Study Scheme: M.Sc.(IT) – II

SEMESTER – III

Academic Session: 2025-26

CORE COURSES:

Code No.	Title of the Paper	L+T+P	Hours per week	Ext. Exam. Marks	Int. Ass. Marks	Max Marks	Credit
MITM2101T	Object Oriented Programming using C++	4+0	4	70	30	100	4
MITM2102T	Data and File Structure	4+0	4	70	30	100	4
MITM2103T	Software Engineering	4+0	4	70	30	100	4
MITM2104T	Computer Networks	4+0	4	70	30	100	4
MITM2105P	Programming Lab-V (Based on MITM2101T)	0+2	4	70	30	100	2
MITM2106P	Programming Lab-VI (Based on MITM2102T)	0+2	4	70	30	100	2
Total				**420**	**180**	**600**	**20**

BOS:29.07.2025

Academic Session: 2025-26

Study Scheme: M.Sc.(IT)-II

SEMESTER-IV

CORE COURSES:

Code No.	Title of the Paper	L+P	Hours per week	Ext. Exam. Marks	Int. Ass. Marks	Max Marks	Credit
MITM2201T	Algorithm Design and Analysis	4+0	4	70	30	100	4
MITM2202T	Computer Graphics	4+0	4	70	30	100	4
MITM2203T	Artificial Intelligence	4+0	4	70	30	100	4
MITM2204T	Minor Project	0+4	4	100	--	100	4
MITM2205P	Programming Lab-VII (Based on MITM2201T)	0+2	4	70	30	100	2
MITM2206P	Programming Lab-VIII (Based on MITM2202T)	0+2	4	70	30	100	2
	Total	**20**		**450**	**150**	**600**	**20**

CONTINUOUS ASSESSMENT (THEORY PAPERS)

1.	Two tests will be conducted during the Semester. One best test will be considered for assessment.	:	60% of the marks allotted for Continuous Assessment
2.	Assessment/ Quizes	:	20% of the marks allotted for Continuous Assessment
3.	Attendance	:	10% of the marks allotted for Continuous Assessment.
4.	Class Participation and behavior	:	10% of the marks allotted for Continuous Assessment.

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Bos:29.07.2025

ASIAN EDUCATIONAL INSTITUTE, PATIALA

(AN AUTONOMOUS COLLEGE)

Affiliated to Punjabi University, Patiala

KNOWLEDGE IS POWER

ESTD.2010

SYLLABI SCHEME

FOR

MASTERS OF SCIENCE IN INFORMATION TECHNOLOGY (M.Sc.IT-Lateral Entry (LE))

(Semester III to IV)

Under Choice Based Credit System & NEP 2020

SCHOOL OF COMPUTER SCIENCE

POST GRADUATE PROGRAMME

Academic Session: 2025-26

BOS:29.07.2025

Study Scheme: M.Sc.(IT) – LE

SEMESTER – III

Academic Session: 2025-26

CORE COURSES:

Code No.	Title of the Paper	L+T+P	Hours per week	Ext. Exam. Marks	Int. Ass. Marks	Max Marks	Credit
MITM2101T	Object Oriented Programming using C++	4+0	4	70	30	100	4
MITM2102T	Data and File Structure	4+0	4	70	30	100	4
MITM2103T	Software Engineering	4+0	4	70	30	100	4
MITM2104T	Computer Networks	4+0	4	70	30	100	4
MITM2105P	Programming Lab-V (Based on MITM2101T)	0+2	4	70	30	100	2
MITM2106P	Programming Lab-VI (Based on MITM2102T)	0+2	4	70	30	100	2
Total				**420**	**180**	**600**	**20**

BOS:29.07.2025

Study Scheme: M.Sc.(IT)-LE
SEMESTER-IV
Academic Session: 2025-26

CORE COURSES:

Code No.	Title of the Paper	L+P	Hours per week	Ext. Exam. Marks	Int. Ass. Marks	Max Marks	Credit
MITM2201T	Algorithm Design and Analysis	4+0	4	70	30	100	4
MITM2202T	Computer Graphics	4+0	4	70	30	100	4
MITM2203T	Artificial Intelligence	4+0	4	70	30	100	4
MITM2204T	Minor Project	0+4	4	100	--	100	4
MITM2205P	Programming Lab-VII (Based on MITM2201T)	0+2	4	70	30	100	2
MITM2206P	Programming Lab-VIII (Based on MITM2202T)	0+2	4	70	30	100	2
Total		**20**		**450**	**150**	**600**	**20**

CONTINUOUS ASSESSMENT (THEORY PAPERS)

1.	Two tests will be conducted during the Semester. One best test will be considered for assessment.	:	60% of the marks allotted for Continuous Assessment
2.	Assessment/ Quizes	:	20% of the marks allotted for Continuous Assessment
3.	Attendance	:	10% of the marks allotted for Continuous Assessment.
4.	Class Participation and behavior	:	10% of the marks allotted for Continuous Assessment.

BOS: 29.07.2025

SEMESTER – III

MITM2101T: OBJECT ORIENTED PROGRAMMING USING C++

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

Maximum Time: 3 Hrs.
Minimum Pass Marks: 35%
Lectures to be delivered: 45-55 Hrs.

A) 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.

B) Instructions for the candidates

1. Candidates are required to attempt five questions in all, selecting two questions each from Section A and Section B and compulsory questions of Section C.
2. Use of non-programmable scientific calculators is allowed.

Course Outcomes:

This course is designed to explore computing and to show students the art of computer programming. Students will be able to understand object oriented programming and advanced C++ concepts for writing good programs. On completion of this course, the students will be able to

- Write, compile and debug programs in C++ language.
- Use different data types, operators and console 0/1 function in a computer program.
- Design programs involving decision control statements, loop control statements and case control structures.
- Understand the implementation of arrays, pointers and functions and apply the dynamics of memory by the use of pointers.
- Comprehend the concepts of structures and classes declaration, initialization and implementation.
- Apply the basis of object oriented programming, polymorphism and inheritance.
- Use the file operations, character I/O, string I/O, file pointers, pre-processor directives and create/update basic data files.

SECTION A

Evolution of OOP: Procedure Oriented Programming. PO Paradigm, Advantages and disadvantages of OOP over its predecessor paradigms. Characteristics of Object Oriented Programming.
Introduction to C++: Identifier, Keywords, Constants. Operators: Arithmetic, relational, logical, conditional and assignment, Size of operator, Operator precedence and associativity. Type conversion, variable declaration, expressions, statements, manipulators. Input and output statements, stream I/O,

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Conditional and Iterative statements, breaking control statements. Storage Classes, Arrays, Arrays as Character Strings, Structures, Unions. Enumerations and User defined types.
Pointers: Pointer Operations, Pointer Arithmetic, Pointers and Arrays, Multiple indirections, Pointer to functions. Functions: Prototyping, Definition and Call, Scope Rules, Parameter Passing by value, by address and by reference, Functions returning references, Const functions, recursion, function overloading, Default Arguments, Const arguments, Pre-processor, Type casting.

SECTION B

Classes and Objects: Class Declaration and Class Definition, Defining member functions, making functions inline, nesting of member functions. Members access control. THIS pointer.
Objects: Object as function arguments, array of objects, functions returning objects, Static data members and Static member functions, Friend functions and Friend classes.
Constructors: properties, types of constructors, Dynamic constructors, multiple constructors in classes.
Destructors: Properties, Virtual destructors, Destroying objects, Rules for constructors and destructors, Array of objects. Dynamic memory allocation using new and delete operators, Nested and container classes, Scopes: Local, Global, Namespace and Classes
Inheritance: Defining derived classes, inheriting private members, single inheritance, types of derivation, function redefining, constructors in derived class. Types of inheritance, Types of base classes, Code Reusability. Polymorphism: Methods of achieving polymorphic behavior
Operator overloading: overloading binary operator, overloading unary operators, rules for operator overloading, operator overloading using friend function. Function overloading: early binding, Polymorphism with pointers, virtual functions, late binding, pure virtual functions and abstract base class. Difference between function overloading, redefining. and overriding.
Templates: Generic Functions and Generic Classes, Overloading of template functions. Exception Handling catching class types, handling derived class exceptions, catch pit signs, restricting exception

Text/Reference Books:

- Herbert Schildt, "The Complete Reference C++", Tata McGraw-Hill.
- Deitel and Deitel, C++ How to Program", Pearson Education.
- Robert Lafore, "Object Oriented Programming in C++", Galgotia Publications.
- BjarneStrautrup, "The C++# Programming Language", Addition- Wesley Publication Co.
- Stanley B. Lippman, JoseeLajoie, C++ Primer". Pearson Education.
- E.Balagurusamy, "Object Oriented Programming
- with, C++ Tata McGraw-Hill.

BOS: 29.07.2025

MITM2102T: DATA AND FILE STRUCTURE

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

Maximum Time: 3 Hrs.
Minimum Pass Marks: 35%
Lectures to be delivered: 45-55 Hrs.

A) Instructions for 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.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from sections A & B of the question paper and the entire section C.
2. Use of non-programmable scientific calculators is allowed

COURSE OUTCOME:

- To give fundamental knowledge data type various data structure.
- To explain the basic concepts of searching and graph theories.
- To make the learners acquainted with the use of different theories.
- Learning Outcome
- Understand the need for Data Structures when building Applications.
- Appreciate the need for optimized algorithms.
- Able to walk through insert and delete for different data techniques.
- Improve programming skills.

SECTION A

Basic concepts and notations: Types of data structures, Data structure operations, Mathematical notations and functions, Algorithmic complexity, Big 'O' notation, Time and space trade off.
Arrays: Linear array, representation of array in memory, traversing linear array, insertion and deletion in an array, Two-dimensional array, row major and column major orders, sparse matrix.
Stacks: Representation of stacks in memory (linked and sequential), operations on stacks, Applications of stacks: string reversal, parentheses matching.
Queues: Representation of queues in memory (linked and sequential), operations on queues, insertion in rear, deletion from front.

SECTION B

Linked list: Representation of linked list using static and dynamic data structures, insertion and deletion of a node from linked list, searching in link list, searching in sorted link list.

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Trees: Definition and basic concepts, linked representation and representation in contiguous storage, binary tree, binary tree traversal, Binary search tree, searching, insertion and deletion in binary search tree. Searching and sorting algorithms: Linear and binary search, bubble sort, insertion sort, selection sort, quick sort, merge sort.

Text/Reference Books:

1. Seymour Lipschutz, Theory and Practice of Data Structures, McGraw-Hill.
2. Vishal Goyal, Lalit Goyal, Pawan Kumar, A Simplified Approach to Data Structures, Shroff Publications.
3. Y.L.Tenenbaum, and A. J. Augenstein, Data Structures using C and C++, PHI.
4. Robert Sedgewick, Algorithms in C, Pearson Education.

BOS:29.07.2025

MITM2103T: SOFTWARE ENGINEERING

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

Maximum Time: 3 Hrs.
Minimum Pass Marks: 35%
Lectures to be delivered: 45-55 Hrs.

A) 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.

B) Instructions for the candidates

1. Candidates are required to attempt five questions in all, selecting two questions each from Section A and Section B and compulsory question of Section C.
2. Use of non-programmable scientific calculators is allowed.

Course Outcomes:

- To provide the idea of decomposing the given problem into Analysis, Designing, Implementation, Testing and Maintenance phases.
- To provide an idea of using various process models in the software industry according to given circumstances.
- To gain the knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are conducted in a software project.
- An ability to work in one or more significant application domains
- Work as an individual and as part of a multidisciplinary team to develop and deliver quality software

SECTION A

Software Engineering : History, Definition, Goal; The role of the Software Engineer, The Software Life Cycle, The relationship of Software Engineering to other areas of Computer Science, Classification of Software Qualities, Representative Qualities, Software process models: Waterfall model, prototyping, spiral; Tools and techniques for process modeling, Management of software engineering management functions, project planning and organization.
Requirement Analysis: The requirement process, types of requirements, Characteristics and components of SRS, Data flow Diagrams, Data Dictionary, UML diagrams for specifying behaviors, metrics and verification of SRS.
Design and Software architecture: The Software design activity and its objectives, Abstraction, Modularity, Coupling-Cohesion criteria, Object-Oriented Design: generalization and specialization, associations and aggregations.

BOS: 29.07.2025

SECTION B

Coding: Programming standards and procedures, programming guidelines, documentation, and Code verification techniques.

Verification and validation: Approaches to verification, testing goals, principles, Equivalence class partitioning, Boundary value analysis mutation testing, graph based testing, cyclomatic complexity, test planning ,automated testing tools, features of Object-Oriented testing.

Software maintenance: The nature of maintenance, maintenance problems, maintenance techniques and tools. Software re-engineering, reverse engineering, forward engineering: forward Engineering for Object-oriented and client/server architecture, Building blocks for CASE, CASE tools and applications.

Text/Reference Books:

- Carlo Ghezzi, Mehdi Jazayeri, Dino Mandrioli, "Fundamentals of Software Engineering", 2nd edition Pearson Education. 2003.
- Shari Lawrence Pfleeger, " Software Engineering : Theory and Practice", 2nd edition, Pearson Education, 2003.
- P.Jalota, "An Integrated Approach to Software Engineering", Narosa Publications.
- Roger.S.Pressman," SoftwareEngineering-A practitioner's Approach", 3rd edition,McGraw-Hill.

BOS:29.07.2025

MITM2104T: COMPUTER NETWORKS

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

Maximum Time: 3 Hrs.
Minimum Pass Marks: 35%
Lectures to be delivered: 45-55 Hrs.

A) 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.

B) Instructions for the candidates

1. Candidates are required to attempt five questions in all, selecting two questions each from Section A and Section B and compulsory question of Section C.
2. Use of non-programmable scientific calculators is allowed.

Course Outcomes:

This course is designed to explore computing and to show students the art of computer programming. Students will be able to learn Understanding programming using C concepts for writing good programs. On completion of this course, the students will be able to:

- Write, compile and debug programs in C language.
- Use different data types, operators and console I/O functions in a computer program.
- Design programs involving decision control statements, loop control statements and case control structures.
- Understand the implementation of arrays, pointers and functions and apply the dynamics of memory by the use of pointers.

SECTION A

Computer networks: uses of computer networks, Goals and applications of networks, computer network structure and architecture, reference models: OSI model, TCP/IP model, Comparison of TCP/IP and OSI models, Introduction to Novell Netware, and ARPANET.
Medium Access Sub layer : Static and dynamic channel allocation for LAN and MAN ALOHA Protocols, **LAN Protocols** : CSMA, CSMA/CD, Collision Free protocol, BRAP, MLMA, Binary countdown, Limited contention protocol, Urn Protocol, Adaptive tree walk protocol.
Networking and Internetworking devices: Repeater, bridges, routers, gateways, switches.

SECTION B

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High speed LAN: FDDI, Fast Ethernet, HIPPI, Fiber channel.
Routing: Static vs. Dynamic Routing, various Routing Algorithms. Congestion Control: Causes of Congestion, Various Congestion Control Strategies and Algorithms Mobile telephone, mobile telephone switching office.
Internet protocols: Principles of Internetworking, connectionless internetworking, Internet protocols, IPv6.
Network Security: Security requirements and attacks, encryption Public key encryption and digital Signatures. distributed applications: SNMP, SMTP, HTTP.

Text/Reference Books:

- A.S. Tannenbaum, "Computer Networks", 3rd Edition, Prentice Hall, 1999.
- Data Communications & Networking by Forouzan, Tata McGraw Hills.
- D.E. Cormer," Computer Networks and Internet", 2nd Edition, Addison Wesley Publication, 2000.
- D.E. Corner and D.L. Stevens," Internetworking with TCP-IP: Design, Implementation and Internals", Vol. II, Prentice Hall, 1990.
- D. Bertsekas and R.Gallagher, "Data Networks", 2nd Edition, Prentice-Hall,1992.
- Stevens W.R.," UNIX Network Programming," Prentice Hall, 1990.

BOS: 29.07.2025

MITM2105P: PROGRAMMING LAB-V

Maximum Marks: 100
Minimum Pass Marks: 35%

Max. Time: 3 Hrs.
Practical sessions to be conducted: 60-70

This laboratory course will mainly consist of exercise based on the subject MITM2101T (Object Oriented Programming using C++).

Maximum Marks for Continuous Assessment: 30

Maximum Marks for External Examination: 70

BOS:29.07.2025

MITM2106P: PROGRAMMING LAB-VI

Maximum Marks: 100
Minimum Pass Marks: 35%

Max. Time: 3 Hrs.
Practical sessions to be conducted: 60-70

This laboratory course will mainly consist of exercise based on the subject MITM2102T (Data and File Structure)

Maximum Marks for Continuous Assessment: 30

Maximum Marks for External Examination: 70

BOS: 29.07.2025

SEMESTER-IV

MITM2201T: ALGORITHM DESIGN AND ANALYSIS

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

Maximum Time: 3 Hrs.
Minimum Pass Marks: 35%
Lectures to be delivered: 45-55 Hrs.

A) Instructions for 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.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from sections A & B of the question paper and the entire section C.
2. Use of non-programmable scientific calculators is allowed

Course Outcomes:

The objective of this course is to introduce the concept of algorithm development, program and programming validation. It includes a special emphasis on the analysis of various algorithms. Upon completion of this course, students will:

- Be familiar with basic of complexity of algorithms.
- Be familiar with development of hashing technique.

SECTION A

Introduction to algorithm analysis: Introduction to algorithm, Algorithm Specifications, performance analysis, case study on analysis of algorithms.
Divide and conquer technique of problem solving: Quick sort and Merge Sort Algorithms and their Performance Analysis.
Greedy algorithms: General Method, Case Study based on Greedy Algorithm (Knapsack Problem, Single source shortest paths, transitive closure and APSP problem)

SECTION B

Dynamic Programming: General Method, Multistage graphs, All Pair Shortest Paths, Optimal Binary Search Trees, String Editing.
Hashing: Introduction to hash table, hash function, resolving collision by chaining and open addressing, deleting items from a hash table.
Intractable Problems: Nondeterministic Algorithms. NP Hard and NP complete Problems, NP Hard Graph Problem (Traveling Salesman problem). NP Hard Scheduling Problems (Job Shop Scheduling)

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Text/Reference Books:

- Mark A.Weiss: Data Structures and Algorithm Analysis in C++, Pearson Education.
- Goodman S.E.and Hedetniemi: Introduction to the Design and Analysis and Algorithm, TMH Publications
- Sara Baose, Gelder A V.: Computer Algorithms: Introduction to Design and Analysis, Pearson Education.
- Ellis Horowitz, Sartaj Sahni and SanguthevarRajasekaran: Fundamentals of ComputerAlgorithms, Universities Press.

DS:29.07.2025

MITM2202T: COMPUTER GRAPHICS

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

Maximum Time: 3 Hrs.
Minimum Pass Marks: 35%
Lectures to be delivered: 45-55 Hrs.

A) Instructions for 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.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from sections A & B of the question paper and the entire section C.
2. Use of non-programmable scientific calculators is allowed.

Course Outcomes:

- The main objective of the course is to introduce students with fundamental concepts and theory of computer graphics.
- It presents the important drawing algorithm, polygon fitting, clipping and 2D transformation curves and an introduction to 3D transformation.

SECTION A

Introduction: Introduction to computer Graphics systems, components of interactive computer graphics system, Application areas.

Video Display Devices: Refresh cathode -ray tube, raster scan displays, random scan displays, colour CRT-monitors, direct view storage tube, flat-panel displays, 3-D viewing devices, virtual reality, raster scan systems, random scan systems, graphics monitors and workstations.

Scan conversion algorithms for line, circle and ellipse, Bresenham's algorithms, area filling techniques, character generation.

2-dimensional Graphics: Cartesian and Homogeneous coordinate system, Geometric transformations (translation, Scaling, Rotation, Reflection, Shearing), Composite transformations, affine transformation, Two dimensional viewing transformation and clipping (line, polygon and text).

SECTION B

3-dimensional Graphics: Geometric transformations (translation, Scaling, Rotation, Reflection, Shearing), Composite transformations, Mathematics of Projections (parallel & perspective). 3-D viewing, transformations and clipping.

Hidden line and surface elimination algorithms, z-buffer, scan-line, sub-division, Painter's algorithm.

Illumination Models: Diffuse reflection, Specular reflection, refracted light, texture surface patterns, Halftoning, Dithering.

Surface Rendering Methods: Constant Intensity method, Gouraud Shading, Phong Shading.

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Text/Reference Books:

- D. Hearn and M.P. Baker, "Computer Graphics", PHI New Delhi; Second Edition, 1995.
- J.D. Foley, A.V. Dam, S.K. Feiner, J.F. Hughes,. R.L Phillips, "Introduction to Computer Graphics", Addison-Wesley Publishing company, N.Y.; Second Edition,1994.
- R.A. Plastock and G. Kalley, "Computer Graphics", McGraw Hill, 1986.

BOS: 29.07.2025

MITM2203T: ARTIFICIAL INTELLIGENCE

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

Maximum Time: 3 Hrs.
Minimum Pass Marks: 35%
Lectures to be delivered: 45-55 Hrs.

A) Instructions for 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.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from sections A & B of the question paper and the entire section C.
2. Use of non-programmable scientific calculators is allowed.

COURSE OUTCOMES:

This course is designed to familiarize the students with the emerging concept AI and its applications in various fields. On completion of this course, the students will be able

- To identify problems where artificial intelligence techniques are applicable.
- To apply selected basic AI techniques.
- To judge applicability of more advanced techniques.
- To participate in the design of systems that act intelligently and learn from experience.

SECTION A

Introduction to AI: Definition, Basic Elements of AI and AI application Areas.
Logic Development: Introduction to Propositional Logic: Syntax, Semantics, Inference methods in Propositional Logic. Introduction to Predicate Logic: Syntax, Semantics of Predicate Logic, Clausal form, Resolution, Unification, Inference Mechanisms.
Knowledge Based Systems: Meaning of Knowledge, Types of Knowledge, Components of Knowledge Base System, Knowledge Representation: Approaches to Knowledge representation, Issues in Knowledge representation, Knowledge representation using rules. Semantic Nets, Frames, Conceptual Dependencies, Scripts, CYC.

SECTION B

Knowledge Acquisition: Definition, General Learning Model, Types of Learning, Factors affecting Learning. Knowledge organization & Manipulation: Introduction, Issues in organization and manipulation.
Dealing with uncertainty: Symbolic reasoning under uncertainty-Introduction and logics for Non-monotonic reasoning, Implementation issues.

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Expert Systems: Basic Components & architecture of Expert systems, representing and using domain knowledge.
Applications of AI: Natural Language Processing, Machine learning, Robotics. Applications of AI in Business, Healthcare, Education and Finance.

Text and Readings:

- E. Rich and K. Knight, "Artificial Intelligence", Tata McGraw Hill.
- E. Charnaik and D. McDermott, "Introduction to Atificial Intelligence", Addison-Welsley Publishing Company.
- Dan W. Patterson, "Introduction to Artificial Intelligence and Expert Systems", PHI.
- W.F. Clofisin and C.S. Melifish, "Programming n PROLOG", Narosa Publishing Co.
- Sanjiva Nath, "Turbo PROLOG", Galgotia Publications Pvt. Ltd.

MITM2204T: MINOR PROJECT

Maximum Time: 3 hrs
Minimum Marks: 40%

Practical units to be conducted: 35-45

This course will mainly consist of developing a minor project using any of the different technologies learnt during the course.
There will not be any marks for internal assessment of the student.

1. The students are required to undertake a minor software development project during the fourth semester of MSc.IT course along with the regular classes. The project should be done preferably using the programming languages taught in the semesters of the course
2. The students will complete systems analysis, design, coding and testing of the software project assigned to them by the teacher. The students are required to complete the minor project in the Department given by the concerned teacher for the Department. No outside training/ project work will be allowed.
3. Joint projects may be allowed and joint project reports will also be accepted, with the permission of the teacher concerned. However the students should highlight their individual contributions in a joint project. The quantum of individual contribution of particular students in joint projects should be such which can be accepted as equivalent to individual minor projects. The same must also be reflected in joint reports.
4. Each student should submit one project report of his/her project to the teacher concerned, as per the format decided by the Department.
5. The students are required to give a live demo of the software developed by them and there will be a viva-voce of the students during the end-semester practical examination.
6. There will not be any marks for internal assessment of the student. The external teacher along with the internal teacher will evaluate the students and marks out of 100 will be awarded to each student according to the following marks distribution.

- **Project Report: 25 Marks**
- **Working Demonstration: 30 Marks**
- **Presentation: 25 Marks**
- **Viva Voce: 20 Marks**

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MITM2105P: PROGRAMMING LAB-VII and VIII

Maximum Marks: 100
Minimum Pass Marks: 35%

Max. Time: 3 Hrs.
Practical sessions to be conducted: 60-70

This laboratory course will mainly consist of exercise based on the subject MITM2201T (Algorithm Design and Analysis) and MITM2202T (Computer Graphics).

Maximum Marks for Continuous Assessment: 30

Maximum Marks for External Examination: 70

BOS: 29.07.2025