

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5½ Years

IX SEMESTER

JULY-DECEMBER 2013

Sub. Code	Subject Name	Credit
IT-101	Mathematics-I	4
IT-102	Statistics Methods-I	4
IT-103	Physics-I	4
IT-104	C Programming	4
IT-105	PC Software	4
IT-106	English	4
IT-107	Lab Viva	2
IT-108	Comprehensive Viva	4

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IT-901: Artificial Intelligence

Aim of Course: To familiarize students with techniques of representing knowledge required to build intelligent machines capable of taking decision like human beings.

Objectives:

The course is designed to make students:

- To familiarize students with techniques of solving problems that need human intelligence.
- To enable students to formulate Artificial Intelligence problems
- To enable students to use heuristic techniques to solve the AI problem.

Course Contents:

UNIT I

Introduction to AI & Problem Solving in AI: What is AI, AI Techniques, Defining the problem in AI, Problem Spaces, Problem Characteristics, Production System and its Characteristics?

UNIT II

Heuristic Search Techniques: Heuristic Search, Criteria for Search, Various Search Techniques-Generate and Test, Depth-first Search, Breadth-first Search, Hill Climbing, Best-First Search, A* and AO* algorithm, Constraint Satisfaction, Means-Ends Analysis etc.

UNIT III

Knowledge Representation and Issues: Types of Knowledge, Representation and Mappings, Approaches and Issues in Knowledge Representation, Predicate Logic – Representation of simple facts, computable functions; Resolution, Logic Programming, Matching, Control Knowledge etc.

UNIT IV

Prolog Programming: Introduction and Applications, Facts, Objects and Predicates. Linguistic variables, Rules, Input-Output operations, Controlling Execution: Recursion, Fail, Cut; Arithmetic operation, compound objects, List and various operations on Lists; Dynamic Databases; Expert-System design etc.

UNIT V

KR Techniques & Advance Artificial Intelligence: Slot and Filler Structure – Introduction, Weak and Strong Structures, Semantic Nets, Frames, Conceptual Dependency and Frames; Fuzzy logic Expert Systems – Concepts and Design.

Reference Books:

1. Rich & Knight, Artificial Intelligence, Second Edition, Tata Mcgraw Hill
2. Russel and Norvig, Artificial Intelligence A Modern Approach, Prentice Hall
3. Dan Patterson, AI & Expert System, Prentice Hall of India
4. Ivan Bratko, Prolog Programming for Artificial Intelligence, Pearson Education, III Edition
5. Carl Townsend, Introduction to Turbo Prolog, BPB Publication
6. Patrick Winston, Artificial Intelligence, Pearson Education India

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IT-902: Principles of Optimization

Aim of Course: The principle aim of this course is to make the students aware of organizational behavior of management-process and importance of decision-making in real life situations.

Objectives:

The course is designed to make students:

- Understand different techniques of optimization, which help in analyzing the process of decision-making.
- To learn problem formulation of optimization.
- To realize the methods of optimization.
- To know the applications of optimization.
- Understand basic concepts of Linear programming and Dynamic Programming

Course Contents:

UNIT I

Organizational behavior and management. Introduction to O.R. Techniques. Models: - Meaning and classifications.

UNIT II

Linear Programming Problems (L.P.P.), Graphical solutions, Simplex algorithm, Principle of Duality, post optimality analysis. Transportation problem, Initial basic feasible solutions, MODI'S optimality analysis, Degeneracy.

UNIT III

Assignment Problem, traveling Salesmen problem, Branch and Berend techniques. Integer program: - Necessity of Integer programming, use of Branch and Berend Technology for solving Integer Programming problem.

UNIT IV

Queue-theory: - Importance of waiting-line in networking Q-models. Dynamic programming problems.

UNIT V

Theory of Games: - Introduction, pay-off matrix, Minimum-Maximum principle, Saddle-point principle of Dominance. Introduction to Inventory Analysis

Reference Books:

1. Dr. S.D. Sharma, Text Book of Operations Research.
2. N.D. Vora, Quantitative Techniques in management.
3. Kanti Swarup, P.K. Gupta and M.M. Singh , Operations Research..
4. H.A. Taha, Introduction to Operations Research.

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IT-903: Component Technology

Aim of the course: To enable the students understand the concepts of EJB and build web-based and/or enterprise-based applications that incorporate EJB technology.

Objectives:

The course is designed to make students:

- Implement business-tier functionality using EJB technology
- Learn the concepts and implementation of RMI and JNDI
- Get an overview of EJB fundamentals.
- Learn the concepts and implementation of Entity and Session beans..

Course Contents:

UNIT I

RMI: Object Serialization, Developing Applications with RMI, and the RMI security manager, Parameters passing in RMI.

UNIT II

JNDI: Naming services, Directory services, Benefits of JNDI, JNDI Architecture, JNDI concepts

UNIT III

Overview & EJB Fundamentals: Motivation for EJB, Component architecture, Various roles in J2EE architecture, Type of Beans, Distributed object & Middleware, Constituents of enterprise beans: Enterprise beans class, EJB Object, Home object, Local interfaces, Deployment description, Vendor specific files.

UNIT IV

Session Beans: Stateless session beans, statefull session beans, characteristics of statefull session beans, lifecycle diagram for session beans. JMS, Integrating JMS with EJB, Developing message driver beans.

UNIT V

Entity Beans: Persistence concepts, Features of entity beans, Bean managed Persistent entity beans, and Container managed persistent entity beans, Life cycle Diagrams, BMP and CMP relationships.

Reference Books:

1. Ed Roman “Mastering Enterprise Java Beans”, Wiley Publishing, 2005, 3rd Edition
2. Kal Ahmed “Professional JAVA server programming”, SPD, 2005
3. J2EE Tutorial from www.java.sun.com

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IT-904: Object Oriented Analysis and Design

Aim of Course: To enable the students to have a thorough understanding of the activities in development projects using Object Oriented Analysis and Design techniques.

Objectives:

The course is designed to make students:

- Develop a working understanding of formal object-oriented analysis and design processes.
- Develop the skills to determine which processes and OOAD techniques should be applied to a given project.
- Develop an understanding of the application of OOAD practices from a software project management perspective

Course Contents:

UNIT I

Software engineering best practices. UML: its road map.

UNIT II

Introduction to the Rational Unified process: Workflow and Lifecycle.

Introduction to Object Orientations, using UML modeling mechanisms.

UNIT III

Requirements Management: key concepts, problem statement,

Glossary, use case model, supplementary specification.

UNIT IV

Analysis and design overview: architectural analysis-layers.

Use case Analysis- Responsibilities, attributes and association.

Architectural design.

UNIT V

Describe concurrency.

Describe distribution, Use case design, Subsystem Design, Class design.

Reference Books:

1. P.Kruchten, The Rational Unified Process: An Introduction, Pearson Education Asia, 2000.
2. G. Booch, I. Jacobson, J. Raumbaugh, The Unified Modeling Language- User's Guide, Addison Wesley, 1999.
3. W.Boggs and M. Boggs, Mastering UML with Rational Rose, BPB Publications, 1999.
4. G. Booch, Object oriented Analysis and Design with Applications, Addison Wesley, 1994.