MASTER OF COMPUTER APPLICATIONS (MCA)
(REVISED COURSE STRUCTURE 2010 ADMISSION)

Semester I

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2101	Combinatorics & Graph Theory	50	50	4
CAS2102	Computer Organization	50	50	4
CAS2103	Programming in C	50	50	3
CAS2104	Discrete Mathematical Structures	50	50	3
CAS2105	Computer Based Optimization	50	50	3
CAS2106	Lab 1 + Viva-Voce	50	50	2
Total				19

Semester II

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2201	Computer Graphics	50	50	3
CAS2202	Data Structures using C	50	50	3
CAS2203	Object oriented Programming with C++	50	50	3
CAS2204	Applied Numerical Analysis	50	50	3
CAS2205	Elective 1	50	50	3
CAS2206	Lab 2 + Viva-Voce	50	50	2
Total				17

Semester III

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2301	Computer Algorithms	50	50	4
CAS2302	Data Base Management Systems	50	50	3
CAS2303	System Software	50	50	4
CAS2304	Software Engineering	50	50	3
CAS2305	Elective 1	50	50	3
CAS2306	Lab 3 + Viva-Voce	50	50	2
Total				19

Semester IV

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2401	Operating System	50	50	4
CAS2402	Artificial Intelligence	50	50	3
CAS2403	Elective 1	50	50	3
CAS2404	Elective 2	50	50	3
CAS2405	Mini Project Work	50	50	3
CAS2406	Lab 4 + Viva-Voce	50	50	2
Total				18

Semester V

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2501	Networks and Data Communications	50	50	4
CAS2502	Simulation and Modeling	50	50	3
CAS2503	Elective 1	50	50	3
CAS2504	Elective 2	50	50	3
CAS2505	Elective 3	50	50	3
CAS2506	Seminar	100	0	3
CAS2507	Viva-voce (Internal)	100		
Total				19

Semester VI

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2601	Project Work and Viva-Voce	200	200	16
Total				16

MASTER OF COMPUTER APPLICATIONS (MCA)
(REVISED COURSE STRUCTURE 2011 ADMISSION ONWARDS)

Semester I

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2101	Combinatorics & Graph Theory	50	50	4
CAS2102	Computer Organization	50	50	4
CAS2103	Programming in C	50	50	3
CAS2104	Discrete Mathematical Structures	50	50	3
CAS2105	Computer Based Optimization	50	50	3
CAS2106	Lab 1 + Viva-Voce	50	50	2
Total				19

Semester II

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2201	Computer Graphics	50	50	3
CAS2202	Data Structures using C	50	50	3
CAS2203	System Software	50	50	3
CAS2204	Applied Numerical Analysis	50	50	3
CAS2205	Elective 1	50	50	3
CAS2206	Lab 2 + Viva-Voce	50	50	2
Total				17

Semester III

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2301	Computer Algorithms	50	50	4
CAS2302	Data Base Management Systems	50	50	3
CAS2303	Object oriented Programming with C++	50	50	4
CAS2304	Software Engineering	50	50	3
CAS2305	Elective 1	50	50	3
CAS2306	Lab 3 + Viva-Voce	50	50	2
Total				19

Semester IV

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2401	Operating System	50	50	4
CAS2402	Artificial Intelligence	50	50	3
CAS2403	Elective 1	50	50	3
CAS2404	Elective 2	50	50	3
CAS2405	Mini Project Work	50	50	3
CAS2406	Lab 4 + Viva-Voce	50	50	2
Total				18

Semester V

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2501	Networks and Data Communications	50	50	4
CAS2502	Simulation and Modeling	50	50	3
CAS2503	Elective 1	50	50	3
CAS2504	Elective 2	50	50	3
CAS2505	Elective 3	50	50	3
CAS2506	Seminar	100	0	3
CAS2507	Viva-voce (Internal)	100		
Total				19

Semester VI

Course Code	Paper	Marks		Credit
		Internal	External	
CAS2601	Project Work and Viva-Voce	200	200	16
Total				16

APPENDIX 3
(REVISED SYLABUS)

1. **CAS 2105 Computer Based Optimization**
2. **CAS 2304 Software Engineering**

CAS 2105   COMPUTER BASED OPTIMIZATION (Revised 2011)

UNIT I
Linear Programming: Mathematical Model, Assumptions of Linear programming, Solutions of Linear Programming Problem **-** Graphical Method**,** Simplex Method – Artificial Variable Method, Two Phase Method, Big M Method, Applications, Duality, Dual Simplex Method, Introduction to Sensitivity Analysis.

UNIT 2
Special Types of Linear programming problems- Transportation Problem – Mathematical Formulation of Transportation Problem, Basic Feasible Solution in Transportation Problem, Degeneracy in Transportation Problem Initial Basic Feasible Solutions to Transportation Problem - Matrix Minima Method, Row Minima Method, Column Minima Methods, Vogel's Approximation Method, Optimal Solution to Transportation Problem – MODI Method, Stepping Stone Method. Assignment problems: Definition, Hungarian Method for AP.

UNIT 3
Integer Programming: Pure Integer Programming Mixed Integer Programming, Solution Methods - Cutting Plane Method, Branch and Bound Method. Binary Integer Linear Programming**,** Travelling Salesman Problems – Iterative Method, Branch and Bound Method

UNIT 4
Dynamic programming: Deterministic and Probabilistic Dynamic programming, Linear Programming By Dynamic Programming Approach

UNIT 5
Queuing Model: Elements and Characteristics of Queuing System, Classification of Queuing System. Structures of basic Queuing Systems Definition and Classification of Stochastic Processes,   Discrete- time Markov Chains, Continuous Markov Chains.
The classical Systems – Poisson Queuing System – $(M/M/1):(\infty/FIFO)$, $(M/M/1):(\infty/SIRO)$, $(M/M/1):(N/FIFO)$, Birth-death queuing systems, Pure Birth Queuing System, Pure Death Queuing System, $(M/M/C):(N/FIFO)$, $(M/M/C):(C/FIFO)$

REFERENCES:

1. J K Sharma, 'Operations Research'Theory and Applications, 4th Ed Mc Millan Publishing Company,2009.
2. Taha, 'Operations Research', 8th Ed., Mc Millan Publishing Company, 2007.
3. Kanti Swaroop, P.K.Guptha, Man Mohan, 'Operations, 13th Ed , Sulthan Chand & sons, 2007
4. Beightler C S & Philips D T, 'Foundations of optimisation', 2nd Ed., Prentice Hall, 1979.
5. Mc Millan Claude Jr, 'Mathematical Programming', 2nd Ed. Wiley Series, 1979.
6. Srinath L.S, 'Linear Programming', East-West, New Delhi.
7. Gillet B G, 'Introduction to Operation Research: a computer oriented algorithmic approach', Mc Graw Hill Book Comp. 1976.

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CAS 2304 SOFTWARE ENGINEERING

(Revised 2011)

Unit 1

Software and Software Engineering: The Nature of Software, The Unique Nature of WebApps, Software Engineering, The Software Process, Software Engineering Practice. Process Models: A Generic Process Model, Process Assessment and Improvement, Prescriptive Process Models, Specialized Process Models.

Unit 2

Understanding Requirements: Requirements Engineering, Eliciting Requirements, Developing Use Cases, Building the Requirements Model, Validating Requirements. Requerments Modeling: Requirements Analysis, Scenario-Based Modeling, UML Models That Supplement the Use Case, Data Modeling Concepts, Class – Based Modeling.

Unit 3

Requirements Modeling: Requirements Modeling Strategies, Flow-Oriented Modeling. Design Concepts: Design Within the Context of Software Engineering, The Design Process, Design Concepts. Architectural Design: Software Architecture - What is Architecture?, Why is Architecture Important? Architectural Styles, Architectural Design.

Unit 4

Component-Level Design: What is a Component?, Designing Class-Based Components. User Interface Design: The Golden Rules, User Interface Analysis and Design. Software Configuration Management, The SCM Repository, The SCM Process.

Unit 5

Software Testing: A Strategic Approach to Software Testing, Testing Conventional Applications - Software Testing Fundamentals, Internal and External Views of Testing, White-Box Testing, Basis Path Testing, Control Structure Testing, Black-Box Testing, Emerging trends in Software Engineering - Future Technology Directions.

Text Book:

Software Engineering – Roger S Pressman, 'Software Engineering: A Practitioner's Approach, 7 th Edition, McGraw-Hill International Edition, 2010.

References:

1. Richard Fairey, 'Software Engineering Concepts', Tata McGraw-Hill 2009 reprint
2. Ian Sommerville, 'Software Engineering'. 6th Ed., Addison Wesley, 2001 Reprint
3. Waman S Jawadekar, 'Software Engineering Principles and Practice', Tata McGraw Hill, 2004

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APPENDIX 4
(NEW ELECTIVES)

1. **E22 – Android Application Programming**
2. **E23 – Web Application Design using PHP**
3. **E24 – Multimedia System Design**

E22 - Android Application Programming

Unit 1:

Background, Introduction to Android Programming – Native Android Applications, Android SDK features, Development Framework. Developing for Android, Developing for Mobile Devices, Android Development Tools.

Unit 2:

Android Applications – Introduction to Application Manifest, Manifest Editor. Android Application Life Cycle- Application Priority, Process States, Externalizing Resources. User Interface Design, Elements, Layout. Common Application Programming Interfaces . Intents, Broadcast Receivers, Adapters and Internet.

Unit 3:

Data Storage , Retrieval and Sharing - Saving Data, Saving and Loading Files, Databases in Android, Introducing Content Providers

Unit 4:

Location based Services - Setting up Emulator, Location Provider. Using Geocoder , Proximity alerts. Maps – Creating Map Based Services, Example. Introducing Services, Background worker Threads , Using Alarms.

Unit 5:

Networking and Web- Peer – to Peer Communication – Instant Messaging , SMS. Accessing Android Hardware – Media API's , Camera, Sensor Manager, Accelerometer and Compass, Telephony, Bluetooth. Managing Network and Wi – Fi Connections. Controlling Device Vibration.

Text Book

1. Professional Android Application Development. Reto Meier, Wrox Publications 2009. Second Edition

References :

1. Android wireless application development. Shane Conder, Lauren Darcey, Addison Wesley Publications 2010 Second Edition.
2. The Android Developer's Cookbook: Building Applications with the Android SDK.James Steele,Nelson To Addison Wesley Publications 2010 First Edition.

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E23 – Web Application Design Using PHP

Unit 1
Introduction to PHP,Language Features. PHP Basics, PHP's Supported Data Types, Identifiers,Variables ,Constants,Expressions ,String Interpolation, Control Structures, Functions, Arrays, Strings and Regular Expressions, Working with the File and Operating System.

Unit 2
Object-Oriented PHP, Advantages of OOP, OOP Concepts, Constructors and Destructors, Static Class Members, The instanceof Keyword. Advanced OOP Features - Object Cloning, Inheritance, Interfaces, Abstract Classes, Namespaces.

Unit 3
PEAR - Using the PEAR Package Manager, Introducing Pyrus. Date and Time - PHP's Date and Time Library, Date Fu. Error and Exception Handling - Error Logging, Exception Handling.

Unit 4
Handling File Uploads - Uploading Files via HTTP, PHP. PHP and LDAP - Using LDAP from PHP. Session Handlers - Configuration Directives, Working with Sessions, Creating Custom Session Handlers. Working with HTML Forms - PHP and Web Forms, Validating Form Data.

Unit 5
Authenticating Your Users - HTTP Authentication Concepts, Authenticating Users with PHP. Web Services – XML – Loading and Parsing XML. Security - Hiding Configuration and Sensitive Data, Data Encryption. Introducing the Zend Framework - Introducing MVC, PHP and Zend Framework. Using PHP with MySQL - Interacting with the Database.

Text Book :
    Beginning PHP and MySQL,W. Jason Gilmore, Apress, 2010, Fourth Edition

References
    1.PHP6 and MySQL, Steve Suehring, Tim Converse and Joyce Park, Wiley India
    2010,   Second Edition
    2. HTML4 Complete , E.Stephen Mask, Janan Platt BPB Publications, First Edition
    1998.

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E 24 - MULTIMEDIA SYSTEMS DESIGN

Unit 1
Introduction to Multimedia – Definitions, CD-ROM and the Multimedia highway. Uses of Multimedia – Introduction to making multimedia, Multimedia skills.

Unit 2

Multimedia Hardware – Macintosh versus windows, Networking Macintosh and windows computers, Connections, Memory and storage devices, Input devices, Output hardware, Communication devices. Basic Software Tools – Text editing and word processing tools, Painting and Drawing tools, 3-D modeling and animation tools, Image editing tools, Sound editing tools, Animation, Video and Digital movie tools. Multimedia authoring tools.

Unit 3
Text: Fonts and Faces, Using Text in Multimedia, Computers and Text, Sounds-Multimedia System Sounds, Digital Audio, Making MIDI Audio, Audio File formats, MIDI Versus Digital Audio, Production Tips. Images – Making Still images, Color – Understanding natural light and color, computerized color, color palettes, Animation – The principles of Animation, Animation by computer.

Unit 4
Video-Using video, How video works, Broadcast video standards, Analog video, Digital video, Shooting and Editing video, Optimization video files for the CD-ROM. Tools for the world wide web–Web servers, Web Browsers, Web page makers and site builders. Plug-ins and delivery vehicles. Designing for the world wide web–Working on the web, Text for the web, Images for the web, Sound for the web, Animation for the web.

Unit 5
Planning and Costing – The process of making multimedia, scheduling, estimating Designing and Producing, Content and Talent – Using content created by others – Using content created for a project, Using Talent, Delivering – Testing, Preparing for Delivery Delivering on CD ROM, Delivering on world wide web.

Text Book :

1. Tay Vaughan, "Multimedia: Making It Work" – TATA McGraw-Hill , Seventh Edition 2008.

References :

1. James E. Shuman, "Multimedia in Action" – Vikas Publishing House, First Edition, 1998 reprint.
2. Casanova John Villamil, Molina. Louis, "Multimedia An Introduction" – Prentice Hall of India Pvt. Ltd., Eastern Economy Edition, First Edition, 1997.

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