

**JYOTI NIVAS COLLEGE AUTONOMOUS  
SYLLABUS FOR 2018 BATCH AND THEREAFTER**

**Programme: B.C.A**

**Semester: V**

**ARTIFICIAL INTELLIGENCE**

**Course Code: 18BCAVE1A**

**No. of Hours: 60**

**COURSE OBJECTIVES:**

- To understand the basics of Artificial Intelligence, challenges faced in developing applications using AI and also understanding the techniques in AI to exploit knowledge.
- To understand and define the problem and visualize it as a state space.
- To understand different heuristic search techniques and means of reducing problems in order to reach the solution state effectively.
- To understand the knowledge representation approaches, the issues faced and representing knowledge in the form of rules, to reason forward and backward while solving a problem.

**LEARNING OUTCOMES:**

- It provides comprehensive knowledge about the fundamental principles, methodologies and industry practices in AI.
- Ability to effectively represent knowledge and facts that will serve as an input to programs involving AI.

**UNIT - I**

**10 HRS**

**Introduction**-AI Problems – AI techniques – Criteria for success.

Problems, Problem Spaces, Search- State Space Search- Production System – Problem Characteristics – Issues in the Design of Search Program.

**UNIT- II**

**16 HRS**

**Heuristic Search Techniques**- Generate and Test – Hill Climbing – Best-First Search – OR Graphs, The A\* Algorithm. Problem Reduction -AND-OR Graph, AO\* Algorithm- Constraint Satisfaction- Means-Ends Analysis.

**UNIT - III**

**10 HRS**

**Knowledge Representation Issues** -Representations and Mappings – Approaches to Knowledge Representation -Issues in Knowledge Representation – The Frame Problem.

**UNIT - IV**

**12 HRS**

**Using Predicate Logic:** Representing simple facts in Logic – Representing instance and is-a relationships – Computable functions and predicates – Resolution – Natural deduction.

**UNIT - V**

**12 HRS**

**Representing Knowledge Using Rules:** Procedural versus Declarative Knowledge – Logic Programming – Forward versus Backward Reasoning – Matching – Control Knowledge.

**REFERENCES:**

1. Elaine Rich & Kevin Knight. Artificial Intelligence. Tata McGraw-hill Publishing Company Ltd. Third Edition, 2008.
2. Dan W. Patterson. Artificial Intelligence and Expert system. Prentice-Hall of India Private Limited.
3. George F Luger. Artificial Intelligence. 4<sup>th</sup> Edition. Pearson Education Publishers.

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**Programme: B.C.A**

**Semester: V**

**DATA WAREHOUSING AND DATA MINING**

**Course Code: 18BCAVE1B**

**No. of Hours: 60**

**COURSE OBJECTIVES:**

- Introducing basic concepts of Data mining and Data warehouse
- To learn to analyze the data to arrive at meaning full conclusion
- To introduce theoretic background of decisiontree, clustering classification and Association rules and pattern finding from the data
- To understand the powerful role of data in business decision.

**LEARNING OUTCOMES:**

- To observe the natural evaluation of data and information technology
- Enhance students' knowledge in difference aspect of knowledge discovery
- To understand the need to handle the large data in order to discover the patterns that helps immensely in various fields.

**UNIT - I**

**10 HRS**

**Data warehousing:** introduction - characteristics of a data warehouse – architecture of datawarehousing- data marts – other aspects of data mart. Online analytical processing: introduction - OLTP & OLAP systems.

Data modeling –star schema for multidimensional view – multi fact star schema or snow flake schema – OLAP TOOLS.

**UNIT - II**

**10 HRS**

**Developing a data Warehouse:** Why and how to build a data warehouse –data warehouse architectural strategies and organization issues - design considerations – data content – metadata distribution of data – tools for data warehousing – performance considerations – crucial decisions in designing a data warehouse.

Applications of data warehousing and data mining: Introduction - national data warehouses – other areas for data warehousing and data mining.

**UNIT - III**

**08 HRS**

**Basic data mining tasks** – data mining versus knowledge discovery in databases – data mining issues – data mining metrics – social implications of data mining – data mining from a database perspective.

**Data mining techniques:** Introduction – a statistical perspective on data mining – similarity measures – decision trees – neural networks – genetic algorithms.

**UNIT - IV****16 HRS**

**Classification:** Introduction – Statistical based algorithms - distance based algorithms – decision tree based algorithms - neural network based algorithms –rule based algorithms – combining techniques.

**Clustering:** Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms - Partitional Algorithms.

**UNIT - V****16 HRS**

Association rules: Introduction - large item sets - basic algorithms – parallel & distributed algorithms – comparing approaches- incremental rules – advanced association rules techniques – measuring the quality of rules.

**REFERENCES:**

1. Margaret H. Dunham. “Data mining introductory and advanced topics”. Pearson education, 2003.
2. C.S.R. Prabhu, “Data warehousing concepts, techniques, products and a applications”. PHI, Second Edition.
3. ArunK.Pujari. “Techniques”. Universities Press (India) Pvt. Ltd... 2003.
4. Alex Berson, Stephen J. Smith. “Data Warehousing, data mining, & OLAP, TMCH. 2001.
5. Jiawei Han &MichelineKamber. “Data mining Concepts & Techniques”. 2001, Academic press

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**Programme: B.C.A**

**Semester: V**

**SOFTWARE TESTING**

**Course Code: 18BCAVE1C**

**No. of Hours: 60**

**COURSE OBJECTIVES:**

- To study the fundamental concepts in Software Testing.
- To learn about the White box testing, Black box techniques, Integration Testing etc.
- To understand software test automation problems and solutions.
- An understanding of some ethical and professional issues those are important for software testers.

**LEARNING OUTCOMES:**

- They will have ability to examine the reason for bugs and evaluate the principle in software testing to avoid and also eliminate the bugs.
- The ability to apply software testing knowledge and engineering methods
- Student will have clear understanding about the Test management and Software test automations.

**UNIT – I: Introduction**

**12 HRS**

**Introduction:** Phases of Software Project, Testing, Verification and Validation, Quality, Quality Assurance and Quality Control, Life Cycle Models, Faults, Errors and Failures, Basics of software testing, **White box testing:** static testing, static analysis tools, Structural testing: Unit/Code functional testing, Code coverage testing, Code complexity testing. **Black Box testing:** Requirements based testing, Boundary value analysis, Equivalence partitioning, state/graph based testing, User Documentation Testing, Domain Testing.

**UNIT - II: Integration Testing**

**12 HRS**

**Integration Testing:** Top down and Bottom up integration, Bi-directional integration, System integration, Scenario Testing, Defect Bash, **System Testing:** Functional versus Non-functional testing, Design/Architecture verification, Deployment testing, Beta testing, Scalability testing, Reliability testing, Stress testing, **Acceptance testing:** Acceptance criteria, test cases selection and Execution.

**UNIT - III: Performance Testing**

**12 HRS**

**Performance Testing:** Methodology for Performance Testing, Tools for Performance Testing, Process for Performance Testing. **Regression testing:** Regression test process, Initial Smoke or Sanity test, Selection of regression tests, **Ad hoc Testing:** Pair testing, Exploratory testing, Iterative testing, Defect seeding.

#### **UNIT - IV: Test Management**

**12 HRS**

**People and organizational issues in testing- Organisation structures for testing teams:** Structure in single-product companies- Structure in Multi-Product Companies- Testing services- **Test Planning Management, Execution and Reporting:** Test planning-Test management- Test Process -Test Reporting

#### **UNIT - V: Testing Tool**

**12 HRS**

**Selenium:** Overview of Selenium- Advantage and Disadvantage of Selenium-**Selenium- IDE:** Features of Selenium IDE, Creating Selenium IDE Tests, Script Debugging-Pattern Matching - **Selenium RC:** Selenium RC Architecture- **Selenese Commands:** Actions-Accessors- Assertions – **Selenium WebDriver :**Selenium WebDriver Architecture - Selenium RC VsWebDriver.

#### **REFERENCES:**

1. S. Desikan and G. Ramesh, “Software Testing: Principles and Practices”, Pearson Education.
2. Aditya P. Mathur, “Fundamentals of Software Testing”, Pearson Education.
3. Ashish Mishra and Aditya Garg, “A practitioner's guide to test automation using selenium”, Tata McGraw-Hill Education.
4. Naik and Tripathy, “Software Testing and Quality Assurance”, Wiley
5. K. K. Aggarwal and Yogesh Singh, “Software Engineering”, New Age International Publication.