 – CLOUD COMPUTING

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 5

Maximum Time: 3 Hrs
Minimum Pass Marks: 35%
Lectures to be delivered: 55-60 Hrs
L: 4 T: 1 P: 0

Course Outcomes:

- Understand the basics of cloud computing, including its definition, characteristics, and service models.
- Understand the differences between public, private, and hybrid clouds, and their use cases.
- Design and implement cloud-based solutions for various industries and applications.
- Understand the security and compliance challenges in cloud computing and how to address them.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates
Candidates are required to attempt two questions each from sections A & B of the question paper and the en- tire section C

SECTION-A

Introduction: Definition of Cloud, Basics of Cloud Computing, Characteristics of Cloud, Benefits of Cloud, Driving factors towards the use of Cloud Computing, Comparing Cloud with Grid Computing Systems, Applications of Cloud Computing.
Basic Concepts and Virtualization: Cloud Computing Evolution, Big Data Concept, Elasticity and Scalability, Virtualization: characteristics of virtualization, Benefits of virtualization, Forms of CPU virtualization, Hypervisors, VMWare, Multitenancy, SLA in Cloud Computing.
Cloud Computing Service Delivery Models: Cloud service delivery models, Cloud Reference Model, Infrastructure as a service (IaaS) architecture, details, examples and applications, Platform as a service (PaaS) architecture, details, examples and applications, Software as service (SaaS) architecture, details, Examples and applications, NIST architecture.

SECTION – B

Cloud Deployment Models: Cloud deployment models, Private Clouds, Public Clouds, Hybrid Clouds, Community, Virtual private Clouds, Heterogeneous and Homogenous Clouds, Selection criteria for Cloud deployment.
Cloud Security: Cloud Security challenges and risks, Principal Characteristics of Cloud Computing Security, Cloud Computing Security Reference Model, How security gets integrated,

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Computing Security, Cloud Computing Security Reference Model, How security gets integrated, Principal security Dangers to Cloud Computing, Internal security breaches, Data corruption or loss, User account and service Hijacking, Steps to reduce Cloud Security breaches, Identity and access management.

Cloud Deployment Models: Cloud deployment models, Private Clouds, Public Clouds, Hybrid Clouds, Community, Virtual private Clouds, Heterogeneous and Homogenous Clouds, Selection criteria for Cloud deployment.

Cloud Security: Cloud Security challenges and risks, Principal Characteristics of Cloud Computing Security, Cloud Computing Security Reference Model, How security gets integrated, Principal security Dangers to Cloud Computing, Internal security breaches, Data corruption or loss, User account and service Hijacking, Steps to reduce Cloud Security breaches, Identity and access management.

Text/Reference Books:

- Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, and Cloud Computing: Principles and Paradigms, Wiley.
- Barrie Sosinsky, Cloud Computing Bible, Wiley.
- Michael Miller, Cloud Computing, QUE Publications.
- Judith Hurwitz, Robin Bloor, Marcia Kaufman, Fern Halper, Cloud Computing for Dummies

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MSIT1207P: DATA ANALYSIS USING SPREADSHEET

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 Hrs
Maximum Pass Marks: 35%
Lectures to be delievered: 55-60 Hrs
L: 0 T: 0 P: 4

Course Outcomes:

- Understand to manage and manipulate data using spreadsheet software.
- Understand to use formulas and functions, such as SUMIF, AVERAGEIF, and VLOOKUP, to per- form data analysis tasks.
- Understand to use data analysis to inform decision-making and solve real-world problems.
- Understand to apply various data analysis techniques, such as filtering, sorting, and grouping, to extract insights from data.

SECTION – A

Introduction to Spreadsheet:
Overview of Spreadsheet, setting up the workspace and preferences, basic data entry and formatting.
Basic Functions and Formulas:
Understanding formulas and functions, basic arithmetic functions (SUM, AVERAGE, MIN, MAX), text functions (CONCATENATE, LEFT, RIGHT, MID), logical functions (IF, AND, OR, NOT).
Data Cleaning and Preparation:
Importing data from various sources, data cleaning techniques: removing duplicates, handling missing values, data validation, text functions for data cleaning.
Data Manipulation and Transformation:
Sorting and filtering data, using tables and structured references, using lookup functions (VLOOKUP, HLOOKUP, INDEX-MATCH), working with PivotTables for data summarization.

SECTION – B

Basic Data Analysis Techniques:
Descriptive statistics in Excel: mean, median, mode, standard deviation, and variance, frequency distributions, using Excel's Data Analysis Tool pack.
Introduction to Data Visualization:
Principles of data visualization, creating basic charts in Excel: bar charts, line charts, pie charts, customizing charts for better clarity.
Advanced Data Visualization Techniques:
Creating advanced charts: scatter plots, histograms, box plots, introduction to Pivot Charts, using spark lines for data trends.
Advanced Excel Functions:
Advanced functions: SUMIFS, COUNTIFS, AVERAGEIFS, array formulas, performing

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scenario analysis and what-if analysis, using Solver for optimization problems.

The breakup of marks for the practical will be as under: -

i. Internal Assessment	30% Marks
ii. Viva Voce(External Evaluation)	30% Marks
iii. Lab Record, Program Development and Execution(External Evaluation)	30% Marks
iv. Attendance	10% Marks

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MSIT1208T: DIGITAL MARKETING

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 Hrs
Maximum Pass Marks: 35%
Lectures to be delievered: 4Hrs/Week
L: 0 T: 0 P: 4

Course Outcomes:

- Understand the concepts of Digital Inclusion and Empowerment and analyze the role of initiatives like Digi-Locker, BHIM, e-Kranti, and e-Hospitals in promoting a digitally empowered society.
- Explore and evaluate the use of public utility portals (e.g., RTI, Health, Finance, Education, and In- come Tax filing) provided by the Government of India for citizen services.
- Demonstrate the ability to use various digital communication tools and platforms, including blogs, social media, and collaborative tools for file sharing, messaging, and video conferencing.
- Analyze the threat landscape in cyberspace, including data breaches, cyber attacks, and understand security practices such as Block chain and government security initiatives.
- Explain and apply ethical practices and netiquettes in digital environments, and understand the importance of ethics in digital communication and cyberspace behavior.

Instructions for the Paper-Setter:
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates:
Candidates are required to attempt two questions each from sections A & B of the question paper and the entire section C

SECTION-A

Meaning and Definition of Marketing- Basics of Marketing, Features of Marketing, Importance of Marketing, Functions of Marketing, Core Concept of Marketing - Need, Want, Demand, Value and Satisfaction, Production-Concept, Product concept, selling concept Marketing concept, Marketing Mix: Meaning, Seven Ps of marketing mix.
Introduction to Digital Marketing- Key Concepts of Digital Marketing, Traditional Marketing vs. Digital Marketing, The Opportunity of Digital Marketing, Characteristics of Digital Marketing, Implications of Digital Marketing, Strategies in Digital Marketing.
Internet and WWW: Introduction to internet and its working, business use of internet, services offered by Internet, evaluation of internet, internet service provider (ISP), internet addressing (DNS and IP addresses).Introduction and working of WWW, Web browsing (opening, viewing, saving and printing a web page and bookmark).

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Search Engine: About search engine, component of search engine, working of search engine.

SECTION – B

HTML: Basics of HTML, HTML Tags, Elements of Web page (Text, Image & Hyperlink Elements). SMO (Social Media Optimization) –Facebook, Twitter, YouTube-Introduction to Social Media, Types of Social Media, How Social Media is affecting Google Search, How to choose right social media, Integrating social media into your website and blogs, Facebook Marketing, Introduction to Facebook, Difference between Pro- files, Places, Groups and Pages, Social media and communications strategy, Facebook Connect(Like, Share, Comment), Facebook pages(Creating, Managing, Retention), Facebook Apps, Measuring and Monitoring, Advantages and Challenges ,

Twitter Marketing: Introduction to Micro blogging and Twitter, Twitter Demographics, Use for reputation, promotion, sales, conversing, Who to follow, Tweeting, Searching tweets and users, Measuring Influence, Tools, Tracking Code, Twitter Account Promotion, How to Shorten and Measure your URLs , Photo Sharing Social Network : Picasa, Video Sharing Social Network : YouTube

Email Marketing: Introduction to Email Marketing, How Email Marketing Works, Sending

Text/Reference Books:

- William I. Stanton, Ajay Pandit, "Marketing Concepts & Cases," The McGraw Hill companies Ltd. New Delhi
- Search Engine Optimization Bible, Jerri L. Ledford, Wiley Publishing
- S. A. Sherlekar, —Marketing Managementl, Himalaya Publishing House, Mumbai.
- E. Stephen Mack, Janan Platt, —HTML 4.0l BPB Publications, New Delhi.