



**KAKATIYA UNIVERSITY WARANGAL
DEPARTMENT OF COMPUTER SCIENCE**

COURSE STRUCTURE FOR M.SC. (CSC) WITH EFFECT FROM 2013-14

M.SC. II YEAR I SEMESTER:

Paper No	Paper Title/Subject	Workload Per Week (Theory : Lab)	Marks		
			Internal	External	Total
MSCCS211	ARTIFICIAL INTELLIGENCE	T(04)	20	80	100
MSCCS212	SOFTWARE ENGINEERING	T(04)	20	80	100
MSCCS213	.NET PROGRAMMING	T(04)	20	80	100
MSCCS214	CRYPTOGRAPHY AND NET WORK SECURITY	T(04)	20	80	100
MSCCS215	DATA WAREHOUSING AND MINING	T(04)	20	80	100
MSCCS216	.NET PROGRAMMING LABORATORY	L(04)	--	50	50
MSCCS217	Data Mining LABORATORY	L(04)	--	50	50
MSCCS218	SOFT WARE ENGINEERIG LABORATORY	L(04)	--	50	50
					650

MSCCS211	ARTIFICIAL INTELLIGENCE	AI
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80

UNIT - I

ARTIFICIAL INTELLIGENCE: ITS ROOTS AND SCOPE, AI: HISTORY AND APPLICATIONS : From Eden to ENIAC: Attitudes toward Intelligence, Knowledge, and Human Artifice, Overview of AI Application Area

ARTIFICIAL INTELLIGENCE AS REPRESENTATION AND SEARCH: Introduction, The Propositional Calculus, The Predicate Calculus, Using co Rules to Produce Predicate Calculus Expressions, Application: A Logic-Based Financial Advisor. (Chapters 1 and 2)

UNIT - II

STRUCTURES AND STRATEGIES FOR STATE SPACE SEARCH:

Introduction, Graph Theory, Strategies for State Space Search, Using the State Space to Represent Reasoning with the Predicate Calculus.

HEURISTIC SEARCH: Introduction, An Algorithm for Heuristic Search, Admissibility, Monotonicity, and Informed ness, Using Heuristics in Games, Complexity Issues.

CONTROL AND IMPLEMENTATION OF STATE SPACE SEARCH:

Introduction, Recursion-Based Search, Pattern-Directed Search, production Systems, The Blackboard Architecture for Problem Solving. (Chapters 3, 4 and 5)

UNIT - III

REPRESENTATION AND INTELLIGENCE: THE AI CHALLENGE: KNOWLEDGE REPRESENTATION: Issues in Knowledge Representation, A Brief History of AI Representational Systems, Conceptual Graphs: A Network Language, Alternatives to Explicit Representation, Agent Based and Distributed Problem Solving.

STRONG METHOD PROBLEM SOLVING: Introduction, Overview of Expert System Technology, Rule-Based Expert Systems, Model-Based, Case Based, and Hybrid Systems, Planning. (Chapters 6 and 7)

UNIT - IV

REASONING IN UNCERTAIN SITUATIONS: Introduction, Logic-Based Abductive Inference, Abduction: Alternatives to Logic, The Stochastic Approach to Uncertainty. (Chapter 8)

TEXT BOOK

1. ARTIFICIAL INTELLIGENCE By George F Luger, Pearson Education.

REFERENCE BOOKS :

1. ARTIFICIAL INTELLIGENCES ByRitch&Neight.
2. INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS By D.W. Patterson (PHI-200)
3. ARTIFICIAL INTELLIGENCE By Patrick Henry Winston
4. PRINCIPLES OF ARTIFICIAL INTELLIGENCE (Narosa)
5. Artificial Intelligence ByShiartRussel Peter Novvig (PHI)

MSCCS212	SOFTWARE ENGINEERING	SE
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80

UNIT - I

INTRODUCTION TO SOFTWARE ENGINEERING: The Evolving Role of Software - Software - The Changing Nature of Software - Software myths. A GENERIC VIEW OF PROCESS: Software Engineering-A Layered technology - A Process frame work - The capability Maturity Model Integration (CMMI) - Process Patterns - Process Assessment - Personal and Team Process Models - process Technology - Product and Process. PROCESS MODELS: Prescriptive Models - The waterfall Model - Incremental Process Models-Evolutionary Process Models - Specialized Process Models - The Unified Process. (Chapters 1,2and 3)

UNIT- II

SOFTWARE ENGINEERING PRACTICE: Software engineering Practice - Communication Practice-Planning Practices - Modeling Practices - Construction Practice - deployment
SYSTEM ENGINEERING: Compute-Based systems - The System Engineering Hierarchy - Business Process Engineering: An Overview - Product Engineering:An Overview - System Modeling.REQUIRMENT ENGINEERING: A Bridge to Design and Construction - Requirements EngineeringTasks - Initiating the Requirements Engineering Process - Eliciting Requirements-Developing Use - Cases - Building the analysis Model - Negotiating Requirements - Validating Requirements. BUILDING THE ANALYSIS MODEL: Requirements Analysis - Analysis Modeling Approaches – Data Modeling Concepts-Object-oriented Analysis - Scenario-Based Modeling - Flow-OrientedModeling - Class-Based Modeling - Creating a Behavioral Model. (Chapters 5, 6, 7, 8)

UNIT - III

DESIGN ENGINEERING: Design within the Context of Software Engineering - design Process andDesign Quality - Design Concepts - The Design Model - Pattern-Based Software Design.
CREATING AN ARCHITECTURAL DESIGN: Software Architecture - Data Design - Architectural Styles and Patterns - Architectural Design- Assessing Alternative Architectural Designs - Mapping Data Flow into Software Architecture. MODELING COMPONENT-LEVEL DESIGN: What is a Component? - Designing Class-Based Component-Level Design - Object Constraint Language - designing Conventional Components. (Chapters 9, 10 and 11)

UNIT - IV

PERFORMING USER INTERFACE DESIGN: The Golden Rules - User Interface Analysis and Design- Interface Analysis - Interface Design Steps - Design Evaluation.RISK MANAGEMENT: Reactive vs. Proactive Risk Strategies - Software Risks - Risk Identification - Risk Projection - Risk Refinement - Risk Mitigation, Monitoring, and Management - The RMMM Plan.QUALITY MANAGEMENT: Quality Concepts - Software Quality Assurance - Software Reviews -Formal Technical Reviews - Formal Approaches to SQA - Statistical Software Quality Assurance -Software Reliability - The ISO 9000 Quality Standards - The SQA Plan. (Chapters 12, 25, 26)

TEXT BOOK:

1. SOFTWARE ENGINEERING BY R.S. PRESSMAN (Mc. Graw Hill Sixth Edition)

REFERENCE BOOKS:

1. SOFTWARE ENGINEERING BY GHEZZI (PHI)
2. SOFTWARE ENGINEERING FUNDAMENTALS BY BEHFOROZ AND HUDSON
OXFORDUNIVERSITY PRESS
3. SOFTWARE ENGINEERING BY FAIRLEY (Mc.Graw Hill)

MSCCS213	.NET PROGRAMMING	.NET
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80

UNIT - I

Fundamentals of Visual Basic, Exception handling, windows forms, Control Classes, Different Types of Boxes, Labels, Buttons, Panels. (Chapters 1 to 7)

UNIT - II

WINDOWS FORMS: Different types of Bars, Menus, Views.

OBJECT - ORIENTED PROGRAMMING: Classes and objects constructors and destructors, inheritance, modifiers, Interfaces, Polymorphism, Vate Binding, Graphics handling and File handling. (Chapters 8 to 13)

UNIT - III

WEB FORMS: Working with web forms, Web forms and HTML, The Web control class, Web Forms and Boxes, Web Forms and Buttons, Validation Controls, Ad Rotators, Web Forms and HTML controls. (Chapters 14 to 19)

UNIT - IV

DATA ACCESS WITH ADO.NET : Accessing data with the server explorer, Data adapters and Data sets, Binding Controls to databases, Handling databases in code, Database access in Web Applications. Creating user Controls, Webuser Controls, and Multithreading creating Windows services, Web Services and Deploying applications. (Chapters 20 to 25)

TEXT BOOK:

1. VB.NET PROGRAMMING (BLACK BOOK) BY STEVEN HOLZNER (Dreamtech- 2003) REFERENCE

REFERENCE BOOKS:

1. VB.NET PROGRAMMING BY T. GADDIS (Dreamtech)
2. Microsoft Visual Basic. Net step by step By Halvosrson (PHI)
3. OOP with Microsoft Visual Basic.Net ByReynoldHacrtte (PHI)

MSCCS214	CRPTOGRAPHY AND NETWORK SECURITY	CNS
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80

UNIT - I

INTRODUCTION:- Attacks, Services, and Mechanisms, Security Services. CONVENTIONAL ENCRYPTION: CLASSICAL TECHNIQUES: Steganography, Classical Encryption Techniques. CONVENTIONAL ENCRYPTION: MODERN TECHNIQUES:- Simplified DES. The Data Encryption Standard, Differential and Linear Cryptanalysis, Block Cipher Modes of Operation.

UNIT - II

CONFIDENTIALITY USING CONVENTIONAL ENCRYPTION:- Traffic Confidentiality, Random Number Generation. PUBLIC-KEY CRPTOGRAPHY:- Principles of Public-Key Cryptosystems, The RSA Algorithm, DiffieHellman Key Exchange, Elliptic Curve Cryptography. INTRODUCTION TO NUMBER THEORY:- Prime and Relatively Prime Numbers, Fermat's and Euler's Theorem, Euclid's Algorithm, The Chinese Remainder Theorem, Discrete Logarithms.

UNIT - III

MESSAGE AUTHENTICATION AND HASHFUNCTIONS:- AuthenticationRequirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and MACs. DIGITAL SIGNATURES AND AUTHENTICATION PROTOCOLS:- Digital Signatures, Authentication Protocols, Digital Signature Standard.

UNIT - IV

ELECTRONIC MAIL SECURITY: S/MIME. IP SECURITY: IP Security Overview, IP Security Architecture, Encapsulating Security Payload, Key Management. FIREWALLS: Firewall Design Principles, Trusted Systems. (Chapters 1,2,4,5,6,7,8,10,12,13 and 16)

TEXT BOOK:

1. CRYPTOGRAPHY AND NETWORK SECURITY principles and Practice FOURTH Edition By William Stallings (Pearson Asia)

REFERENCE BOOKS:

1. DAVIES &PRICE: SECURITY FOR COMPUTER NETWORKS - Wiley (1984)
2. MAYER &MATYAS: CRYPTOGRAPHY - Wiley B. SCHNEIER: APPLIED CRYPTOGRAPHY - (John Wiley)

MSCCS215	DATA WAREHOUSE AND DATA MINING		DMW
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80	

UNIT-I

What is Data Mining, Data Mining Functionalities, and classification, Data Mining Task, Integrating a Data Mining System, Major issues in Data Mining, Descriptive Data Summarization, and Data Cleaning. (Chapters 1,2.1 to 2.3)

UNIT-II

Data Integration and transformation, Data reduction, Data Discrimination and concept Hierarchy Generation. What is Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Complementation, From Data Warehouse to data mining. (Chapters 2.4 to 2.6, 3)

UNIT-III

Basic Concepts of frequent patterns, Frequent Item sets, mining methods, Association rules, what is classification and Prediction, Classification By Decision Tree Induction, Bayesian Classification, Rule-Based Classification. (Chapters 5.1, 5.2.1, 5.2.2, 5.3.1, 6.1, 6.2, 6.3.1, 6.3.3, 6.4.1, 6.4.2, 6.5.1 6.5.2)

UNIT - IV

What is Cluster analysis, types, Partitioning methods, Hierarchical methods, Density Based methods, Grid Based methods, and Model-Based Clustering methods, Outlier analysis? (Chapters 7.1 to 7.8 and 7.11)

TEXT BOOK:

1. DATA MINING CONCEPTS & TECHNIQUES BY JIAEEI HAN, MICHELINE & KAMBER (2nd EDITION) Harcourt India (Elsevier Publishing Company)

REFERENCE BOOKS:

1. Data Mining Introductory and advanced topics-MARGARET H DUNHAM, PEARSON EDUCATION
- 2.Data Mining Techniques - ARUN K PUJARI, University Press.
- 3.Data Warehousing in the Real World - SAM ANAHORY & DENNIS MURRAY. Pearson Edn Asia.
- 4.Data Warehousing Fundamentals - PAULRAJ PONNAIAH WILEY STUDENT EDITION
- 5.DATA WAREHOUSING, DATA MINING & OLAP BY ALEX BERSON AND STEPHEN J. SMITH (TMH)

MSCCS216	.NET LAB	.NETL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

- The concepts covered in the corresponding theory paper are to be implemented.

MSCCS217	DATA MINING Laboratory	DML
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

Weka is a collection of machine learning algorithms for data mining tasks. The algorithms can either be applied directly to a datasets#. Weka contains tools for data pre-processing, classification, regression, clustering, association rules, and visualization.

Launching WEKA, COMMAND-LINE(simple CLI), EXPLORER-User Interface, Preprocessing, Classification, Clustering, Associating, Selecting Attributes, Visualizing; EXPERIMENTER-Simple, Advanced; KNOWLEDGEFLOW-Introduction, Features, Components; ArffViewer; Converters;etc.,

RESOURCES:

Manuals and Software:

- <http://www.cs.waikato.ac.nz/ml/weka/index.html>
- Collections of Datasets:
- # <http://www.cs.waikato.ac.nz/ml/weka/datasets.html>

MSCCS2188	SOFTWARE TESTING LABOTORY	STL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

SOFTWARE TESTING – Introduction, purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs. Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle. Basic Structural Modeling: Classes, Relationships, Class & Object Diagrams. Interactions, Interaction diagrams, Use cases, Use case Diagrams, Activity Diagrams, Component, Deployment, Component diagrams and Deployment diagrams; Caste Study on Unified Library Application(ULA).

To learn and use the testing tools to carry out the functional testing, load/stress testing and use the following (or similar) automated testing tools to automate testing:

- a) Win Runner/QTP for functional testing.
- b) Load Runner for Load/Stress testing.
- c) Test Director for test management.

List of Sample Programs /Experiments

1. The student should take up the case study of Unified Library Application (ULA) which is mentioned in the theory, and Model it in different views i.e Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.
2. Student has to take up another case study of his/her own interest and do the same what ever mentioned in first problem. Some of the ideas regarding case studies are given in reference books which were mentioned and it would be referred for some new idea.

REFERENCE BOOKS:

1. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech
2. Software Testing Concepts and Tools, P.Nageswara Rao, Dreamtech Press.
3. Grady Booch, James Rumbaugh, Ivan Jacobson : The Unified Modeling Language User Guide, Pearson Education 2nd Edition