# LESSON PLANS

# MCA 1st SEM

# &

# MCA 3rd SEM

## (JULY-DEC 2025 SESSION)

# MCA 1st SEM

# Institute of Management & Technology,Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

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|---|---|---|---|
| **COURSE:** | **OBJECT ORIENTED PROGRAMMING USING JAVA** | **CODE:** | **20MCA21C1** |
| **CLASS:** | **MCA I Sem** | **ACADEMIC YEAR:** | **2025-26** |
| **FACULTY:** | **Ms. URVIJA RAINA** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| UNIT-I | | | | |
| 1 | Genesis and Evolution of Java Language, Internet & Java, Byte-code, its features, Java Program Structure and Java's Class Library | R1 | 2 | Chalk & Talk,PPT |
| 2 | Data Types, Variables, Scope of Variable | T1,R1 | 2 | Chalk & Talk |
| 3 | Operators and their precedence | T1,R1 | 2 | Chalk & Talk |
| 4 | Selection Statements,Iterative Statements(for,while,do-while) | T1,R1 | 2 | Chalk & Talk,PPT |
| 5 | Defining Classes & Methods, Using a Class by creating Objects of a Class, Automatic Garbage Collection | T1,R1 | 2 | Chalk & Talk,PPT |
| 6 | Arrays, Arrays of Characters | T1,R1 | 1 | Chalk & Talk |
| 7 | String Handling Using String Class, Operations on String Handling,Using String Buffer Class | R1,R2 | 2 | Chalk & Talk,PPT |
| 8 | Lab based on above topics | T1,R1 | 5 | Chalk & Talk,PPT |
| UNIT-II | | | | |
| 9 | Using Existing Classes for Inheritance, Choosing Base Class,Multiple Levels of Inheritance | T1,R1 | 2 | Chalk & Talk |
| 10 | Abstraction through Abstract Classes, Using Final Modifier | T1,R1 | 2 | Chalk & Talk |
| 11 | Packages, Defining a Package, Packaging up Your Classes, Adding Classes from a Package to Your Program | T1,R1 | 2 | Chalk & Talk |
| 12 | CLASSPATH, Standard Packages, Access Protection in Packages | T1,R1 | 2 | Chalk & Talk |
| 13 | Creating an Interface, Implementing an | T1,R1 | 1 | Chalk & Talk |

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| | Interface, Interface References | | | |
| 14 | Implementing Multiple Interfaces, Constants in Interfaces, Inheritance in Interfaces, Nested Interfaces | T1,R2 | 2 | Chalk & Talk |
| 15 | Lab based on above topics | T1,R1 | 4 | Chalk & Talk |
| UNIT-III | | | | |
| 16 | Exceptions and its types, Dealing with Exceptions, Exception Objects, Defining Your Own Exceptions | T1,R1 | 2 | Chalk & Talk |
| 17 | Java Thread Model, Understanding Threads, Main Thread, Creating a Thread | T1,R1 | 2 | Chalk & Talk |
| 18 | Creating Multiple Threads, Thread Priorities, Synchronization | T1 | 2 | Chalk & Talk |
| 19 | I/O Basics, Byte and Character Structures, I/O Classes, Reading Console Input | T1 | 1 | Chalk & Talk |
| 20 | Writing Console Output, Reading and Writing on Files | T1 | 1 | Chalk & Talk |
| 21 | Random Access Files,Storing and Retrieving Objects from File, Stream Benefits | T1 | 2 | Chalk & Talk |
| 22 | Lab based on above topics | T1,R1 | 3 | Chalk & Talk |
| UNIT-IV | | | | |
| 23 | Applet Basics, Applet Architecture, Applet Life Cycle, | T1,R2 | 2 | Chalk & Talk |
| 24 | Applet Display Methods, The HTML APPLET Tag,Passing Parameters to Applets | T1,R2 | 1 | Chalk & Talk |
| 25 | AWT Classes, Window Fundamentals, Working with Frame, Creating a Frame Window in an Applet,Displaying Information within a Window | T1,R2 | 2 | Chalk & Talk |
| 26 | Working with Graphics, Working with Color, Setting the Paint Mode, Working with Fonts | T1,R2 | 2 | Chalk & Talk,PPT |
| 27 | Managing Text Output Using Font Metrics, Exploring Text & Graphics | T1,R2 | 2 | Chalk & Talk,PPT |
| 28 | Working with AWT Controls, Layout Managers and Menus. | T1,R2 | 2 | Chalk & Talk,PPT |
| 29 | Lab based on above topics | T1,R2 | 4 | Chalk & Talk,PPT |

Total Lectures: 45(Lectures) + 16(Labs)

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

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|---|---|---|
| ☐CHALK & TALK | ☐STUD. ASSIGNMENT | ☐WEB RESOURCES |
| ☐LCD/SMART BOARDS | ☐STUD. SEMINARS | ☐ADD-ON COURSES |

# References

## A. TEXT BOOKS:

T1 Java The Complete Reference, Herbert Schildt, Tata McGraw Hill Publication

## B. REFERENCE BOOKS:

R1 Programming in Java A Primer, E Balagurusamy, Tata McGraw Hill Publication
R2 Beginning Java, Ivor Horton, Wrox Publications

## C. GOOGLE CLASSROOM LINK:

https://classroom.google.com/c/ODA5MzMwNzczNjA3?cjc=vwcw33lx

## DIGITAL CONTENT:

W1. https://docs.oracle.com/javase/tutorial/
W2. https://www.javatpoint.com/java-tutorial
W3. https://www.w3schools.com/java/

# Institute of Management & Technology,Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

| | | | |
|---|---|---|---|
| **COURSE:** | **COMPILER DESIGN** | **CODE:** | **20MCA21C2** |
| **CLASS:** | **MCA 1st Semester** | **ACADEMIC YEAR:** | **2025-26** |
| **FACULTY:** | **Dr. Ritu Agrawal** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| UNIT-I | | | | |
| 1 | Introduction to System programs | T1, W1 | 1 | PPT |
| 2 | Overview of Assemblers, Loaders, Linkers, Macros, Compilers | T2 | 1 | PPT |
| 3 | System Software Tools: Variety of software tools | T1,T2 | 2 | PPT |
| 4 | Text editors, Interpreters | T2 | 1 | Chalk & Talk |
| 5 | Program generators, Debug Monitor, System Programming environment. | T1,T2 | 1 | Chalk & Talk |
| 6 | Compile and Go Loader, general loader schemes | T1, W2 | 1 | Chalk & Talk |
| 7 | Absolute Loader, Subroutine linkage | T1, W2 | 1 | Chalk & Talk |
| 8 | Reallocating Loader | T1,W2 | 1 | Chalk & Talk |
| 9 | Direct Linkage Loader | T1 | 1 | Chalk & Talk |
| 10 | Binders, Linking loader, overlays . | T1 | 1 | Chalk & Talk |
| UNIT-II | | | | |
| 11 | Phases of Compiler | T3 | 1 | PPT |
| 12 | Compiler writing tools, Cross-Compiler | T3,R1 | 1 | Chalk & Talk |
| 13 | Lexical Analysis | T3, R1 | 1 | Chalk & Talk |
| 14 | Finite Automata | T3,W3 | 1 | Chalk & Talk |

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| 15 | Regular Expression, Lexeme | T3 | 1 | Chalk & Talk |
| 16 | From a Regular expression to an NFA, NFA to DFA | T3, R1 | 1 | PPT |
| 17 | Design of Lexical Analyzer. | T3 | 1 | Chalk & Talk |
| 18 | Syntax Analyzer, CFG, Role of the Parser | T3, R1,W3 | 1 | Chalk & Talk |
| 19 | Top Down Parsing, Recursive Descent parsing | T3, R1,W4 | 1 | Chalk & Talk |
| 20 | Predictive Parsers | T3, W4 | 1 | Chalk & Talk |
| 21 | Bottom up Parsing, Shift reduce | T3,W4 | 1 | Chalk & Talk |
| 22 | Operator Precedence parsers | T3,W4 | 1 | Chalk & Talk |
| 23 | LR Parsers. | T3 | 1 | Chalk & Talk |
| 24 | Practical on above topics | | 9 | |
| UNIT-III | | | | |
| 25 | Syntax directed definitions | T3, R1 | 1 | Chalk & Talk |
| 26 | Evaluation Orders of Syntax directed definitions | T3 | 2 | PPT |
| 27 | Intermediate Languages: Intermediate code generation | T3, R1 | 1 | Chalk & Talk |
| 28 | Syntax trees, Construction of Syntax trees | T3, R1 | 1 | Chalk & Talk |
| 29 | Three Address Code | T3 | 1 | Chalk & Talk |
| 30 | Types and Declarations | T3, R1 | 1 | PPT |
| 31 | Translation of Expressions, Type Checking, Postfix form | T3,R2 | 1 | Chalk & Talk |
| 32 | Symbol table: Contents of Symbol table, Data Structures for Symbol table | T3, R1,R2 | 1 | Chalk & Talk |
| 33 | Runtime Storage Administration | T3, R1,R2 | 1 | Chalk & Talk |
| 34 | Practical on above topics | T3 | 4 | Software Tool |
| UNIT-IV | | | | |
| 35 | Principal sources of optimization | T3 | 1 | Chalk & Talk |
| 36 | Loop optimization | T3 | 1 | Chalk & Talk |
| 37 | DAG | T3 | 1 | Chalk & Talk |
| 38 | Optimization of Basic Blocks | T3 | 1 | Chalk & Talk |
| 39 | Global Data Flow Analysis – Efficient Data Flow Algorithm | T3, R1 | 1 | PPT |
| 40 | Code Generation: Issues in code generation | T3,R2 | 1 | Chalk & Talk |

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| 41 | Design of a simple Code Generator | T3 | 1 | Chalk & Talk |
| 42 | Register allocation and Assignment | T3,R2 | 1 | Chalk & Talk |
| 43 | Peephole optimization | T3 | 1 | Chalk & Talk |

Total Lectures: 43 Total labs: 13

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

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|---|---|---|
| ☐ CHALK & TALK | ☐ STUD. ASSIGNMENT | ☐ WEB RESOURCES |
| ☐ LCD/SMART BOARDS | ☐ STUD. SEMINARS | ☐ ADD-ON COURSES |

# References

**A. TEXT BOOKS:**

T1 Donovan: Systems Programming, Tata McGraw Hill.
T2 Dhamdhere: System Software, Tata McGraw Hill.
T3 Alfred V. Aho, Ravi Sethi, Jeffrey D. Ullman: Compilers Principles, Techniques and Tools, Addison Wesley.

**B. REFERENCE BOOKS:**

R1 Principles of Compiler Design, ITL Education Solutions Limited.
R2 Torben Ægidius Mogensen: Basics of Compiler Design, ISBN 978-87-993154-0-6.

**C. GOOGLE CLASSROOM LINK**

https://classroom.google.com/c/NzgwMDUzOTM2MzE1?cjc=o7v6ri2i

**DIGITAL CONTENT:**

W1. https://www.geeksforgeeks.org/computer-science-fundamentals/system-software/

W2. https://www.scaler.com/topics/what-is-loader/#

W3. https://www.geeksforgeeks.org/theory-of-computation/introduction-of-finite-automata

W4 https://www.geeksforgeeks.org/compiler-design/types-of-parsers-in-compiler-design/

# Institute of Management & Technology,Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

| | | | |
|---|---|---|---|
| **COURSE:** | **COMPUTER GRAPHICS AND MULTIMEDIA** | **CODE:** | **20MCA21C3** |
| **CLASS:** | **MCA 1st Sem** | **ACADEMIC YEAR:** | **2025-26** |
| **FACULTY:** | **Ms. Kanishka Setia** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| UNIT-I | | | | |
| 1 | Overview of Computer Graphics, its classification and its Applications | T1, R1 | 1 | Chalk & Talk |
| 2 | CRT,Display Devices-Raster and Random Scan System, Color CRT,Flat Panel Devices | T1,R1 | 2 | Chalk & Talk |
| 3 | Graphic Input devices, Graphics Software and standards | T1, R1 | 1 | Chalk & Talk |
| 4 | Introduction to Scan Conversion and graphic primitives | T2,R1 | 1 | Chalk & Talk |
| 5 | Point Conversion and Line Conversion-DDA Algortihm | T2,R1 | 1 | PPT |
| 6 | Line Conversion- Bresenham's Line drawing Algo and introduction to circle | T2,R1 | 2 | PPT |
| 7 | Bresenham's Circle grnerating Algorithm and Mid point circle algorithm | T2, R1 | 1 | PPT |
| 8 | Ellipse Algorithm and overview of filled area primitives | T1,R1,W1 | 2 | PPT |
| 9 | Inside outside Test , Boundary Fill and Flood fill algorithm | T2,R1 | 1 | PPT |
| 10 | Character generation, line attributes, area fill and character fill attributes | T1,R1 | 1 | Chalk & Talk |
| 11 | Practical Lab based on above topics | T1,R1 | 4 | Chalk & Talk |
| UNIT-II | | | | |
| 12 | 2D Transformation-translation, rotation, scaling, reflection and shearing | T1,R1 | 1 | PPT |
| 13 | Homogenous and Composite transformation | T1,T2 | 1 | PPT |
| 14 | Viewing pipeline and coordinate syatem, window to viewport transformation | T1,R1 | 1 | Chalk & Talk |
| 15 | Introduction to clipping-Point and line clipping, Cohen Sutherland line clipping algorithm | T1, R1 | 2 | Chalk & Talk |
| 16 | Liang Barsky and NLN Line clipping algorithm | T2,R1,W2 | 1 | PPT |
| 17 | 3D object representation and display methods | T1,R1 | 2 | PPT |
| 18 | Bezier curves and surfaces | T2,R1 | 1 | PPT |

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| 19 | B-spline curve and surfaces | T2, R1 | 1 | PPT |
| 20 | Practical Lab based on above topics | T2,R1 | 4 | Chalk & Talk |
| UNIT-III | | | | |
| 21 | 3D Transformation, Composite tramsformation | T1,R1 | 2 | Seminar |
| 22 | Viewing Pipleine and coordinates, Parallel and perspective transformation | T1,R1,W3 | 1 | PPT |
| 23 | Types of parallel and perspective projection | T1,R1,W3 | 1 | PPT |
| 24 | Hidden surfaces, Visible surface and back face detection methods | T2,R1 | 2 | Chalk & Talk |
| 25 | Depth buffer methods, Illumination methods | T1,R1 | 1 | PPT |
| 26 | Color Models-XYZ,RGB, YIQ and CMY , light properties | T1,R1 | 1 | PPT |
| 27 | Shading and its types | T1,R1 | 1 | PPT |
| 28 | Practical Lab based on above topics | T1,R1 | 4 | Chalk & Talk |
| UNIT-IV | | | | |
| 28 | Multimedia concepts, its applications | T3,R2 | 1 | Chalk & Talk |
| 29 | Multimedia system architecture, object definition for MM, MM data interface standards and databases | T3,R2 | 2 | Chalk & Talk |
| 30 | Data file format standards, Digital Voice and audio compression and decompression | T3,R2,W4 | 2 | PPT |
| 31 | Video image and animation, full motion video, storage and retrieval technologies | T3,R2 | 1 | PPT |
| 32 | Authoring and its tools, Hypermedia and mobile messaging , distributed multimedia systems, Integrated document management | T3,R2 | 2 | Seminar |
| 33 | Case study of Flash, drawing shapes, modeling ,shading and textures | T3,R2 | 2 | PPT |
| 34 | Practical Lab based on above topics | T3,R2 | 4 | Chalk & Talk |

Total Lectures: 45 Total Labs: 16

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

| | | |
|---|---|---|
| ☐ CHALK & TALK | ☐ STUD. ASSIGNMENT | ☐ WEB RESOURCES |
| ☐ LCD/SMART BOARDS | ☐ STUD. SEMINARS | ☐ ADD-ON COURSES |

# References

## A. TEXT BOOKS:

T1 Computer Graphics C Version by D.D.Hearn and Pauline Baker
T2 Schaum's Outline of Computer Graphics 2nd Edition by Zhigang Xiang and Roy Plastock

T3 Bufford: Multimedia Systems, Addison Wesley

**B.REFERENCE BOOKS:**

R1 Newman : Principles of Interactive Computer Graphics, McGraw Hill
R2 Jeffcoate : Multimedia in Practice, Prentice-Hall.

**C. GOOGLE CLASSROOM LINK:**

https://classroom.google.com/c/NjIyNjM4NTQ1MDAw?cjc=lhnxhvj

**DIGITAL CONTENT:**

W1 https://www.slideshare.net/slideshow/ellipses-drawing-algo/18240499
W2. https://www.slideshare.net/slideshow/3dobjectrepresentationpdf/251555364
W3. https://www.slideshare.net/slideshow/perspective-projection-151113040/151113040
W4. https://www.slideshare.net/slideshow/multimediamultimedia-compression/151057974

# Institute of Management & Technology,Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

| | | | |
|---|---|---|---|
| **COURSE:** | **DIGITAL DESIGN & COMPUTER ARCHITECTURE** | **CODE:** | **20MCA21C4** |
| **CLASS:** | **MCA-1st Semester** | **ACADEMIC YEAR:** | **2025-26** |
| **FACULTY:** | **Dr. Rekha Mittal** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| **UNIT-I** | | | | |
| 1 | **Number System:** Binary, Octal, Hexadecimal and Decimal. | T1,R1 | 1 | Chalk & Talk |
| 2 | 2's Complement Arithmetic.1's and 2's Complements, Inter- conversion of numbers. | T1,R1 | 1 | Chalk & Talk |
| 3 | Coders: Weighted and Non-weighted codes, BCD Codes, Gray codes, Self-complementing codes, Error-Detecting/Correcting codes, Alphanumeric Codes, Hamming Codes, Floating Point Numbers. | T1,T2 | 2 | Chalk & Talk |
| 4 | Binary Arithmetic: Binary Addition and Subtraction, | T1,R1 | 1 | Chalk & Talk |
| 5 | Booth Coding, Binary Multiplication. | T1,R1 | 2 | Chalk & Talk |
| 6 | **Logic Design:** Logic Gates, Truth Tables.Theorems of Boolean Algebra. | T1,R1 | 1 | Chalk & Talk NPTEL Lectrure |
| 7 | Boolean Algebra, Boolean Expressions-Variables and Literals, Boolean Expressions – Equivalent and Complement. | T1,R1 | 1 | Chalk & Talk |
| 8 | Simplification Techniques, SOPs & POSs Boolean Expressions. | T1,R1 | 2 | Chalk & Talk |
| 9 | Lab based on above Topics | T1,R1 | 3 | H/W ,S/W Tools |
| **Unit-2** | | | | |
| 10 | **Combinational Circuits:** Combinational Logic, Arithmetic | T1,R1 | 1 | Chalk & Talk |

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| | Circuits– Adder and Subtractor, BCD Adder. | | | |
| 11 | Code Converters, Magnitude Comparato,ParityGenerators/ Checkers,Multiplexers, Demultiplexers, Decoders, Encoders. | T1,R1 | 2 | Chalk & Talk |
| 12 | **Sequential Circuits:** Latches, R S Flip Flop, Level Triggered and Edge Triggered Flip Flops. | T1,R1 | 2 | Chalk & Talk |
| 13 | JK Flip-Flop, Master-Slave Flip Flops, T Flip-Flop, D Flip-Flops. | T1,R1 | 1 | Chalk & Talk |
| 14 | **Registers and Counters:** Controlled Buffer Registers, Shift Registers | T1,R1 | 1 | Chalk & Talk |
| 15 | Applications of Shift-registers; Ripple Counter, Synchronous Counter. | T1,R1 | 2 | Chalk & Talk |
| 16 | Modulus Counter, Binary Ripple Counters, Up/Down Counters, Decade and BCD Counters. | T2,R1 | 2 | NPTEL Lectrure |
| 17 | Lab based on above Topics | T2,R1 | 3 | H/W ,S/W Tools |
| **Unit-3** | | | | |
| 18 | **Basic Computer Design:** Computer Instructions and types. | T2 | 1 | PPT |
| 19 | Instruction Set, Instruction Cycle, Instruction Formats. | T2,R1 | 2 | PPT |
| 20 | Addressing Modes, Computer Registers, Bus System, Register Transfer Language terminology | T2 | 2 | PPT |
| 21 | **Programming in 8086/8088 Assembly Language:** A/L program structure, segments, registers, instructions, macros, A/L directives | T2,R1 | 3 | Chalk & Talk |
| 22 | **CPU Design:** CPU Registers, Micro-operations and its types, Design of ALU. Control Unit Design-Microprograms, Control Unit of a basic computer–Timing and Control; Hardwired and Micro-programmed controlled unit. Architectures -RISC, CISC, Scalar, Superscalar and pipelined architectures. | T2 | 3 | Chalk & Talk |
| 23 | Control Unit of a basic computer–Timing and Control; Hardwired and Micro-programmed controlled unit. Architectures -RISC, CISC, Scalar, Superscalar and pipelined architectures. | T2,R1 | 2 | PPT |
| 24 | Lab based on above Topics | T2,R1 | 3 | H/W ,S/W Tools |

| Unit-4 | | | | |
|---|---|---|---|---|
| 25 | **Input/Output Organization:** Peripheral Devices, Input-output Interface, Asynchronous Data Transfer, Mode of Transfer, Priority Interrupt, Direct Memory Access, Input-output Processor, Serial Communication. | T2 | 2 | PPT & Chalk & Talk |
| 26 | **Advance Architecture:** Introduction to parallel processing– Pipelining, Parallel Computer structures, Architectural classification. | T1 | 2 | Chalk & Talk |
| 27 | Pipelining & Vector processing; Instruction and Arithmetic pipelines, Principles of designing pipelined processors. | T2 | 3 | Chalk & Talk |
| 28 | Structures for array processors: SIMD Array processor, SIMD Interconnection networks. Parallel Processing Applications | T2 | 3 | Chalk & Talk |
| 29 | Lab based on above Topics | T2,R1 | 2 | H/W ,S/W Tools |

Total Lectures: 45 Labs : 11

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

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|---|---|---|
| ☐ CHALK & TALK | ☐ STUD. ASSIGNMENT | ☐ WEB RESOURCES |
| ☐ LCD/SMART BOARDS | ☐ STUD. SEMINARS | ☐ ADD-ON COURSES |

# References

## A. TEXT BOOKS:


**T1** Gill Nasib Singh and Dixit J.B: Digital Design and Computer Organisation, University Science Press (Laxmi Publications),New Delhi.

**T2** Mano,M.M.:Digital Logic and Computer Design, Prentice-Hall of India.


## B. REFERENCE BOOKS:


**R1** William Stalling- Computer Organizations & Architecture, Pearson/PHI, 6th Edition


## C. GOOGLE CLASSROOM LINK:

https://classroom.google.com/c/NzEwNzc3Njc4NzA4?cjc=donqn43

## D. DIGITAL CONTENT:

W1. https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/
W2. https://nptel.ac.in/courses/108105132

# Institute of Management & Technology,Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

| | | | |
|---|---|---|---|
| **COURSE:** | **ADVANCE DATA STRUCTURE** | **CODE:** | **20MCA21C5** |
| **CLASS:** | **1st Sem** | **ACADEMIC YEAR:** | **2025-2026** |
| **FACULTY:** | **Ms. Heena Dhawan** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| **Unit 1** | | | | |
| 1 | Analyzing algorithms ,Time and Space complexity | T1,R1 | 2 | Chalk & Talk |
| 2 | Big-oh notastion and theta notation,Average best and worst case analysis | T1,R1 | 2 | Chalk & Talk |
| 3 | Designing algorithms growth of functions | T1,R1 | 1 | PPT |
| 4 | Divide and conquer,Asympotic notations | T1,R1 | 2 | PPT |
| 5 | Recurrences Maximum ,sub array problems | T1,R1 | 1 | Chalk & Talk |
| 6 | Stressan's Method ,Substitution method | T1,R1 | 2 | PPT |
| 7 | The master method ,floors and ceilings | T1,R1 | 2 | Chalk & Talk |
| 8 | Lab based on above topics | T1,R1 | 4 | S/W Tools |
| **Unit 2** | | | | |
| 9 | Binary ttree traversal methods pre order in order and post order | T1,R1 | 2 | Chalk & Talk |
| 10 | Recursive algorithm,representation and its application | T1,R1 | 2 | Chalk & Talk |
| 11 | Conversion of forest into tree,Threaded binanry tree | T1,T2 | 2 | Chalk & Talk |
| 12 | Binary search tree and its representation | T1,R1 | 2 | PPT |
| 13 | AVl trees | T1,R1 | 1 | Chalk & Talk |
| 14 | Splay tree and B-tree | T1,R1 | 2 | Chalk & Talk |
| 15 | Heap operation | T1,R1 | 2 | Chalk & Talk |
| 16 | Binomial Heap ,skew and heap set | T1,R1 | 2 | Chalk & Talk |

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| 17 | Lab based on above topics | T1,R1 | 3 | S/W Tools |
| **Unit 3** | | | | |
| 18 | Representation and types of graph ,path and circuits | T1 | 2 | PPT |
| 19 | Euler graph ,hamiltonian graph and circuits and planner graph | T1 | 2 | Chalk & Talk |
| 20 | DFS and BFS traversal | T1 | 2 | Chalk & Talk |
| 21 | Prims and krushkals algorithumand f'oyd's algo | T1 | 2 | Chalk & Talk |
| 22 | Topological sorting | T1 | 1 | Chalk & Talk |
| 23 | Max flow :ford-fulkerson algo,max flow-min cut | T1,R1 | 2 | Chalk & Talk |
| 24 | Lab based on above topics | T1,R1 | 6 | S/W Tools |
| **Unit 4** | | | | |
| 25 | Backtracking Algorithm ans design methdologies | T1,R1 | 2 | PPT |
| 26 | 8 queens problem and 0/1 knapsack problem | T1,R1 | 2 | Chalk & Talk |
| 27 | String matching algo:Naïve String matching and robin-karp algorithm | T1,R1 | 2 | Chalk & Talk |
| 28 | Travelling salesperson problem | T1,R1 | 1 | Chalk & Talk |
| 29 | P,NP and Appproximation algo and Np hard classes and NP problems | T1,R1 | 2 | Chalk & Talk |
| 30 | Lab based on above topics | T1,R1 | 2 | S/W Tools |

Total Lectures: 45
Total Labs:15

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

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|---|---|---|
| ☐CHALK & TALK | ☐STUD. ASSIGNMENT | ☐WEB RESOURCES |
| ☐LCD/SMART BOARDS | ☐STUD. SEMINARS | ☐ADD-ON COURSES |

# References

## A. TEXT BOOKS:

[T1] Thomas H Coremen, "Introduction to algorithms", PHI learning pvt. Ltd

## B. REFERENCE BOOKS:

[R1] G.L Heileman, "Datra Structure", Tata MCGrew Hill ,new Delhi

## C. Google Classroom Link

https://classroom.google.com/c/ODAyNTY3MTA2NjIw?cjc=jlimuylb

**DIGITAL CONTENT:**

W1 https://www.geeksforgeeks.org/

# MCA 3rd SEM

# Institute of Management & Technology,Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

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|---|---|---|---|
| **COURSE:** | **DATA MINING & BIG DATA ANALYTICS** | **CODE:** | **21MCA23C1** |
| **CLASS:** | **MCA 3rd Semester** | **ACADEMIC YEAR:** | **2025-26** |
| **FACULTY:** | **Dr. Ritu Agrawal** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| UNIT-I | | | | |
| 1 | Introduction to Data Mining Systems, Knowledge Discovery Process | T1 | 2 | PPT |
| 2 | Data Mining Techniques | T1,W1 | 2 | PPT |
| 3 | Issues, Applications | T1, W1 | 1 | Chalk & Talk |
| 4 | Data Objects and Attribute types | T1, T2 | 1 | Chalk & Talk |
| 5 | Statistical description of data | T1,W3 | 1 | PPT |
| 6 | Data Pre-processing – Cleaning, Integration, Reduction, Transformation and Discretization; Data Visualization | T1, T2 | 2 | PPT |
| 7 | Data similarity and dissimilarity measures. | T1, W1 | 1 | PPT |
| 8 | Mining Frequent Patterns | T1 | 1 | Chalk & Talk |
| 9 | Associations and Correlations | T1 | 1 | Chalk & Talk |
| 10 | Pattern Evaluation Method | T1 | 1 | Chalk & Talk |
| 11 | Pattern Mining in Multilevel; Multi-Dimensional Space – Constraint Based Frequent Pattern Mining; Classification using Frequent Patterns. | T1,T2 | 1 | PPT |

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| UNIT-II | | | | |
| 12 | Decision Tree Induction | T1, T2 | 1 | PPT |
| 13 | Bayesian Classification | T1 | 1 | Chalk & Talk |
| 14 | Rule Based Classification, Classification by Back Propagation | T1 | 1 | Chalk & Talk |
| 15 | Support Vector Machines, Lazy Learners | T1,T2 | 1 | PPT |
| 16 | Model Evaluation and Selection, Techniques to improve Classification Accuracy | T1,W1 | 1 | Chalk & Talk |
| 17 | Clustering Techniques: Cluster analysis | T1,T2 | 1 | Chalk & Talk |
| 18 | Partitioning Methods - Hierarchical Methods | T1,W1 | 1 | Chalk & Talk |
| 19 | Density Based Methods, Grid Based Methods | T1,W1 | 1 | Chalk & Talk |
| 20 | Evaluation of clustering, Clustering high dimensional data, Clustering with constraints, Outlier analysis-outlier detection methods. | T1 | 2 | Chalk & Talk |
| 21 | Practical on Data Mining using WEKA tool | T1 | 9 | Software Tool |
| UNIT-III | | | | |
| 22 | Types of Digital Data | T3, R1 | 1 | Chalk & Talk |
| 23 | Overview of Big Data, Challenges of Big Data | T3, R1,R2 | 1 | PPT |
| 24 | Modern Data Analytic Tools, Big Data Analytics and Applications | T3, R1 | 1 | Chalk & Talk |
| 25 | Overview and History of Hadoop, Apache Hadoop | T3, R1 | 2 | Chalk & Talk |
| 26 | Analysing Data with Unix tools, Analysing Data with Hadoop | T3 | 1 | Chalk & Talk |
| 27 | Hadoop Streaming, Hadoop Environment | T3, R1 | 1 | Chalk & Talk |
| 28 | Concepts of Hadoop Data File System, Design of HDFS | T3,R2 | 1 | PPT |
| 29 | Command Line Interface, Hadoop file system interfaces | T3, R1,R2 | 1 | Chalk & Talk |
| 30 | Data flow; Hadoop I/O: Compression and Serialization. | T3, R1,R2 | 1 | Chalk & Talk |
| UNIT-IV | | | | |
| 31 | Introduction, Map Reduce Features, How Map Reduce Works | T3 | 2 | PPT |
| 32 | Anatomy of a Map Reduce Job Run, Failures, Job Scheduling, Shuffle and Sort, Task Execution | T3 | 2 | PPT |

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| 33 | Map Reduce Types and Formats | T3 | 1 | Chalk & Talk |
| 34 | Pig - Introduction to PIG, Execution Modes of Pig, Comparison of Pig with Databases | T3 | 1 | Chalk & Talk |
| 35 | Hive: Hive Shell, Hive Services, Hive Metastore, Comparison with Traditional Databases | T3, T4, R1 | 1 | PPT |
| 36 | HiveQL, Tables, Querying Data and User Defined Functions. | T3,R2 | 1 | PPT |
| 37 | Hbase: HBasics, Concepts, Clients, Example, Hbase Versus RDBMS. Big SQL: Introduction | T3,T4 | 1 | Chalk & Talk |
| 38 | Introduction of R and Big R, Collaborative Filtering, Big Data Analytics with Big R | T3,R2 | 2 | Chalk & Talk |

Total Lectures: 45 Total Labs: 9

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

| | | |
|---|---|---|
| ☐ CHALK & TALK | ☐ STUD. ASSIGNMENT | ☐ WEB RESOURCES |
| ☐ LCD/SMART BOARDS | ☐ STUD. SEMINARS | ☐ ADD-ON COURSES |

# References

## A. TEXT BOOKS:

**T1** Jiawei Han & Micheline Kamber: Data Mining - Concepts & Techniques, HarcourtIndia PVT Ltd. (Morgan Kaufmann Publishers).
**T2** A.K. Pujari: Data Mining Techniques, University Press.
**T3** Tom White: Hadoop- The Definitive Guide, Third Edition, O'reilly Media.
**T4** Seema Acharya, Subhasini Chellappan: Big Data Analytics, Wiley.

## B. REFERENCE BOOKS:

**R1** Michael Berthold, David J. Hand: Intelligent Data Analysis, Springer.
**R2** BIG DATA ANALYTICS: Introduction to Hadoop, Spark, and Machine-Learning ; Raj Kamal, Preeti Saxena ;McGraw-Hill Education, 2019.

## C. GOOGLE CLASSROOM LINK

https://classroom.google.com/c/Nzk5MDk0ODI4NTY4?cjc=4z7mstbh

**DIGITAL CONTENT:**

W1. https://share.google/LB3ZO4E4oD3MaFtWM
W2. https://share.google/4cNFupuP0llOxyUNl
W3. https://www.slideshare.net/slideshow/statistical-analysis-119122733/119122733

# Institute of Management & Technology,Faridabad

## Department of Computer Applications (MCA)

## Lecture Plan

| | | | |
|---|---|---|---|
| **COURSE:** | **ARTIFICIAL INTELLIGENCE & COMPUTATIONAL INTELLIGENCE** | **CODE:** | **21MCA23C2** |
| **CLASS:** | **MCA IIIrd Sem** | **ACADEMIC YEAR:** | **2025-26** |
| **FACULTY:** | **Dr Rimple Dhamija** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| **UNIT-I** | | | | |
| 1 | Introduction to Artificial Intelligence | T1 | 1 | PPT, Chalk & Talk |
| 2 | History and Applications of AI | T1, R1 | 1 | PPT |
| 3 | Problem solving and Defining the problem as state space search | T1 | 1 | PPT, Chalk & Talk |
| 4 | Production System | R1 | 1 | PPT |
| 5 | Problem Characteristics | T1 | 1 | PPT |
| 6 | Brute Force Search Technique | T1, R1 | 1 | PPT, Chalk & Talk |
| 7 | Heuristic Search Techniques | T1 | 3 | PPT, Chalk & Talk |
| 8 | Expert System: Definition, Role of knowledge | T1,R1 | 1 | PPT |
| 9 | Architecture and Life cycle of Expert System | T1,R1 | 2 | PPT |
| 10 | Lab based on above Topics | R2 | 2 | Software Tools |
| **UNIT-II** | | | | |
| 11 | Types of knowledge, Knowledge Acquisition and its Techniques | T1, R1 | 3 | PPT |
| 12 | Knowledge Engineering and Cognitive Behavior | T1,R1 | 1 | PPT |
| 13 | Introduction to Knowledge Representation and Level of representation | T1.R1 | 2 | PPT |
| 14 | Knowledge representation schemes: Formal logic | T1.R1 | 1 | PPT, Chalk & Talk |
| 15 | Knowledge representation schemes: Inference Engine | T1.R1 | 1 | PPT, Chalk & Talk |
| 16 | Knowledge representation schemes: Semantic net, Frame and Scripts | T1.R1 | 2 | PPT, Chalk & Talk |
| 17 | Perception: Sensing, Speech recognition, Vision, Action. | T1.R1 | 1 | PPT |
| 18 | Lab based on above Topics | R2 | 2 | Software Tools |

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| **UNIT-III** | | | | |
| 19 | Introduction to Computational Intelligence, Biological and Artificial Neural Network (ANN) | T1, R2 | 1 | PPT |
| 20 | Learning in Artificial Neural Networks | T1, R2 | 1 | PPT |
| 21 | Artificial Neural Network Models | T1, R2 | 3 | PPT |
| 22 | Applications of Neural Network | T1, R2 | 1 | PPT |
| 23 | Fundamentals of evolutionary computation and Evolutionary Strategies | T1, R2 | 1 | PPT |
| 24 | Design and Analysis of Genetic Algorithms, comparison of GA and traditional search methods | T2, R2 | 1 | PPT |
| 25 | Genetic Operators and Parameters, Genetic Algorithms in Problem Solving | T2, R2 | 2 | PPT |
| 26 | Particle Swarm Optimization and Ant Colony Optimization | T2, R2 | 1 | PPT |
| 27 | Artificial Immune Systems and Harmony Search | T2, R2 | 1 | PPT |
| 28 | Honey-Bee Optimization and Memetic Algorithms | T2, R2 | 1 | PPT |
| 29 | Co-Evolution, Multi-Objective Optimization, Tabu Search, Constraint Handling | T2, R2 | 1 | PPT |
| 30 | Lab based on above Topics | R2 | 4 | Software Tools |
| **UNIT-IV** | | | | |
| 31 | Crisp sets, Fuzzy sets: Basic types and concepts, characteristics and significance of paradigm shift, Representation of fuzzy sets | R2 | 1 | PPT, Chalk & Talk |
| 32 | Fuzzy Set perations, membership functions, Classical relations and fuzzy relations | R2 | 1 | PPT, Chalk & Talk |
| 33 | Fuzzyfication, Defuzzification, Fuzzy reasoning, Fuzzy inference systems | R2 | 1 | PPT, Chalk & Talk |
| 34 | Fuzzy control system, Fuzzy clustering, Applications of fuzzy systems | R2 | 1 | PPT, Chalk & Talk |
| 35 | Neuro-fuzzy systems, Neuro-fuzzy modeling; Neuro-fuzzy control | R2 | 1 | PPT, Chalk & Talk |
| 36 | Applications: Pattern Recognition, Image Processing | R2 | 1 | PPT |
| 37 | Applications: Biological Sequence Alignment and Drug Design, Robotics and Sensors | R2 | 1 | PPT |
| 38 | Applications: Information Retrieval Systems, Share Market Analysis, Natural Language Processing | R2 | 1 | PPT |
| 39 | Lab based on above Topics | R2 | 4 | Software Tools |

**Total Lectures: 45 (Theory) + 12 (Practical)**

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

| | | |
|---|---|---|
| ☐ CHALK & TALK | ☐ STUD. ASSIGNMENT | ☐ WEB RESOURCES |
| ☐ LCD/SMART BOARDS | ☐ STUD. SEMINARS | ☐ ADD-ON COURSES |

# References

## A. TEXT BOOKS:

**[T1]** Artificial Intelligence by Rich Elaine and Knight Kevin , Tata McGraw Hill
**[T2]** An Introduction to Genetic Algorithms by M. Mitchell, Prentice-Hall

## B. REFERENCE BOOKS:

**[R1]** Foundations of Artificial Intelligence and Expert Systems by V S Janakiraman, Macmillan
**[R2]** Neural Networks, Fuzzy Logic and Genetic Algorithms by S. Rajasekaran and G.A Vijayluxmi Pai, PHI

## C. GOOGLE CLASSROOM LINK

https://classroom.google.com/c/ODAxNDI2NzAxMjU3

## DIGITAL CONTENT:

**[W1]** https://www.w3schools.com/ai/
**[W2]** https://www.javatpoint.com/artificial-intelligence-tutorial

# Institute of Management & Technology,Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

| | | | |
|---|---|---|---|
| **COURSE:** | **Android Mobile Application Development** | **CODE:** | **21MCA23C3** |
| **CLASS:** | **3rd Sem** | **ACADEMIC YEAR:** | **2025-2026** |
| **FACULTY:** | **Ms. Heena Dhawan** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| **Unit 1** | | | | |
| 1 | Mobile Application and characterstics and benefits | T1,R1 | 2 | Chalk & Talk |
| 2 | Application Modal ,Managing Resources | T1,R1 | 2 | Chalk & Talk |
| 3 | Framework Tools | T1,R1 | 1 | PPT |
| 4 | Memory management and Design pattern for limited memory | T1,R1 | 2 | Chalk & Talk |
| 5 | Resource management | T1,R1 | 1 | Chalk & Talk |
| 6 | Mobile devices profiles | T1,R1 | 2 | PPT |
| 7 | Dynamic linking Plug-ins using DLLs | T1,R1 | 2 | Chalk & Talk |
| 8 | Lab based on above topics | T1,R1 | 4 | S/W Tools |
| **Unit 2** | | | | |
| 9 | Introduction of ADK and JDK and android layouts | T1,R1 | 2 | Chalk & Talk |
| 10 | Android application architecture ,Traditional programming modal | T1,R1 | 2 | Chalk & Talk |
| 11 | Android activities and intents ,task services | T1,T2 | 2 | Chalk & Talk |
| 12 | GUI and MVC architecture ,fragments | T1,R1 | 2 | PPT |
| 13 | Shadows and gradient | T1,R1 | 1 | Chalk & Talk |
| 14 | Services,storing and retrieving data | T1,R1 | 2 | Chalk & Talk |
| 15 | Location based services | T1,R1 | 2 | Chalk & Talk |
| 16 | Graphic and multimedia ,telephony | T1,R1 | 2 | Chalk & Talk |
| 17 | Lab based on above topics | T1,R1 | 6 | S/W Tools |

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|---|---|---|---|---|
| **Unit 3** | | | | |
| 18 | Building an User interface ,Fragments and multiple UI | T1 | 2 | PPT |
| 19 | Lifecycle of Varoius application ,content provider | T1 | 2 | Chalk & Talk |
| 20 | Location based services :Mapping google map .Working with Maps | T1 | 2 | Chalk & Talk |
| 21 | Building client server applications | T1 | 2 | Chalk & Talk |
| 22 | Native libraries and header | T1 | 1 | Chalk & Talk |
| 23 | Working with map view and sensors | T1,R1 | 2 | Chalk & Talk |
| 24 | Lab based on above topics | T1,R1 | 6 | S/W Tools |
| **Unit 4** | | | | |
| 25 | Using Google Maps: GPS and Wifi Integration ,android notification | T1,R1 | 2 | PPT |
| 26 | Bluetooth ,camera and sensors | T1,R1 | 2 | Chalk & Talk |
| 27 | Runtime Environmentfor applications ,Callbacks | T1,R1 | 2 | Chalk & Talk |
| 28 | Serilization,Application signing key for google maps | T1,R1 | 1 | Chalk & Talk |
| 29 | Introduction to Flutter ,Android Features ,UI implementation | T1,R1 | 2 | Chalk & Talk |
| 30 | Lab based on above topics | T1,R1 | 2 | S/W Tools |

Total Lectures: 45
Total Labs:18

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

| | | |
|---|---|---|
| ☐ CHALK & TALK | ☐ STUD. ASSIGNMENT | ☐ WEB RESOURCES |
| ☐ LCD/SMART BOARDS | ☐ STUD. SEMINARS | ☐ ADD-ON COURSES |

# References

**A. TEXT BOOKS:**

[T1] Mark L. Murphy, "The busy coders guide to android development", Commons Ware

**B. REFERENCE BOOKS:**

[R1] Big Nerd Ranch , "Android Architecture Components", Addison-Wesley Proffesional

**C. Google Classroom Link:**

https://classroom.google.com/c/ODExMDY1NDMzNTEy?cjc=33qjhlko

# Institute of Management & Technology, Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

| | | | |
|---|---|---|---|
| **COURSE:** | **SOFTWARE TESTING AND QUALITY ASSURANCE** | **CODE:** | **21MCA23DA2** |
| **CLASS:** | **MCA 3rd** | **ACADEMIC YEAR:** | **2025-26** |
| **FACULTY:** | **Dr. Rakesh Chandra Verma** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method | Mapping of Course Outcome |
|---|---|---|---|---|---|
| **Unit 1** | | | | | |
| 1 | Testing Strategy and Environment: Minimizing Risks, Writing a Policy for Software Testing, Economics of Testing | T1,R1 | 1 | Chalk & Talk And PPT | |
| 2 | Testing-an organizational issue, Management Support for Software Testing, Building a Structured Approach to Software Testing, Developing a Test Strategy Building Software : | T1,R1 | 2 | | |
| 3 | Testing Process: Software Testing Guidelines, workbench concept, Customizing the Software Testing Process. | T1,T2 | 2 | | |
| 4 | Process Preparation checklist - Software Testing Techniques: Dynamic Testing – Black Box testing techniques. | T1,R1 | 2 | | |
| 5 | White Box testing techniques, Static testing | T1,R1 | 2 | | |
| 6 | Validation Activities Regression testing. | T1,R1 | 2 | | |
| 7 | Computer Lab based on the above topic | T1,R1 | 3 | | |
| **Unit 2** | | | | | |
| 8 | Approach, Issues; integration, incremental. | T1,R1 | 1 | Chalk & Talk | |
| 9 | Strict Alternation, Peterson's Solution, Producer Consumer Problem. | T1,R1 | 1 | | |
| 10 | System, alpha,Beta testing etc. | T1,T2 | 2 | | |
| 11 | Comparative evaluation of techniques: Testing tools | T1,R1 | 2 | | |

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|---|---|---|---|---|
| 12 | Dynamic analysis tools, test data generators, Debuggers, test drivers etc. | T1,R1 | 2 | |
| 13 | Technical Metrics for Software: Quality Factors | T1,R1 | 2 | |
| 14 | Framework; Metrics for analysis ,Design,testing source code. | T1,R1 | 2 | |
| 15 | Computer Lab based on the above topic | T2,R1 | 3 | |
| **Unit 3** | | | | |
| 16 | Introduction to Object Oriented testing | T2 | 2 | Chalk & Talk . |
| 17 | Path Testing, State Based Testing, Class Testing | T2,R1 | 3 | |
| 18 | Testing Web Applications: Web testing, Functional Testing | T2 | 3 | |
| 19 | User interface Testing, Usability Testing | T2,R1 | 2 | |
| 20 | Configuration and Compatibility Testing Security Testing, Performance Testing, Database testing, Post Deployment Testing. | T2 | 3 | |
| 21 | Computer Lab based on the above topic | T2,R1 | 3 | |
| **Unit 4:** | | | | |
| 22 | Software Quality, Software QualityChallenges, | T2 | 2 | Students Seminar Chalk & Talk |
| 23 | Software Quality factors. Software Quality Assurance: concept, components, importance and essence | T1 | 2 | |
| 24 | FTR, structured walk through technique etc. Software Quality Management Standards, Management and its role in Software Quality Assurance Quality Standards: ISO 9000 and Companion ISO Standards, CMM, CMMI. | T1 | 3 | |
| 25 | Computer Lab based on the above topic | T1,T2 | 3 | |

Total Lectures: 43(Theory) And 12(Lab).

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

| | | |
|---|---|---|
| ✓ CHALK & TALK | ☐ STUD. ASSIGNMENT | ☐ WEB RESOURCES |
| ☐ LCD/SMART BOARDS | ☐ STUD. SEMINARS | ☐ ADD-ON COURSES |

# References


**A. TEXT BOOKS:**

[T1] Meyers, G.: The art of Software Testing, Wiley-Inter-Science.
[T2 ] Pressman : Software Engineering, TMH..

**B. REFERENCE BOOKS:**

[R1] Gill, Nasib Singh: Software Engineering : Reliability, Testing and Quality Assurance, Khanna Book Publishing Co.(P) Ltd, N. Delhi

**C. GOOGLE CLASSROOM LINK**

**https://classroom.google.com/c/NzU4Mjc4NjA1NTg3?cjc=cpnz2pk**

**DIGITAL CONTENT:**

W1. https://www.os-book.com/OS9/slide-dir/index.html
W2. https://codex.cs.yale.edu/avi/os-book/OSE2/slide-dir/index.html

# Institute of Management & Technology,Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

| | | | |
|---|---|---|---|
| **COURSE:** | **NETWORK PROGRAMMING** | **CODE:** | **21MCA23DB1** |
| **CLASS:** | **3rd Sem** | **ACADEMIC YEAR:** | **2025-26** |
| **FACULTY:** | **Dr. Rashmeen Kaur** | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| **UNIT 1** | | | | |
| 1 | Overview of UNIX OS, Environment of a UNIX process, Process control, Process relationships Signals, Interprocess Communication | T1,R1,W1 | 2 | Chalk & Talk |
| 2 | Overview of TCP/IP, Network architecture, UUCP, XNS, IPX/SPX for LANs, TCP & IP headers, XNS, IPX/SPX for LANs, TCP & IP headers, IPv4 & v6 address structures | T1,R1, | 2 | Chalk & Talk |
| 3 | Socket Programming**:** Creating sockets, Posix data type, Socket addresses, Assigning address to a socket, Java socket programming | T1,R1,W2 | 1 | PPT |
| 4 | Thread programming, Berkeley Sockets: Overview, socket address structures, byte manipulation & address conversion functions, | T1,R1 | 2 | PPT |
| 5 | elementary socket system calls – socket, connect, bind, listen, accept, fork, exec, close, TCP ports (ephemeral, reserved), Berkeley Sockets: I/O asynchronous & multiplexing models, | T1,R1 | 2 | Chalk & Talk |
| 6 | select & poll functions, signal & fcntl functions, socket implementation (client & server programs), UNIX domain protocols | T1,R1 | 2 | PPT |
| 7 | Lab based on above topics | T1,R1 | 3 | S/W Tools |
| **UNIT 2** | | | | |
| 8 | **APIs & Winsock Programming:** Windows socket API, window | T1,R1,W3 | 2 | Chalk & Talk |
| 9 | socket & blocking I/O model, blocking sockets, | T1,R1,W3 | 2 | Chalk & Talk |
| 10 | blocking functions, timeouts for blocking I/O, | T1,T2,W3 | 2 | Chalk & Talk |
| 11 | API overview, | T1,R1,W3 | 2 | PPT |
| 12 | Different APIs & their programming technique, | T1,R1 | 2 | Chalk & Talk |
| 13 | DLL & new API's | T1,R1 | 2 | Chalk & Talk |
| 14 | DLL issues, Java Beans | T1,R1 | 2 | Chalk & Talk |

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|---|---|---|---|---|
| 15 | Lab based on above topics | T1,R1 | 2 | S/W Tools |
| **UNIT 3** | | | | |
| 16 | **Web Programming & Security:** Java network programming | T1,W3 | 2 | PPT |
| 17 | packages, RMI | T1,W3 | 2 | Chalk & Talk |
| 18 | Overview of Javascript, WAP architecture & WAP services, | T1 | 2 | Chalk & Talk |
| 19 | Web databases, Component technology, CORBA concept, CORBA architecture, CGI programming | T1 | 3 | Chalk & Talk |
| 20 | Firewall & security technique, Cryptography, Digital Signature. | T1 | 2 | Chalk & Talk |
| 21 | Lab based on above topics | T1,R1 | 2 | S/W Tools |
| **UNIT 4** | | | | |
| 22 | **Client Server Programming:** Client side programming:- Creating sockets | T1,R1,W4 | 2 | PPT |
| 23 | implementing generic network client, Parsing data using string Tokenizer | T1,R1,W4 | 2 | Chalk & Talk |
| 24 | Retrieving file from an HTTP server, Retrieving web documents by using the URL class | T1,R1 | 2 | Chalk & Talk |
| 25 | Server side programming:- Steps for creating server, | T1,R1,W4 | 1 | Chalk & Talk |
| 26 | Accepting connection from browsers, creating an HTTP server .Adding multithreading to an HTTP server. | T1,R1 | 2 | Chalk & Talk |
| 27 | Lab based on above topics | T1,R1 | 3 | S/W Tools |

Total : 45 Lectures+10 Labs

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

| | | |
|---|---|---|
| ☐ CHALK & TALK | ☐ STUD. ASSIGNMENT | ☐ WEB RESOURCES |
| ☐ LCD/SMART BOARDS | ☐ STUD. SEMINARS | ☐ ADD-ON COURSES |

# References

**A. TEXT BOOKS:**

[T1] W.Richard Stevens: Advanced Programming in the UNIX Environment, Addison Wesley.

**B. REFERENCE BOOKS:**

[R1] Steven.W.R: UNIX Network Programming (Volume I& II), PHI.

**C. GOOGLE CLASSROOM LINK:**

https://classroom.google.com/c/NTI0MjUyMzI4MjEy?cjc=z7fbwnq

## DIGITAL CONTENT:

W1 https://www.inf.usi.ch/carzaniga/edu/adv-ntw/socket_programming.html
W2 https://unpbook.com/
W3 http://networkprogrammingnotes.blogspot.com/p/windows-socket-api.html
W4 https://www.ibm.com/docs/en/zos/3.1.0?topic=program-client-server-socket-programs

# Institute of Management & Technology,Faridabad

## Department of Computer Applications(MCA)

## Lecture Plan

| | | | |
|---|---|---|---|
| **COURSE:** | **Disaster Management** | **CODE:** | 16ENVO2 |
| **CLASS:** | MCA 3rd Sem | **ACADEMIC YEAR:** | 2025-26 |
| **FACULTY:** | Mrs.Heteshi Gupta | | |

| S. No. | Topic Name | Reference/ Text Book/ Web (R/T/W) | No. Of Lecture | Delivery Method |
|---|---|---|---|---|
| **UNIT-I** | | | | |
| 1 | Causes and phases of disaster | T1, R1 | 2 | Chalk & Talk |
| 2 | Rapid onset and slow onset disasters | T1, R1 | 1 | Chalk & Talk |
| 3 | Nature and responses to geo-hazards | T1, R1 | 1 | Chalk & Talk |
| 4 | Trends in climatology | T1, R1 | 2 | Chalk & Talk |
| 5 | Meteorology and Hydrology | T1, R1 | 2 | Chalk & Talk |
| 6 | Seismic activities. | T1, R1 | 2 | Chalk & Talk |
| 7 | Changes in Coastal zone. | T1, R1 | 2 | Chalk & Talk |
| 8 | Coastal erosion | T1, R1 | 1 | Chalk & Talk |
| 9 | Coastal erosion due to natural and manmade structures. | T1, R1 | 2 | Chalk & Talk |
| 10 | Beach protection | T1, R1 | 1 | Chalk & Talk |
| **UNIT-II** | | | | |
| 11 | Causes of flooding | T2, R2 | 2 | Chalk & Talk |
| 12 | Hazards associated with flooding | T2, R2 | 2 | Chalk & Talk |
| 13 | Flood forecasting. Flood management | T2, R2 | 2 | Chalk & Talk |
| 14 | Integrated Flood Management and Information System (IFMIS), Flood contro | T2, R2 | 2 | Chalk & Talk |
| 15 | Water related hazards- Structure and nature of tropical cyclone, | T2, R2 | 1 | Chalk & Talk |
| 16 | Tsunamis – causes and physical characteristics, mitigation of risks | T2, R2 | 1 | Chalk & Talk |
| 17 | Causes and characteristics of ground-motion | T2,R2 | 2 | Chalk & Talk |

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|---|---|---|---|---|
| 18 | Earthquake scales | T2,R1 | 1 | Chalk & Talk |
| 19 | Magnitude and intensity | T2,R1 | 2 | Chalk & Talk |
| 20 | Earthquake hazards and risks | T2,R1 | 1 | Chalk & Talk |
| **UNIT-III** | | | | |
| 20 | Volcanic land forms | T2, R1 | 2 | Chalk & Talk |
| 21 | Eruptions, early warning from satellites | T2, R1 | 2 | Chalk & Talk |
| 22 | Risk mitigation and training, | T2, R1 | 2 | Chalk & Talk |
| 23 | Landslides. | T2, R1 | 1 | Chalk & Talk |
| 24 | UN draft resolution on Strengthening of Coordination of Humanitarian Emergency Assistance | T2, R1 | 2 | Chalk & Talk |
| 25 | International Decade for Natural Disaster Reduction (IDNDR) | T2, R1 | 1 | Chalk & Talk |
| 26 | Policy for disaster reduction | T2, R1 | 2 | Chalk & Talk |
| 27 | Problems of financing and insurance. | T2, R1 | 1 | Chalk & Talk |

Total Lectures: 45

**DELIVERY/INSTRUCTIONAL METHODOLOGIES:**

| | | |
|---|---|---|
| ☐ CHALK & TALK | ☐ STUD. ASSIGNMENT | ☐ WEB RESOURCES |
| ☐ LCD/SMART BOARDS | ☐ STUD. SEMINARS | ☐ ADD-ON COURSES |

# References

## A. TEXT BOOKS:


T1. Sinha, D. K. Towards Basics of Natural Disaster Reduction, Research Book Centre, New Delhi. 2006
T2. Smith, K. Environmental Health, Assessing Risk and Reduction Disaster, 3rd Edition,Routledge, London. 200121


## B. REFERENCE BOOKS:


R1. Bolt, B.A. Earthquakes , W. H. Freeman and Company, New York. 1988
R2. Carter, N,W. Disaster Management: A Disaster Manager's Hand Book, Asian Development Bank, Manila. 1992


## C. GOOGLE CLASSROOM LINK:

**https://classroom.google.com/c/ODA4NjM4NDA3MTgw?cjc=vdoawjfs**

## DIGITAL CONTENT

W1.https://rcueslucknow.org/publication/TrainingModules/Dr.A.K.Singh/HandBookDisasterManagement.pdf
W2.https://en.wikipedia.org/wiki/Earthquake
W3.http://www.ebookbou.edu.bd/Books/Text/SOB/CEMBA-CEMPA/cemba_3619/Module-1.pdf