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**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)**

**IBRAHIMBAGH, HYDERABAD - 31**

**DEPARTMENT OF COMPUTER APPLICATIONS**

**MCA III YEAR (I & II SEMESTER)**

**SCHEME OF INSTRUCTION AND SYLLABUS**



**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)**

**(AFFILIATED TO OSMANIA UNIVERSITY & ACCREDITED BY A.I.C.T.E)**

**DEPARTMENT OF COMPUTER APPLICATIONS**

**IBRAHIMBAGH, HYDERABAD – 500 031**

**[www.vce.ac.in](http://www.vce.ac.in)**

**DEPARTMENT OF COMPUTER APPLICATIONS**

**DEPARTMENT – VISION**

To enable students to achieve excellence in computational skills embedded with human values.

**MCA PROGRAM – MISSION**

To imbibe technical competence for developing innovative solutions and new applications in computer science and technology, there by transforming them as better professionals.

**MCA PROGRAM – PROGRAM EDUCATIONAL OBJECTIVES (PEOS):**

1. To gain knowledge and proficiency for analysis, design and problem solving, to have a successful career in industry and for higher studies. .
2. To promote application of technical knowledge coupled with project management abilities.
3. To imbibe leadership qualities with professional ethics and communication skills.
4. To provide positive attitude for lifelong learning.

**MCA PROGRAM – PROGRAM OUTCOMES (POs):**

- a. An ability to apply knowledge in computer applications to become successful professionals.
- b. An ability to develop logic and understand the essential mathematics related to Information Technology.
- c. An ability to Design, implement, and evaluate a software product.
- d. An ability to apply skills for solving technical problems in software development.
- e. An ability to familiarize with emerging & advanced software tools.
- f. An ability to experience the industrial environment for understanding the impact of computational solutions in a global & societal context.
- g. An ability to analyse the knowledge of contemporary issues.
- h. An ability to apply professional ethics.
- i. An ability to get readiness to collaborate in a multi-disciplinary team.
- j. An ability to communicate effectively.
- k. An ability to participate in life-long learning.
- l. An ability to handle the projects through appropriate project management techniques.



**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)  
DEPARTMENT OF COMPUTER APPLICATIONS**

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana, India

*(Sponsored by Vasavi Academy of Education)*

Phone: +91-40-23146070 Fax: +91-40-23146090, +91-40-23146080

**Date:11.03.16**

**Minutes of the Board of Studies Meeting held on 11.03.16 (Friday) from 11.00 AM in the  
MCA Seminar Hall, V-Block 3<sup>rd</sup> Floor, Department of Computer Applications,**

**Members Present**

1	Dr. P. Hemagiri Rao	Chairman & Head
2	Dr. Rajeev Wankar	OU nominee
3	Mr. S. Rambabu	Subject expert
4	Mr. Oruganti Prasad	Industry Expert
5	Mr. S. Bala Krishna	Alumni
6	Ms. R. Sudha	Faculty member
7	Ms. G. Ruth Rajitha Rani	Faculty member
8	Mr. K. Rama Krishna	Faculty member
9	Ms. S. Sree Lakshmi	Faculty member
10	Ms. M. Gayatri	Faculty member
11	Ms. K. BindhuMadhavi	Faculty member
12	Mr. M. Jitendhar Reddy	Faculty member
13	Mr. K. SrinivasaChakravarthy	Faculty member
14	Mr. M. Pravin Kumar	Faculty member

The following members of Board of Studies could not attend the meeting

1. Dr. DurgaBhavani Subject expert

**Agenda of the Meeting:**

1. Introduction of members
2. Brief report on the profile of the department
3. Discussion on third Year MCA course structure, scheme of examination
4. Discussion on third year MCA theory syllabus
5. Discussion on third year MCA laboratory syllabus
6. Discussion on Internal and external question paper setting
7. Any other item with the permission of the chair

## Minutes:

1. The Chairman Dr. P. Hemagiri Rao, welcomed all the members, He thanked the subject experts, industry expert and the alumnus for accepting to be part of the meeting.
2. The Chairman presented a brief profile of the college and the department and then mentioned the agenda for the meeting.
3. The Chairman then initiated the discussion of the syllabus with the structure and the proposed syllabus of MCA III Year.
4. The Subject Expert Mr. Rambabu expressed certain doubts about the distribution of the syllabus, of the MWT course, in terms of the units, as he felt that some units had more topics when compared to the others. But he was later convinced with the justification given by the faculty members concerned.
5. The Subject Expert Mr. Rambabu, suggested that viva-voce in OOSD lab, is very important. The Alumnus Mr. Balakrishna, suggested that students can go for a Vendor Neutral Certification of UML.
6. All the experts discussed in detail about the course Information Security. Mr. Rambabu felt that having five theory and four labs shall be overloaded for the students. So, he felt Information Security may be offered as an elective in place of Rich Internet Applications (RIA), since most of the contents the RIA syllabus are already being covered in the course Web Programming and Services, offered during II year II-Semester. The other experts also agreed with Mr. Rambabu.
7. The experts also felt that in place of the electives Soft Computing and Research Methodologies, Mobile Application Development may be offered as elective, since it is one of the courses in-demand for the industry in the current days. Also, the experts felt that the course Research Methodologies is offered as a main subject for students at their pre-PhD level. So this course might not be relevant as part of MCA curriculum. The experts also mentioned that the course Soft Computing requires some basics from Computer Graphics and Image Processing. As these courses are not part of the MCA curriculum, the students might not be able to follow Soft Computing. So, they suggested it may be removed from the proposed curriculum.
8. The O.U. Nominee Dr. Rajeev Wankar, suggested that in place of the prescribed text book proposed for the Cloud Computing course, another book titled "Distributed and Cloud Computing – From Parallel Processing to Internet-of-Things" by the author Kai Hwang, may be used as the prescribed text book.
9. All the experts were convinced with the other electives being offered and expressed their satisfaction with the proposed syllabus of each of those courses.
10. Dr. Rajeev Wankar and Mr. Rambabu asked about how the Project Seminars would be conducted. The Chairman briefed the experts about the methodology that would be followed for conducting the Project Seminars and also the evaluation process. The experts were satisfied with the proposed process.


11. The Subject Expert Mr. Rambabu, asked the details about Cisco Certification course offered in two semesters. The faculty member concerned explained that students would be given certificates on completion of Module-I and Module-II that covers topics on Introduction to Networking and Routing and Switching Concepts respectively. The committee members were satisfied with the topics covered in the syllabus.
12. The members then broke for lunch and continued the discussion on the course curriculum of II Semester after lunch. The members discussed about how the project work is proposed to be conducted and evaluated. They were satisfied with the explanation given by the Chairman.
13. The Chairman thanked all the members for their active participation in the discussion and for their valuable inputs in finalising the course curriculum of MCA III Year I and II Semesters, under Autonomy.

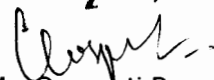
**Resolutions:**


The following resolutions have been made in the meeting.

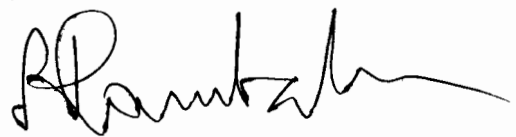
- i. The Course structure and scheme of examination of MCA III year proposed under Autonomy have been discussed and approved.
- ii. MCA III year theory syllabus proposed under Autonomy has been discussed and approved.
- iii. MCA III year lab syllabus proposed under Autonomy has been discussed and approved.
- iv. The BOS members have given the approval to modify semester end and internal marks of Communicative English – I of MCA I year I-Semester and Communicative English – II of MCA I Year II-Semester from 70 marks and 30 marks to 35 marks and 15 marks respectively.
- v. The BOS members have given the approval to modify instruction periods of Computer Programming and Problem Solving Lab and Elements of Information Technology Lab of MCA I Year I-Semester from 9 periods and 3 periods per week to 6 periods and 6 periods per week respectively. Also the credits of Elements of Information Technology Lab ~~from 2 credits to 3 credits.~~

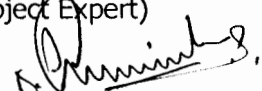
and CPPS Lab the credits is 2.

  
Dr. Rajeev Wankar  
(OU Nominee)

  
Mr. Oruganti Prasad  
(Industry Expert)

  
Dr. P. Hemagiri Rao  
(Chairman)

  
Mr. S. Rambabu  
(Subject Expert)

  
Mr. S. Bala Krishna  
(Alumnus)

## CONTENTS

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2	MCA III Year I Semester Syllabus (Theory)	2 – 21
3	MCA III Year I Semester Syllabus (Labs & Seminar)	22 – 25
4	MCA III Year II Semester Scheme of Instruction	26
5	MCA III Year II Semester Syllabus (Labs & Seminar)	27 – 28

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD-31**  
**DEPARTMENT OF COMPUTER APPLICATIONS**

**SCHEME OF INSTRUCTION & EXAMINATION**  
**MCA III YEAR I-SEMESTER**

Sl. No.	Course Ref. No.	Course	Scheme of Instruction			Scheme of Examination			
			Periods per week			End Sem Exam hrs	Maximum Marks		Credits
			L	T	P		End Sem Exam	Sessi-onals	
<b>Theory</b>									
1	CA 7010	Middleware Technologies	4	1	-	3	70	30	4
2	CA 7020	Object Oriented Systems Development	4	1	-	3	70	30	4
3	CA	Elective – II	4	1	-	3	70	30	4
4	CA	Elective – III	4	1	-	3	70	30	4
<b>Practical</b>									
5	CA 7316	Project Seminar *	-	-	3	-	-	25	2
6	CA 7321	Programming Lab-IX (MWT Lab)	-	-	6	3	50	25	3
7	CA 7331	Programming Lab-X (OOSD Lab)	-	-	6	3	50	25	3
8	CA 7341	Certification Course I – Cisco Networking (Introduction to Networking)	-	-	3	-	-	25	2
<b>TOTAL</b>			<b>16</b>	<b>04</b>	<b>18</b>	<b>18</b>	<b>380</b>	<b>220</b>	<b>26</b>


**Code Elective – II**


CA 7030 Cloud Computing  
 CA 7040 Human Computer Interaction  
 CA 7050 Software Reuse Techniques  
 CA 7060 Mobile Application Development

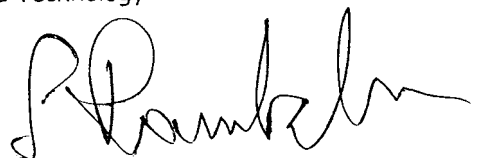
**Code Elective – III**

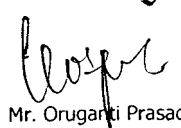
CA 7070 Information Security  
 CA 7080 System Administration  
 CA 7090 Information Retrieval Systems  
 CA 7100 Multimedia Technology

  
 Dr. P. Hemagiri Rao

  
 Mr. S. Bala Krishna

  
 Dr. Rajeev Wankar

  
 Mr. S. Rambabu

  
 Mr. Oruganti Prasad

CA 7010

**MIDDLEWARE TECHNOLOGIES**

**Lecture** : 4 Hrs/Week  
**Tutorial** : 1 Hrs/Week  
**Practical** : -

**Internal Assessment** : 30  
**End Sem Exam** : 70  
**Credits** : 03

**Course Objectives:**

At the end of the course the students should be able to

1. Learn the fundamental concepts of client-server and JDBC.
2. Learn the fundamentals of Servlet Programming and JSP.
3. Learn the basics of Enterprise Java Beans, types of ejbs and their applications.
4. Learn about the .NET framework and basic C# constructs.
5. Learn about Windows Forms Applications and ADO .Net.

**Course Outcomes:**

At the end of the course the students will be able to:

1. Implement JDBC drivers to connect to a database and store and retrieve data.
2. Develop a simple application using Servlets and JSP.
3. Implement simple applications using Session and Entity ejbs.
4. Implement the basic constructs of C# programming.
5. Implement a small Window application with database connectivity using ADO.

**Course Contents:****Unit – I**

**Client/Server Concepts:** Client/Server, File Server, Database server, Group server, Object Server, Web server, Middleware – General Middleware –Service specific middleware, Client/Server Building blocks – RPC – Messaging – Peer- to- Peer.

**Database Programming with JDBC** – Database Drivers, java.sql package, javax.sql package, JDBC Data sources

**Unit – II**

**Servlet Programming** – Overview of the Java Servlet API, Servlet Implementation, Servlet Configuration, Servlet Exceptions, The Servlet Lifecycle, Requests and Responses, Servlet Context

**JSP Basics and Architecture** – Introducing JSP, The Nuts and Bolts, JSP Design Strategies

**JSP Tag Extensions** – A Simple Tag, Anatomy of a Tag Extension, Writing Tag Extensions

**Unit – III**

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


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

**Unit – IV**

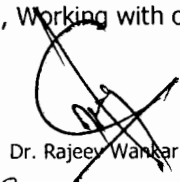
**Introduction to .NET and C#** - Overview of the .NET Framework, CLR, Framework Class Library, Working with the .NET framework and SDK, understanding the C# compiler, C# Language Fundamentals – Layout of a C# program, Primitives, Operators, Loops, Preprocessing Directives, Strings, Enumerated Types, Arrays, reference and Value Types, Class Design in C# , Working with objects in C#



Dr. P. Hemagiri Rao



Mr. S. Bala Krishna



Dr. Rajeev Wankar



Mr. Oruganti Prasad



Mr. S. Rambabu



**Unit – V**

C# Text Manipulation and File I/O, Building Windows Forms Applications, Windows Forms Controls, ADO.NET

**Learning Resources:**

**PRESCRIBED TEXTBOOKS:**


1. Professional Java Server Programming, J2EE 1.3 Edition by Subrahmanyam Allamaraju and Cedric Buest, Dreamtech Press
2. Tom Valesky, "Enterprise Java Beans", Pearson Education, 2002
3. Core C# and .NET by Stephen.C.Perry, Pearson Education

**Reference Books:**


1. Robert Orfali, Dan Harkey and Jeri Edwards, "The Essential Client / Server Survival Guide", Galgotia Publications Pvt. Ltd, 2002
2. J2EE – The Complete Reference, by Jim Keogh, Tata Mcgraw Hill

**Web Resources:**


1. <http://www.oracle.com/java>
2. <http://www.microsoft.com>



Dr. P. Hemagiri Rao




Mr. S. Bala Krishna



Dr. Rajeev Wankar



Mr. Oruganti Prasad



Mr. S. Rambabu

CA 7020

**OBJECT ORIENTED SYSTEM DEVELOPMENT**

**Lecture** : 4 Hrs/Week  
**Tutorial** : 1 Hrs/Week  
**Practical** : -

**Internal Assessment** : 30  
**End Sem Exam** : 70  
**Credits** : 03

**COURSE OBJECTIVES:**

The Course will enable the learners to:

1. Understand designs based on design principles, patterns, and heuristics.
2. Improve the quality of a design, and be able to explain it.
3. Write object-oriented code to correctly implement a design.
4. Write analysis and design documentation in the Unified Modeling Language (UML).
5. Appraise the Unified development process.

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Explain the need for modelling and develop Structural models.
2. Perform basic and advanced behavioural modeling.
3. Perform architectural modelling.
4. Explain the Unified Software Development Process.
5. Describe the Usecase, Analysis, Design, Implementation and Test models of UDP

**COURSE CONTENTS:****Unit – I**

UML Introduction: Why we model, Introducing the UML, Hello World. Basic Structural Modeling: Classes, Relationships, Common Mechanisms, Diagrams, Class Diagrams.

Advanced Structural Modeling: Advanced Classes, Advanced Relationships, Relationships, Interfaces, Types and Roles, Packages, Instances, Object Diagrams, Components.

**Unit – II**

Basic Behavioral Modeling: Interactions, Use Cases, Use Case Diagrams, Interaction Diagrams, Activity Diagrams.

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

**Unit – III**


Architectural Modeling: Artifacts, Deployment Collaborations, Patterns and Frame works, Artifact diagrams, Deployment diagrams, Systems and models.


**Unit – IV**

Unified Software Development Process: The Unified Process, The Four Ps, A Use- Case- Driven Process, An Architecture - Centric Process, An Iterative and incremental Process.

**Unit – V**

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

  
Dr. P. Hemagiri Rao

  
Mr. S. Bala Krishna

  
Dr. Rajeev Wankar

  
Mr. Oruganti Prasad

  
Mr. S. Rambabu

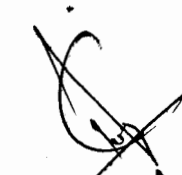
**LEARNING RESOURCES:**

**PRESCRIBED TEXTBOOK:**

1. Grady Booch, James Rumbaugh, Ivor Jacobson, The Unified Modeling Language – User Guide, (Covering UML 2.0) 2<sup>nd</sup> Edition, Pearson Education, India, 2007.
2. Ivor Jacobson, Grady Booch, James Rumbaugh, The Unified Software Development Process, Pearson Education, India, 2008.



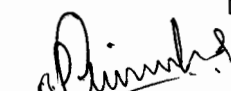
Dr. P. Hemagiri Rao



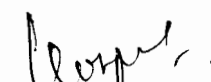
Dr. Rajeev Wankar



Mr. S. Rambabu



Mr. S. Bela Krishna



Mr. Oruganti Prasad

**Elective - II**

CA 7030

**CLOUD COMPUTING**

**Lecture** : 4 Hrs/Week  
**Tutorial** : 1 Hrs/Week  
**Practical** : -

**Internal Assessment** : 30  
**End Sem Exam** : 70  
**Credits** : 03

**COURSE OBJECTIVES:**

The Course will enable the learners:

1. To impart fundamental concepts in the area of Cloud Computing.
2. To be familiar with Cloud models and Architecture.
3. To understand the concept of Virtual Machines and Virtualization.
4. To impart knowledge in Cloud Security.
5. To learn a Cloud Programming and software Environments

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Understand the basic concepts of the Cloud Computing.
2. Understand the Architecture, Infrastructure and Delivery Models of Cloud Computing
3. Understand the importance of virtual machines and virtualization.
4. Address the issues of security in Cloud Computing.
5. Learning Cloud supporting languages.

**UNIT-I**

**Introduction to Cloud Computing:** Cloud Computing in a Nutshell, Roots of Cloud Computing, Grid and Cloud, Layers and Types of Clouds, Desired Features of a Cloud, Basic Principles of Cloud Computing, Challenges and Risks of Cloud Computing.

**Service Models of Cloud Computing:** Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS).

**UNIT-II****Cloud Computing Architecture 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-III**

**Virtualization:** Introduction, Types of Virtualization, Levels of Virtualization, Virtualization Structures/Tools and Mechanisms, Virtualization of CPU, Memory and I/O Devices, Importance of virtualization in Cloud computing.

**Case studies:** Xen Virtual machine monitors-Xen API, VMware - VMware products - VMware Features. Microsoft Virtual Server - Features of Microsoft Virtual Server.


**UNIT-IV****Federation, Presence, Identity, and Privacy in the Cloud:**

Federation in the Cloud, Presence in the Cloud, Privacy and its Relation to Cloud-Based Information Systems.

**Security in the Cloud:** Cloud Security Challenges, Software-as-a-Service Security, Is Security-as-a-Service-the New MSSP.




Dr. P. Hemagiri Rao



Mr. S. Bala Krishna



Dr. Rajeev Wankar



Mr. Oruganti Prasad



Mr. S. Rambabu

## UNIT-V

**Common Standards in Cloud Computing:** The Open Cloud Consortium, The Distributed Management Task Force, Standards for Application Developers, Standards for Messaging, Standards for Security. End-User Access to Cloud Computing: You Tube API Overview, Zimbra, Facebook, Zoho, DimDim Collaboration.

### LEARNING RESOURCES:

#### Prescribed Textbook:

1. John W. Rittinghouse, "Cloud Computing: Implementation, Management, and Security", James F. Ransome, CRC Press 2009.
2. Kai Hwang, Geoffrey C.Fox, Jack J. Dongarra, "Distributed and Cloud Computing From Parallel Processing to the Internet of Things", Elsevier, 2012.
3. Raj kumar Buyya, James Borberg and Andrzej M. Gosecinski, "Cloud Computing: Principles and paradigms (Wiley Series on Parallel and Distributed Computing)", Wiley Publishing @2011

#### Reference Books:

1. Chris Wolf, Erick M. Halter, "virtualization: From the Desktop to the Enterprise", APress 2005.
2. William von Hagen, "Professional Xen Virtualization", Wrox Publications, January, 2008.
3. David Marshall, Wade A. Reynolds, "Advanced Server Virtualization: VMware and Microsoft Platform in the Virtual Data Center", Auerbach Publications, 2006.

#### Web References:

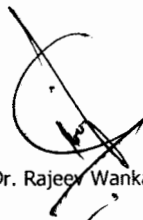
1. <http://aws.amazon.com>
2. <http://code.google.com/appsengine>
3. [www.Theartofservice.org](http://www.Theartofservice.org)



Dr. P. Hemagiri Rao



Mr. S. Bala Krishna



Dr. Rajeev Wankar



Mr. S. Rambabu



Mr. Oruganti Prasad

## Elective - II

CA 7040

**HUMAN COMPUTER INTERACTION**

**Lecture** : 4 Hrs/Week  
**Tutorial** : 1 Hrs/Week  
**Practical** : -

**Internal Assessment** : 30  
**End Sem Exam** : 70  
**Credits** : 03

**COURSE OBJECTIVES:**

The Course will enable the learners to:

1. Learn the importance of a user interface and its characteristics
2. Learn about the various controls used in user interface
3. Learn about standardization of user interfaces
4. Learn about usability, conceptualization, modeling and testing of a user interface.

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Comprehend a given user interface design
2. Use the various controls as part of a user interface
3. Implement the standardization guidelines for designing a user interface.
4. Implement an interactive user interface
5. Design prototypes for a user interface and test them.

**COURSE CONTENTS:****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**

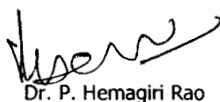
Feedback, Guidance and assistance. Internationalization and accessibility, graphics, icons and images, colours, Layout windows and pages.

**UNIT- IV**

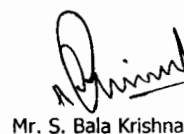
Interaction Design: Introduction, Goals, Usability, Conceptualization interaction: Problem space, Conceptual models, Interface metaphors, Interaction paradigms, Cognition: Conceptual frameworks for cognition. Collaboration and Communication: Social mechanism, Conceptual framework.

**UNIT- V**

Affective aspects, Expressive interface, User frustration, Agents, Process of interaction design, Activities characteristics, Practical issues, Life cycle models, Design: Prototyping and construction, Prototyping, conceptual design, Physical design Evaluation: Introduction, Framework, Testing and modelling users: Kinds of tests ,Doing user testing, Experiments, Predictive models.




Dr. P. Hemagiri Rao



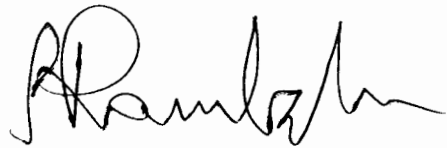
Mr. S. Bala Krishna



Dr. Rajeev Wankar



Mr. Oruganti Prasad



Mr. S. Rambabu

**LEARNING RESOURCES:**

**PRESCRIBED TEXTBOOK:**


1. Wilbert O.Galitz, The Essential Guide to User Interface Design, Wiley Dreamtech 2002.
2. Sharp, Rogers, Preece, Interaction Design, John Wiley, 2007.

**REFERENCE BOOKS:**


1. Andrew Sears, Julie A Jacko, Human, Computer Interaction Fundamentals, CRC Press, 2009.
2. Dan R Oslen, Human, Computer Interaction, Cengage Learning, 2010.




Dr. P. Hemagiri Rao



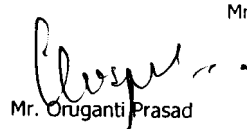
Mr. S. Bala Krishna



Dr. Rajeev Wankar



Mr. S. Rambabu



Mr. Oruganti Prasad

## Elective - II

CA 7050

## SOFTWARE REUSE TECHNIQUES

Lecture : 4 Hrs/Week  
 Tutorial : 1 Hrs/Week  
 Practical : -

Internal Assessment : 30  
 End Sem Exam : 70  
 Credits : 03

**COURSE OBJECTIVES:**

The Course will enable the learners to:

1. Learn the basics of software reuse.
2. Appraise benefits of software reuse, establish and manage a reuse Business.
3. Understand various models used for software Reuse
4. Discuss about various design patterns
5. Describe various architectural patterns.

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Understand some reuse problems and explain the benefits of software reuse.
2. Discuss several different creational patterns in implementation of software reuse.
3. Explain how structural patterns are chosen in software development.
4. Describe and apply various behavioral design patterns.
5. Select among various architectural patterns for a given problem.

**COURSE CONTENTS:****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, state, strategy, template, visitor, other design patterns – Whole-part, master - slave, view handler, forwarder- receiver, client – dispatcher- server, publisher – subscriber.

**UNIT-V**

Architectural patterns – Layers, pipes and filters, black board, broker, model - view controller, presentation- abstraction – control, micro kernel, reflection.



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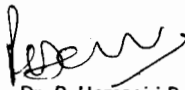
**LEARNING RESOURCES:**

**PRESCRIBED TEXTBOOK:**


1. Ivar Jacobson, Martin Griss, Patrick Hohson – Software Reuse. Architecture, Process and Organization for Business Success, ACM Press, 1997.
2. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides – Design Patterns- Addison, 1995, Pearson Education.
3. Frank Buschmann etc. – Pattern Oriented Software Architecture – Volume 1, Wiley 1996.

**REFERENCE BOOKS:**

1. James W Cooper – Java Design Patterns, a tutorial, Addison 2000, Pearson Education.



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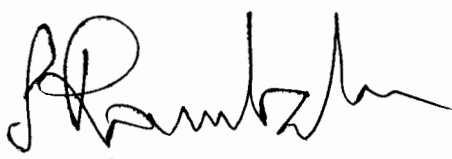
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## Elective - II

CA 7060

## MOBILE APPLICATION DEVELOPMENT

**Lecture** : 4 Hrs/Week  
**Tutorial** : 1 Hrs/Week  
**Practical** : -

**Internal Assessment** : 30  
**End Sem Exam** : 70  
**Credits** : 03

**COURSE OBJECTIVES:**

The Course will enable the learners to:

1. Understand system requirements for mobile applications
2. Generate suitable design using specific mobile development frameworks
3. Generate mobile application design
4. Implement the design using specific mobile development frameworks
5. Deploy the mobile applications in marketplace for distribution

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Describe the requirements for mobile applications
2. Explain the challenges in mobile application design and development
3. Develop design for mobile applications for specific requirements
4. Implement the design using Android SDK
5. Implement the design using Objective C and iOS

**COURSE CONTENTS:****UNIT I**

**INTRODUCTION:** Introduction to mobile applications – Embedded systems - Market and business drivers for mobile applications – Publishing and delivery of mobile applications – Requirements gathering and validation for mobile applications.

**UNIT II**

**BASIC DESIGN:** Introduction – Basics of embedded systems design – Embedded OS - Design constraints for mobile applications, both hardware and software related – Architecting mobile applications – User interfaces for mobile applications – touch events and gestures – Achieving quality constraints – performance, usability, security, availability and modifiability.

**UNIT III**

**ADVANCED DESIGN:** Designing applications with multimedia and web access capabilities – Integration with GPS and social media networking applications – Accessing applications hosted in a cloud computing environment – Design patterns for mobile applications.

**UNIT IV**

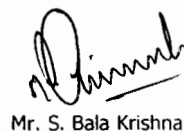
**TECHNOLOGY I – ANDROID:** Introduction – Establishing the development environment – Android architecture – Activities and views – Interacting with UI – Persisting data using SQLite – Packaging and deployment – Interaction with server side applications – Using Google Maps, GPS and Wifi – Integration with social media applications.

**UNIT V**

**TECHNOLOGY II – IOS:** Introduction to Objective C – iOS features – UI implementation – Touch frameworks – Data persistence using Core Data and SQLite – Location aware applications using Core Location and Map Kit – Integrating calendar and address book with social media application – Using Wifi - iPhone marketplace.



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**LEARNING RESOURCES:**

**PRESCRIBED TEXTBOOK:**


1. Jeff McWherter and Scott Gowell, "Professional Mobile Application Development", Wrox, 2012
2. Charlie Collins, Michael Galpin and Matthias Kappler, "Android in Practice", Dream Tech, 2012.

**REFERENCE BOOKS:**


1. James Dovey and Ash Furrow, "Beginning Objective C", Apress, 2012.
2. David Mark, Jack Nutting, Jeff LaMarche and Frederic Olsson, "Beginning iOS 6 Development: Exploring the iOS SDK", Apress, 2013.

**Web Resources:**

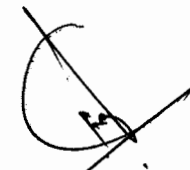
1. <http://developer.android.com/develop/index.html>




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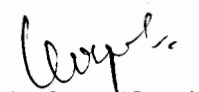
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**Elective III****CA 7070****INFORMATION SECURITY**

**Lecture** : 4 Hrs/Week  
**Tutorial** : 1 Hrs/Week  
**Practical** : -

**Internal Assessment** : 30  
**End Sem Exam** : 70  
**Credits** : 03

**COURSE OBJECTIVES:**

The Course will enable the learners to:

1. Define key terms and critical concepts of information security, understand information security roles of professionals in an organization
2. Understand the functions and relationships among laws, regulations and professional organizations in information security, define risk management, risk identification and risk control
3. Define management's role in development, maintenance and enforcement of information
4. Learn and understand the technology that enables use of virtual private networks
5. Understand how an organization's information security blueprint becomes a project plan and explain the issues and concerns related to staffing the information security.

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Enumerate the phases of security systems development life cycle and recount the history of computer security
2. Differentiate the laws and ethics and identify major national laws that affect the practice of information security
3. Identify major components of information security blueprint and explain how it supports the information security program
4. Recognize the important role of access control in computerized information systems and identify widely-used authentication factors
5. Enumerate many organizational considerations that a project plan must address, anticipate and mitigate the non technical problems that organizations face in times of rapid change

**COURSE CONTENTS:****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, IT Act 2000 and its Amendments. Risk Management: Overview, Risk identification, Risk assessment, Risk control strategies, selecting a risk control strategy, Quantitative versus qualitative risk control practices, Risk management discussion points, Recommended risk control practices.

**UNIT-III**

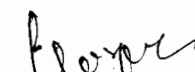
Planning for Security: Security policy, Standards and practices, Security blue print, Security education, Continuity strategies.

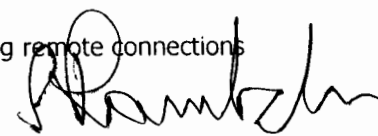
Security Technology: Firewalls and VPNs: Physical design, Firewalls, Protecting remote connections

  
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#### UNIT-IV

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

Cryptography: Foundations of cryptology, Cipher methods, Cryptographic Algorithms, Cryptographic tools, Protocols for secure communications, Attacks on cryptosystems.

#### UNIT- V

Implementing Information Security: Information security project management, Technical topics of implementation, Non technical aspects of implementation, Security certification and accreditation.

Security and Personnel: Positioning and staffing security function, Employment policies and practices, Internal control strategies. Information security maintenance : Security management models, The maintenance model, Digital forensics

#### LEARNING RESOURCES:

##### PRESCRIBED TEXTBOOK:


1. Michel E Withman and Herbert J Mattord, Principles and Practices of Information Security, Cengage Learning, 2009.

##### Reference Books:


2. Thomas R Peltier, Justin Peltier, John Blackley, Information Security Fundamentals, Auerbach Publications, 2010.
3. Detmar W Straub, Seymour Goodman, Richard L Baskerville, Information Security, Policy, Processes and Practices, PHI , 2008.
4. Mark Merkow and Jim Breithaupt, Information Security Principle and Practices, Pearson Education, 2007.




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**Elective – III****CA 7080****SYSTEM ADMINISTRATION**

**Lecture** : 4 Hrs/Week  
**Tutorial** : 1 Hrs/Week  
**Practical** : -

**Internal Assessment** : 30  
**End Sem Exam** : 70  
**Credits** : 03

**COURSE OBJECTIVES:**

The course will enable the learners to:

1. Understand the role and responsibilities of a Unix system administrator
2. Install and configure the Linux operating system
3. Manage the resources and security of a computer running Linux at a basic level
4. Make effective use of Unix utilities, and scripting languages
5. Configure and manage simple TCP/IP network services on a Linux system
6. Develop an appreciation of the documentation available as part of an installed Unix/Linux system

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Make appropriate decisions during the configuration process to create a properly functioning Linux environment.
2. Use programs and utilities to administer a Linux machine.
3. Explain how a Linux server can be integrated within a multi-platform environment.
4. Analyze the need for security measures for a Linux environment.
5. Identify the different uses and advantages of Linux in a business environment in order to participate in discussions regarding network servers and services.

**COURSE CONTENTS: -****UNIT-I**

Functions of System Administrator, 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 NT: 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 NT



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**LEARNING RESOURCES:**

**PRESCRIBED TEXTBOOK:**

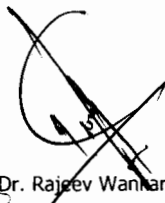
1. Aeloen Frisch, "Essential System Administration", O'Reilly, 1995, Second Edition.
2. Aeleon Frisch, "Essentail Windows Administration", O'Reilly, 1998, First Edition.
3. Nemeth, "Unix System Administration", Pearson Education.



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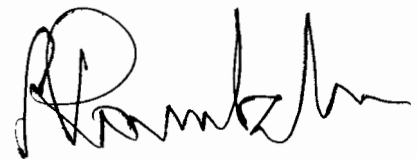
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## Elective – III

CA 7090

## INFORMATION RETRIEVAL SYSTEMS

**Lecture** : 4 Hrs/Week  
**Tutorial** : 1 Hrs/Week  
**Practical** : -

**Internal Assessment** : 30  
**End Sem Exam** : 70  
**Credits** : 03

**Course Objectives:**

The Course will enable the learners to:

1. To gain knowledge on information Storage & Processing
2. To gain Knowledge of Retrieval and performance of IR systems.

**Course Outcomes:**

At the end of the course the learners should be able to:

1. To understand the capabilities of IR systems.
2. To use different IR techniques in various application areas
3. To evaluate the performance of an IR Systems
4. To retrieve information from large collections

**COURSE CONTENTS:****UNIT I**

**Introduction:** Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses,

**Information Retrieval System Capabilities** - Search, Browse, Miscellaneous.

**UNIT II**

**Cataloging and Indexing:** Objectives, Indexing Process, Automatic Indexing, Information Extraction,

**Data Structures:** Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure.

**UNIT III**

**Automatic Indexing:** Classes of automatic indexing, Statistical Indexing, Natural Language, Concept Indexing, Hyper Linkages.

**Document and Term Clustering:** Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters

**User Search Techniques:** Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, weighted searches of Boolean systems, Searching the Internet and hypertext.

**UNIT IV**


**Information Visualization:** Introduction, Cognition and perception, Information visualization technologies.

**Text Search Algorithms:** Introduction, Software text search algorithms, Hardware text search systems.


**UNIT V**

**Multimedia Information Retrieval** – Spoken language audio Retrieval, Non-Speech Audio Retrieval, Graph Retrieval, Imaginary Retrieval, Video Retrieval

**Information System Evaluation:** Introduction, Measures used in system evaluation, Measurement example – TREC results.



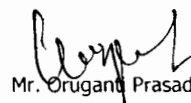
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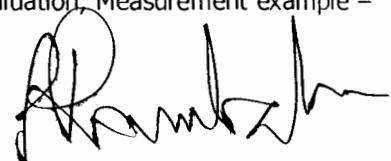
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**LEARNING RESOURCES:**

**PRESCRIBED TEXTBOOK:**

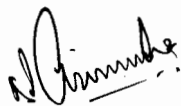
1. Information Storage and Retrieval Systems: Theory and Implementation By Kowalski, Gerald, Mark T Maybury Kluwer Academic Press, 2000.

**REFERENCE BOOKS:**

1. Modern Information Retrieval By Ricardo Baeza-Yates, Pearson Education, 2007.
2. Information Retrieval: Algorithms and Heuristics By David A Grossman and Ophir Frieder, 2<sup>nd</sup> Edition, Springer International Edition, 2004.
3. Information Retrieval Data Structures and Algorithms By William B Frakes, Ricardo Baeza-Yates, Pearson Education, 1992.



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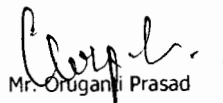
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## Elective – III

CA 7100

## MULTIMEDIA TECHNOLOGY

**Lecture** : 4 Hrs/Week  
**Tutorial** : 1 Hrs/Week  
**Practical** : -

**Internal Assessment** : 30  
**End Sem Exam** : 70  
**Credits** : 03

**COURSE OBJECTIVES:**

The Course will enable the learners to:

1. Describe the concepts of Multimedia.
2. Explain the elements and techniques of Multimedia.
3. Know the global applications of Multimedia in various domains.

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Explain the concepts of Multimedia and its elements.
2. Describe different Multimedia tools.
3. Understand the applications of Multimedia Techniques in various domains of computer applications.

**COURSE CONTENTS:****Unit – I**

**Multimedia and Digital Representation:** Characteristics of Multimedia Presentation, Multiple Media, Hardware and Software Requirements, Steps for Creating a Multimedia Presentation, Digital Representation, Relation between Sampling and Bit Depth.

**Unit – II**

**Visual Display Systems – Text – Image:** Video Adapter Card, Liquid Crystal Display (LCD), Plasma Display Panel (PDP), Text Compression, File Formats, Image Types, Basic Steps for Image Processing, Image Processing Software.

**Unit – III**


**Graphs and Audio :** Advantages of Graphs, Uses of Graphs, Components of Graphics Systems, Clipping Algorithms, 3D Graphics, Audio Mixer, Musical Instrument Digital Interface (MIDI), Audio File Formats.

**Unit – IV**

**Video and Compression :** Types of Animation, Computer Assisted Animation, 3D Animation, Special Effects, Lossy / Perceptual Compression Techniques, JPEG Image Coding Standard, MPEG Image Coding Standard, MPEG-2 Video, MPEG-4, MPEG-7.

**Unit – V**

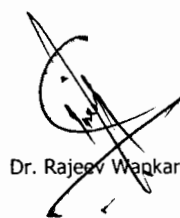
**Multimedia Architecture and Application Development :** Multimedia Architecture, Hardware Support, Real time Protocols, Streaming Techniques, Multimedia Database Systems (MMDBS), Software Life Cycle Overview, Virtual Reality, Virtual Reality Modeling Language (VRML).



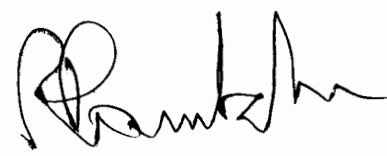
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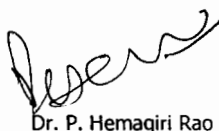
**LEARNING RESOURCES:**

**PRESCRIBED TEXTBOOK:**

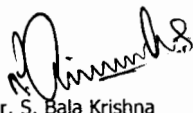
1. Ranjan Parekh, "Principles of Multimedia", 12th Edition, Tata Mc Graw Hill, 2012

**Reference books:**

1. James E. Shuman, "Multimedia in Action", Cengage India Pvt. Ltd.
2. John F Koegel Boford, "Multimedia Systems", 3rd Edition, Pearson Education.



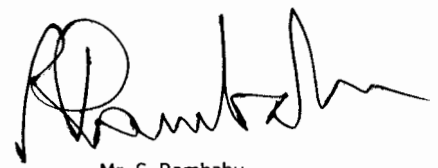
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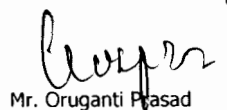
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CA 7316

**PROJECT SEMINAR**

**Lecture** : -  
**Tutorial** : -  
**Practical** : 3 Hrs/Week

**Internal Assessment** : 25  
**End Sem Exam** : -  
**Credits** : 01

**Course Objectives:**

The course will enable the learners to:

1. Survey a wide range of state-of-the-art topics in computer applications and related disciplines.
2. Analyse critically and design creative solutions for the surveyed problems.
3. Express themselves clearly in both written and oral forms.

**Course Outcomes:**

At the end of the course the learners should be able to:


1. Identify, understand and discuss current, real-world computer application issues.
2. Use multiple thinking strategies to examine real-world issues, explore creative avenues of expression.
3. Improve oral and written communication skills.

**COURSE CONTENTS:**

1. The objective of the project seminar is to prepare the student for systematic independent study of the state-of-the-art topics in the broad area of his/her specialization and to select a Project topic.
2. Project synopsis to be submitted by the end of 4<sup>th</sup> week of semester in consultation with the project guide. The synopsis should consist of definition of the problem, scope of the problem, SRS and plan of action.
3. The students have to give two seminars, first seminar on their project idea and SRS, the second seminar on project design.
4. Each seminar will be evaluated for 10 Marks and 05 Marks for Seminar Report.
5. Students are exposed to the following aspects of seminar presentations.
  - i. Literature survey
  - ii. Organization of the material
  - iii. PPT Presentation
  - iv. Technical writing
6. Each student has to submit a write-up of the seminar talk two days before the scheduled date of the seminar.
7. The Sessional marks will be awarded to the students by project coordinator and guide of the student on the basis of an oral and written presentation as well as their involvement in the discussion.




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CA 7321

**PROGRAMMING LAB - IX  
(MWT LAB)**

**Lecture** : -  
**Tutorial** : -  
**Practical** : 6 Hrs/Week

**Internal Assessment** : 25  
**End Sem Exam** : 50  
**Credits** : 02

**Course Objectives:**

At the end of the course the students should be able to

1. To learn database connectivity using JDBC.
2. To learn how to develop applications using Servlets and JSP
3. To learn how to develop applications using EJB
4. To learn .NET programming using C# and ADO .NET

**Course Outcomes:**

At the end of the course the students will be able to

1. Implement simple applications using JDBC.
2. Develop simple applications using Servlets and JSP.
3. Develop simple applications using EJB.
4. Develop simple .NET applications using C# and ADO .NET.

**COURSE CONTENTS:****List of Programs**

1. Develop a simple application to connect to a database and perform basic operations on the tables in the database.
2. Develop a simple application using Servlets and JSP.
3. Develop an application for Payroll Management using Servlets and JSP.
4. Develop an Enterprise Java Bean for Student Information System.
5. Develop an Enterprise Java Bean for Library operations.
6. Develop an application for converting the currency values using .NET.
7. Develop an application for browsing CD catalogue using .NET.
8. Develop class time-table using .NET
9. Develop a Student Information System Forms using .NET and store data into database.
10. Develop a Library Information System Forms using .NET and store data into database.

**LEARNING RESOURCES:****PRESCRIBED TEXTBOOK:**

1. Professional Java Server Programming, J2EE 1.3 Edition by Subrahmanyam Allamaraju and Cedric Buest, Dreamtech Press
2. Tom Valesky, "Enterprise Java Beans", Pearson Education, 2002
3. Core C# and .NET by Stephen.C.Perry, Pearson Education


**Reference Books:**

1. J2EE – The Complete Reference, by Jim Keogh, Tata Mcgraw Hill

**Web Resources:**

1. <http://www.oracle.com/java>
2. <http://www.microsoft.com>

  
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CA 7331

**PROGRAMMING LAB - X  
(OOSD LAB)**

**Lecture** : -  
**Tutorial** : -  
**Practical** : 6 Hrs/Week

**Internal Assessment** : 25  
**End Sem Exam** : 50  
**Credits** : 02

**COURSE OBJECTIVES:**

The course will enable the learners to:

1. Understand the principles of Object oriented Design and development.
2. Improve the quality of a design, iteratively.
3. Be able to write analysis and design documentation in the Unified Modelling Language (UML).

**COURSE OUTCOMES:**

At the end of this course are the learners will be able to:

1. Develop Structural models
2. Perform basic and advanced behavioural modelling.
3. Perform architectural modelling

**COURSE CONTENTS:**

**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

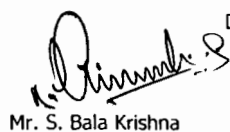
Students should form into groups. They should carry out the Case Study as a group activity. The lab should be carried out using a CASE Tool. Finally they should submit a report.



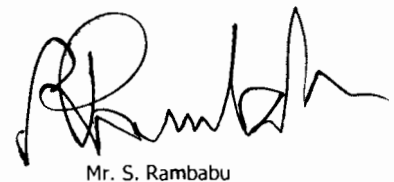
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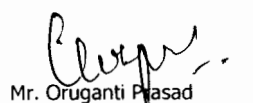
Dr. Rajeev Wankar



Mr. S. Bala Krishna



Mr. S. Rambabu



Mr. Oruganti Prasad

CA 7341

**CERTIFICATION COURSE I – CISCO NETWORKING (INTRODUCTION TO NETWORKING)**

<b>Lecture</b>	: -	<b>Internal Assessment</b>	: 25
<b>Tutorial</b>	: -	<b>End Sem Exam</b>	: -
<b>Practical</b>	: 3 Hrs/Week	<b>Credits</b>	: 1

**COURSE OBJECTIVES:**

The course will enable the learners to:

1. Learn fundamental Networking concepts and technologies.
2. Develop the skills necessary to plan and implement small and medium sized Networks across a range of applications.
3. Configure or troubleshoot a Network in Packet Tracer, the Network Simulation tool.

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Develop both the practical and conceptual skills that build the foundation for understanding basic Networking.
2. Gain an understanding of the "layered" approach to Networks.
3. Build simple LANs, perform basic configuration for Routers and Switches, and implement IP Addressing schemes.

**COURSE CONTENTS:**

1. Introduction
2. Exploring the Network
3. Configuring a Network Operating System
4. Network Protocols and Communications
5. Network Access
6. Ethernet
7. Network Layer
8. Transport layer
9. IP Addressing
10. Subnetting IP Networks
11. Application Layer
12. It's a Network

The Sessional marks will be awarded to the students based on


- Performance in assessments conducted for each chapter during the instruction period for 10 Marks.
- Overall performance assessment of the course will be conducted at the end of the semester for 15 marks. (on successful completion of Module - I)




Dr. P. Hemagiri Rao



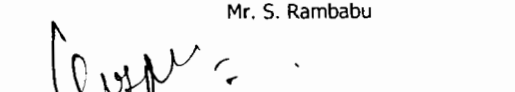
Mr. S. Bala Krishna



Dr. Rajeev Wankar



Mr. S. Rambabu



Mr. Oruganti Prasad

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD-31**  
**DEPARTMENT OF COMPUTER APPLICATIONS**


**SCHEME OF INSTRUCTION & EXAMINATION**  
**MCA III YEAR II-SEMESTER**

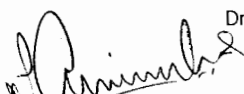
Sl. No.	Syllabus Ref. No.	SUBJECT	Category	Scheme of Instruction		Scheme of Examination			
				Periods per week		End Sem Exam hrs	Maximum Marks		Credits
				L/T	D/P		End Sem Exam	Sessi-onals	
1	CA 7815	Project { Seminar Lab	EEC	-	4 6	Viva Voce	Grade*	50	10
2	CA 7821	Certification Course II – Cisco Networking (Routing and Switching Concepts)	EEC	-	3	-	-	25	2
<b>TOTAL</b>					<b>13</b>	-	-	75	12


\* Projects are evaluated with Viva Voce examination and the following grades are awarded:

**Outstanding/Excellent/Very Good/Good/Average/Pass/Fail.**

**Note:** In case of **Fail**, the candidate has to **re-appear** the Viva Voce examination.

  
Dr. P. Hemagiri Rao

  
Mr. S. Bala Krishna

  
Dr. Rajeev Wankar

  
Mr. Oruganti Prasad

  
Mr. S. Rambabu



CA 7815

**PROJECT**

<b>Lecture</b>	: -	<b>Internal Assessment</b>	: 50
<b>Tutorial</b>	: -	<b>End Sem Exam</b>	: Grade
<b>Practical</b>	: 10 Hrs/Week	<b>Credits</b>	: 10

**COURSE OBJECTIVES:**

The course will enable the learners to:

1. Survey a wide range of state-of-the-art topics in computer applications and related disciplines.
2. Analyse critically and develop creative solutions for the surveyed problems.
3. Understand the Project development cycle through project work.

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

1. Plan, analyze, design, implement and test a software project.
2. Prepare a technical report and documentation; deliver a technical seminar based on the project work carried out.
3. Express themselves clearly in both written and oral forms.

**COURSE CONTENTS:**

1. 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 16 weeks of duration.
2. Students are required to present First Project Seminar on the aspects of project analysis and design for 10 marks and second seminar on implementation of the project work for 20 marks. Students are required to submit four progress reports for 05 marks each for every 3 weeks.
3. 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
4. The Sessional marks will be awarded to the students by project coordinator and guide of the student on the basis of an oral and written presentation as well as their involvement in the discussion.
5. At the end of the semester the students are required to present themselves for End Sem Viva-voce examination in which each student will be awarded with a grade.



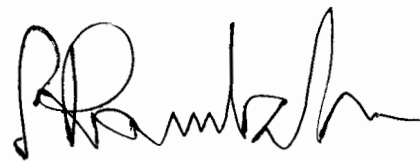
Dr. P. Hemagiri Rao



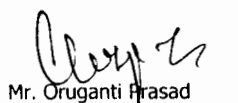
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Mr. S. Rambabu



Mr. Oruganti Prasad

CA 7821

**CERTIFICATION COURSE II – CISCO NETWORKING  
(ROUTING AND SWITCHING CONCEPTS)**

<b>Lecture</b>	: -	<b>Internal Assessment</b>	: 25
<b>Tutorial</b>	: -	<b>End Sem Exam</b>	: -
<b>Practical</b>	: 3 Hrs/Week	<b>Credits</b>	: 1

**COURSE OBJECTIVES:**

The course will enable the learners to:

1. Learn the architecture, components, and operations of Routers and Switches in a small Network.
2. Describe enhanced switching technologies such as VLANs, VLAN Trunking Protocol (VTP), Rapid Spanning Tree protocol (RSTP) and 802.1Q.
3. Configure and troubleshoot basic operations of a switched network.
4. Configure and verify static and default routing.
5. Configure and troubleshoot basic operations of routers in a small routed network.
6. Configure and troubleshoot VLANs and Inter-VLAN routing.
7. Configure, monitor and troubleshoot ACLs (Access Control Lists) for IPv4 and IPv6 networks.

**COURSE OUTCOMES:**

At the end of the course the learners should be able to:

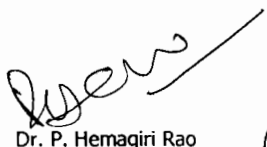
1. Configure and troubleshoot routers and switches.
2. Resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF.
3. Configure VLANs and Inter-VLAN routing in both IPv4 and IPv6 Networks.

**COURSE CONTENTS:**

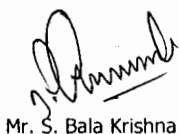
1. Introduction to switched networks
2. Basic switching concepts and configuration
3. VLANs
4. Routing concepts
5. Inter-VLAN Routing
6. Static Routing
7. Routing Dynamically
8. Single-Area OSPF
9. Access Control Lists
10. DHCP
11. Network Address Translation for IPv4

The Sessional marks will be awarded to the students based on

- Performance in assessments conducted for each chapter during the instruction period for 10 Marks.
- Overall performance assessment of the course will be conducted at the end of the semester for 15 marks. (on successful completion of Module - II)



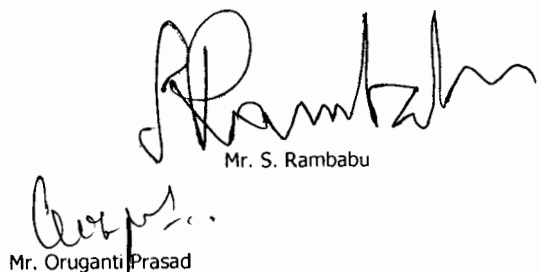
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