## SCHEME OF INSTRUCTION AND EXAMINATION

### M.C.A IIIrd YEAR

### FACULTY OF INFORMATION TECHNOLOGY

#### SEMESTER – I

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WITH EFFECT FROM THE ACADEMIC YEAR 2014-2015

CS 801

INFORMATION SECURITY

Instruction 4 Periods per week
Duration of University Examination 3 Hours
University Examination 80 Marks
Sessional 20 Marks

UNIT-I
Introduction: History, Critical characteristics of information, NSTISSC security model, Components of an information system, Securing the components, Balancing security and access, The SDLC, The security SDLC.
Need for Security: Business needs, Threats, Attacks- secure software development.

UNIT-II
Legal, Ethical and professional Issues: Law and ethics in information security, Relevant U.S laws-international laws and legal bodies, Ethics and information security.
Risk Management: Overview, Risk identification, Risk assessment, Risk control strategies, selecting a risk control strategy, Quantitive versus qualitative risk control practices, Risk management discussion points, Recommended risk control practices.

UNIT-III
Security Technology: Firewalls and VPNs: Physical design, Firewalls, Protecting remote connections

UNIT-IV
Security Technology: Intrusion detection, access control and other security tools: Intrusion detection and prevention systems, Scanning and analysis tools, Access control devices.

UNIT-V

Suggested Reading:
Instruction: 4 Periods per week
Duration of University Examination: 3 Hours
University Examination: 80 Marks
Sessional: 20 Marks

Unit – I


Unit – II

EJB Architecture: EJB – EJB Architecture – Overview of EJB software architecture – View of EJB – Conversion – Building and Deploying EJBs – Role in EJB.

Unit – III

EJB Applications: EJB Session Beans – EJB entity beans – EJB Clients – EJB Deployment Building an application with EJB.

Unit – IV


Unit – V


Suggested Reading:

CS 803

OBJECT ORIENTED SYSTEM DEVELOPMENT

Instruction 4 Periods per week
Duration of University Examination 3 Hours
University Examination 80 Marks
Sessional 20 Marks

Unit – I


Unit – II


Advanced Behavioral Modeling: Events and signals, State Machines, Processes and Threads, Times and space, State Chart Diagrams.

Unit – III


Unit – IV


Unit – V

Core Workflows: Requirements Capture , Capturing Requirements as Use Cases, Analysis, Design, Implementation, Test.

Suggested Reading:

CLOUD COMPUTING

Instruction 4 Periods per week
Duration of University Examination 3 Hours
University Examination 80 Marks
Sessionals 20 Marks

UNIT-I

UNIT-II
Virtual Machines and Virtualization of Clusters and Data Centers, Levels of Virtualization, Virtualization Structures/Tools and Mechanisms, Virtualization of CPU, Memory and I/O Devices, Virtual Clusters and Resource Management, Virtualization Data-Center Automation.

UNIT-III
Cloud computing architectures over Virtualized Data Centers: Data-Center design and Interconnection networks, Architectural Design of Compute and Storage Clouds, Public Cloud Platforms, GAE, AWS, Azure, Inter-cloud Resource Management

UNIT-IV

Unit-V

Suggested Reading:
5) A Fully Homomorhic Encryption Scheme, Craig Gentry, September 2009.

Web resources:
http://aws.amazon.com
http://code.google.com/appsengine
http://www.buyya.com/
CS 805

ELECTRONIC COMMERCE

Instruction
Duration of University Examination
University Examination
Sessional

4   Periods per week
3   Hours
80 Marks
20 Marks

UNIT – I


UNIT – II

UNIT – III
Inter Organizational Commerce And EDI- Electronic Data Interchange, EDI applications in business, EDI: Legal, Security, and Privacy issues, EDI and Electronic Commerce

EDI Implementation, MIME, and Value added net works.-Standardization and EDI, EDI Software Implementation, EDI Envelope for Message Transport, Value-Added Networks, Internet-Based EDI.


UNIT – IV

Advertising and Marketing on the Internet – Information based marketing, advertising on Internet, online marketing process, market research.

UNIT – V

Multimedia and Digital Video – key multimedia concepts, Digital Video and Electronic Commerce, Desktop video processing, Desktop video conferencing.

Suggested Reading:
CS 806

HUMAN COMPUTER INTERACTION

Instruction: 4  Periods per week
Duration of University Examination: 3  Hours
University Examination: 80 Marks
Sessional: 20 Marks

UNIT- I
Importance of the user interface. Characteristics of graphical and web user interfaces, User Interface Design Process: Knowing the client, Understanding business function, Principles of good screen design.

UNIT-II
System Menus and Navigation Schemes, Kinds of windows, Device based controls, Screen based controls, Test and Messages.

UNIT- III
Feedback, Guidance and assistance. Internationalization and accessibility, graphics, icons and images, colours, Layout windows and pages.

UNIT- IV

UNIT- V

Suggested Reading:
CS 807

SOFTWARE REUSE TECHNIQUES

Instruction 4  Periods per week
Duration of University Examination 3  Hours
University Examination 80 Marks
Sessional 20 Marks

UNIT-I
Software reuse success factors, Reuse driven software engineering business, Object oriented software engineering, applications and component sub systems, use case components, object components.

UNIT-II
Design Patterns – Introduction, Creational patterns, factory, factory method, abstract factory, singleton, builder prototype.

UNIT-III
Structural Patterns- Adapters, bridge, composite, decorator, façade, flyweight, proxy.
Behavioral Patterns – Chain of responsibility, command, interpreter.

UNIT-IV
Behavioral Patterns – Iterator, mediator, memento, observer, stazte, strategy, template, visitor, other, design patterns- Whole part, master- slave,view handler, forwarder- receiver, client – dispatcher- server, publisher – subscriber.

UNIT-V

Suggested Reading:
3. Frank Buschmann etc. – Pattern Oriented Software Architecture – Volume 1, Wiley 1996.
WITH EFFECT FROM THE ACADEMIC YEAR 2014-2015

CS 808

SOFT COMPUTING

Instruction 4  Periods per week
Duration of University Examination 3  Hours
University Examination 80 Marks
Sessional 20 Marks

UNIT-I
Fundamentals of Neural Networks: Basic Concepts of Neural Networks, Human Brain, Model of an Artificial Neuron, Neural Network Architectures, Characteristics of Neural Networks, Learning Methods, Taxonomy of Neural Network Architectures, History of Neural Network Research, Early Neural Network Architectures, Some Application Domains.

UNIT-II

UNIT-III
Fuzzy Set Theory: Fuzzy Versus Crisp, Crisp Sets, Fuzzy Sets, Crisp Relations, Fuzzy Relations.

UNIT-IV
Genetic Modeling: Inheritance Operators, Cross Over, Inversion, And Deletion, Mutation Operator, Bit-Wise Operators, Bit-Wise Operators used in GA, Generational Cycle, Convergence of Genetic Algorithms, Applications, Multi-Level Optimization, Real Life Problem, Differences and Similarities Between GA and Other Traditional Methods, Advances in GA.

UNIT-V
Integration of Neural Networks, Fuzzy Logic and Genetic Algorithms: Hybrid Systems, Neural Networks, Fuzzy Logic, and Genetic Algorithms Hybrids, Preview of Hybrid Systems
Genetic Algorithms Based Backpropagation Networks: Ga Based Weight Determination, Applications.

Suggested Reading:
XML AND WEB SERVICES

Instruction          4   Periods per week
Duration of University Examination          3   Hours
University Examination                               80 Marks
Sessional                                           20 Marks

UNIT- I :

UNIT- II :
XML Technology : XML Technology, XML - Name Spaces - Structuring With Schemas and DTD - Presentation Techniques - Transformation - XML Infrastructure.

UNIT- III:

UNIT- IV:
WEB Services: Overview - Architecture - Key Technologies - UDDI - WSDL - ebXML - SOAP And Web Services In E-Com - Overview Of .NET And J2EE.

UNIT- V:

Suggested Reading:

CS 810

MOBILE COMPUTING

Instruction  4   Periods per week
Duration of University Examination  3   Hours
University Examination  80 Marks
Sessional  20 Marks

UNIT- I


Medium Access Control, SDMA, FDMA, TDMA, CDMA, Comparisons.

UNIT- II

Telecommunication system, GSM, DECT, TDMA, TETRA, UMTS & IMT-2000.


Broadcast systems: Cyclic representation of data, Digital audio Broadcasting, Digital video Broadcasting, Convergence of Broadcasting and mobile communication.

UNIT- III


UNIT- IV


UNIT- V


Suggested Reading:

CS 811

SOFTWARE TESTING

Instruction          4   Periods per week
Duration of University Examination          3   Hours
University Examination          80 Marks
Sessional          20 Marks

Unit-I

A Mathematical Context: A Perspective on Testing, Examples


Unit-II


Unit-III


Unit-IV


Unit-V


Suggested Reading:

CS 812

SYSTEM ADMINISTRATION

Instruction          4   Periods per week
Duration of University Examination          3   Hours
University Examination                               80 Marks
Sessional                                                   20 Marks

UNIT- I

Functions of system administration, UNIX: Files, Processes Devices, file system, essential administrative tools: Grep, awk, files and directory commands, starting and shutdown process.

UNIT- II

User accounts, security, managing system resources : System performance, managing CPU usage, memory, disk I/O automating tasks with scripts.

UNIT- III

File system and Disks: Mounting, adding disks, CD-Rom devices, and backup and restore terminals modems and printers.

UNIT- IV

TCP/IP Network Management: TCP/IP networking, adding a new host, NFS/NIS, monitoring the network, E-mail, configuring and building Kernel for Linux.

UNIT- V

Windows 2003 Server: Startup, shutdown, server configuration, user accounts, managing processes, disks and file system security.

Note: First four units are related to UNIX system, Fifth unit is related to Windows 2003 Server.

Suggested Reading:

CS 813

RICH INTERNET APPLICATIONS

Instruction 4 Periods per week
Duration of University Examination 3 Hours
University Examination 80 Marks
Sessional 20 Marks

UNIT-I
Web 2.0 Folksonomies and Web 2.0, Software as a service. Multiple delivery channels (Voice – VOXML, and ANT (HTML), Social Net working.

UNIT - II
Client side programming – Overview of Java Script, Objects in Java Script, Regular expressions, Overview of XML, DTD and XML Schema, DOM and SAX Parsers,CSS,XSLT.

UNIT- III
Web Services- SOA,SOAP,WSDL,REST Services.
JSON Format- Ajax introduction, XML HTTP object comparison with I frames.

UNIT-IV
Building Rich Internet Application- Flash Player, Flex framework, MXML introduction, Action Script Introduction, working with Action Script, Flex Data binding, Common UI Components using Datagrids. Tree controls, Pop up controls etc.

UNIT-V
Mashup using Flex and Ajax. Web services in Flex. Semantic web(Web 3.0). Resource Description Frame work, use and examples, Ontologies, Web ontology language(OWL).

Suggested Reading:
CS 814

SOFTWARE PROJECT MANAGEMENT

Instruction 4  Periods per week
Duration of University Examination 3  Hours
University Examination 80 Marks
Sessional 20 Marks

Unit – I

Unit – II
Selection of an Appropriate Project Approach, Software Effort Estimation, Activity Planning.

Unit – III
Risk Management, Resource Allocation, Monitoring & Control.

Unit – IV

Unit – V
Software Quality, An Overview of PRINCE 2

Suggested Reading:
CS 814

RESEARCH METHODOLOGY

Instruction 4    Periods per week
Duration of University Examination 3    Hours
University Examination 80 Marks
Sessional 20 Marks

UNIT I

Defining the Research Problem: Definition of Research Problem, Problem Formulation, Necessity of Defining the Problem, Technique Involved in Defining a Problem.

UNIT II
Literature Survey: Importance of Literature Survey, Sources of Information, Assessment of Quality of Journals and Articles, Information through Internet.
Literature Review: Need of Review, Guidelines for Review, Record of Research Review

UNIT III

UNIT IV
Data Analysis: Deterministic and random data, uncertainty analysis, tests for significance: Chi-square, student’s ‘t’ test, Regression modeling, direct and interaction effects. ANOVA, F-test. Time Series analysis, Autocorrelation and autoregressive modeling.

UNIT V
Research Proposal preparation: Writing a Research Proposal and Research Report, Writing a Research Grant Proposal

Suggested Reading:
1. C.R. Kothari; Research Methodology, Methods & Technique; New age international publishers, 2004
2. R. Ganesh; Research Methodology for Engineers; MJP Publishers; Chennai, 2011.
3. Y.P. Agarwal; Statistical Methods; Concepts, Application and Computation; Sterling Publishers Pvt Ltd; New Delhi; 2004
4. Dr. Vijay Upadhye and Dr. Aravind Shende; Research Methodology, S Chand & Company Ltd.; New Delhi; 2009.
5. P. Hamdass and A Wilson Arun; Research and Writing across the disciplines; MJP Publishers;
CS 831

PROGRAMMING LAB IX – OOSD LAB

Instruction          3   Periods per week
Duration of University Examination          3   Hours
University Examination                               50 Marks
Sessional                        25 Marks

Students have to perform the following OOAD steps on a given

Case Study:

* Use Case Modeling
* Structural Modeling
* Behavioral Modeling
* Architectural Modeling

The output should consists of:

* Use case Diagrams
* Class Diagrams
* Sequence Diagrams
* Collaboration Diagrams
* State Chart Diagrams
* Activity Diagrams
* Deployment Diagrams
* Component Diagrams

Students should form into groups. They should carry out the Case Study as a group activity. The lab should be carried out using a CASE Tool. Finally they should submit a report.

Students should familiarize themselves with Rational Test Suite/ WinRunner/ LoadRunner
CS 832

PROGRAMMING LAB X – MIDDLEWARE TECHNOLOGIES LAB

Instruction 3 Periods per week
Duration of University Examination 3 Hours
University Examination 50 Marks
Sessional 25 Marks

1. Create a Distributed name Server (like DNS) RMI.
2. Create a Java Bean to draw various graphical shapes and display it using or without using BDK.
3. Develop an enterprise Java Bean for student Information System.
4. Develop an enterprise Java Bean for Library operations.
5. Create and invoke Web Services.
6. Develop a component for converting the currency values using COM/.NET.
7. Develop a component for browsing CD catalogue using COM/.NET.
8. Develop a component for retrieving information from message box using DCOM/.NET.
9. Develop a middleware component for retrieving Stock Market Exchange information using CORBA.
10. Develop a middleware component for retrieving Bank balance using CORBA.
1. Oral presentation is an important aspect of engineering education. The objective of the seminar is to prepare the student for systematic independent study of the art topics in the broad area of his/her specialization.

2. Seminar topics can be chosen by the students with the advice from the faculty members.

3. Students are the exposed to the following aspects of seminar presentations.
   - Literature survey
   - Organization of the material
   - PPT Presentation
   - Technical writing

Each student is required to

4. Submit one page of Synopsis of the seminar talk two days before for display on notice board.

5. Give 20 minutes PPT presentation, followed by 10 minutes discussion.

6. Submit a report on the seminar topic with a list of references and slides used within a week.

Seminars are to be scheduled in the 5th week of the semester.

The Sessional marks will be awarded to the students by at least 2 faculty members on the basis of an oral and written presentation as well as their involvement in the discussion.
### Scheme of Instruction and Examination

#### MCA IIIrd Year

**Faculty of Information Technology**

**Semester – II**

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<td>CS 852</td>
<td>Project</td>
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*Projects are evaluated with Viva Voce examination and the following grades are awarded:

**Excellent/Very Good/Good/Satisfactory/ Not Satisfactory**

In case of Not Satisfactory, the candidates has to redo the project and submit at the time of next semester examination.
CS 851

PROJECT SEMINAR

Instruction 3 Periods per week Sessional
25 Marks

Each student will be required to:
7. Submit one page of synopsis on the project work for display on notice board.
8. Give a 20 minutes presentation followed by 10 minutes discussion.
9. Submit a technical write-up on the project.

At least two teachers will be associated with the Project Seminar to evaluate students for the award of sessional marks which will be on the basis of performance in all the 3 items stated above.

The project seminar presentation should include the following components of the project:

- Problem definition and specification.
- Literature survey, familiarity with research journals.
- Broad knowledge of available techniques to solve a particular problem.
- Planning of the work, preparation of bar(activity) charts
- Presentation-oral and written.
WITH EFFECT FROM THE ACADEMIC YEAR 2014-2015

CS 852

PROJECT

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Sixth Semester of the MCA course is exclusively meant for project work. Project has to be carried out by each student individually in a period of 15 weeks of duration. Students should submit a synopsis at the end of 2nd week in consultation with the Project Guide. The synopsis should consist of definition of the problem, scope of the problem and plan of action. After completion of eight weeks students are required to present a Project Seminar on the topic covering the aspects of analysis, design and implementation of the project work.

At the end of the semester the students are required to present themselves for a University Vive-voce examination in which each student will be awarded with a grade.

A committee consisting of two faculty members of the respective college along with a guide will evaluate the project and award internal marks.