

Master of Science (Computer Application) (effective from 2015-16)

Name of Program		Master of Science (Computer Application)						
Abbreviation		MSC(CA)						
Duration		2 Years (Regular)						
Eligibility		Candidate must have passed Bachelors Degree in Computer Science / Computer Application / / Information Technology / Computer Engineering / any other degree in Computer / IT.						
Objective of Program		The Objective of the program is to impart knowledge of advanced and/or latest theories, concepts , methods, techniques and tools related to various areas of Computer Applications/Information Technology and specifically in the area of Web Application Development, Software Engineering and Data Management.						
Program Outcome		At the successful completion of the program, students will be able to start their career in the Information Technology industry .						
Medium of Instruction		English						
Program Structure		Semester 1						
Course Code	Title	Teaching per week		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
101	Advanced Data Structures	4	0	4	3 Hrs	70	30	100
102	Advance Database Management System	4	0	4	3 Hrs	70	30	100
103	Object Oriented System Design	4	0	4	3 Hrs	70	30	100
104	Enterprise Data Management and ERP	4	0	4	3 Hrs	70	30	100
105	Web Programming Using Java	4	0	4	3 Hrs	70	30	100
106	Practical 1	0	4	4	2 Hrs	70	30	100
107	Practical 2	0	3	3	2 Hrs	70	30	100
108	Practical 3	0	3	3	2 Hrs	70	30	100
TOTAL		20	10	30		560	240	800
Semester -2								
Course Code	Title	Teaching per week		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
201	Advanced Concepts of Operating System	4	0	4	3 Hrs	70	30	100
202	Web Programming Using C#	4	0	4	3 Hrs	70	30	100
203	Advanced Software Engineering	4	0	4	3 Hrs	70	30	100
204	Data Warehousing and Data Mining	4	0	4	3 Hrs	70	30	100
205	Information Security	4	0	4	3 Hrs	70	30	100
206	Practical 1	0	4	4	2 Hrs	70	30	100
207	Practical 2	0	4	3	2 Hrs	70	30	100
208	Practical 3	0	3	3	2 Hrs	70	30	100

TOTAL		20	10	30		560	240	800
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Semester 3								
Course Code	Title	Teaching per week		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
301	Advance PHP Programming	4	0	4	3 Hrs	70	30	100
302	Mobile Application Development	4	0	4	3 Hrs	70	30	100
303	Software Testing	4	0	4	3 Hrs	70	30	100
304	Elective 1	4	0	4	3 Hrs	70	30	100
305	Elective 2	4	0	4	3 Hrs	70	30	100
306	Practical in Advance PHP Programming	0	4	4	2 Hrs	70	30	100
307	Practical on Mobile Application Development	0	3	3	2 Hrs	70	30	100
308	Practical on Software Testing	0	3	3	2 Hrs	70	30	100
TOTAL		20	10	30		560	240	800

Elective 1 and 2 are to be selected from the following papers:

- a) Cloud Computing
- b) Distributed Databases
- c) Multimedia Systems
- d) Artificial Intelligence and Expert Systems

Semester 406						
Course Code	Title	Course Credits	University Marks	Internal Exam	Total Marks	
401	Project	24	280	120	400	
402	Seminar	6	70	30	100	
TOTAL		30	350	150	500	

Program Passing Rules	As Per the University Norms of PG Rules
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Course : 301 : Advance PHP Programming

Course Code	301
Course Title	Advance PHP Programming
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The purpose of the course is to make students capable of implementing concepts , methods and tool related to PHP for professional web application development , management and maintenance.
Course Objective	To Provide in-depth knowledge of most recent Open Source based server side programming technology.
Pr-requisite	Basic Understanding of Web, HTTP, HTML, Database Systems, Networks and Open Source Concepts
Course Out come	After completion of this course, the student will be capable to develop , manage and maintain professional web applications using PHP
Course Content	<p>Unit 1 PHP Programming Concepts</p> <ul style="list-style-type: none"> 1.1 Code structure and documentation 1.2 Array, Reference and Functions 1.3 Site structure and basics of web site development using PHP 1.4 PHP and OOP templates 1.5 Error Handling 1.6 Authentication 1.7 Cookies and Session Management 1.8 <i>Browser detection</i> 1.9 Sending MIME Mail Message with Mail_mime, smtp <p>Unit 2 Accessing Database</p> <ul style="list-style-type: none"> 2.1 Accessing MySQL Database <ul style="list-style-type: none"> 2.1.1 Connecting to MySQL DB Engine and database 2.1.2 Executing queries and retrieving resultsets 2.1.3 Exporting data to CSV and Tab Delimited files <p>Unit 3 PHP Internals</p> <ul style="list-style-type: none"> 3.1. Profiling and debugging with XDebug <ul style="list-style-type: none"> 3.1.1. Tracing 3.1.2. Profiling 3.1.3 Using remote debugging 3.2 Working with Code Caches <ul style="list-style-type: none"> 3.2.1 Alternative PHP Cache(APC) <ul style="list-style-type: none"> 3.2.2.1 ionnCube PHP accelerator(PHPA) 3.2.2 Truck MMCache <p>Unit 4 working with images, pdf files, ajax and XML</p> <ul style="list-style-type: none"> 4.1. Creating and Manipulating images 4.2. Using Text in Images 4.3. Creating database driven graph 4.4. Saving and building on existing image.

	<p>4.5. Generate PDF file. 4.6. PHP with XML 4.7. PHP with Ajax</p> <p>Unit 5 PHP Frameworks 5.1 Application Development using CodeIgniter 5.2 Introduction to Application Development using Yii</p> <p>Self study: Application Development using Megenta (self study)</p> <p>Note : CodeIgniter and Yii should be taught in the theory class. Practical lab work must be done using CodeIgniter.</p>
Reference Book	<ol style="list-style-type: none"> 1. Essential PHP Tools Modules, extensions and Accelerators – David Sklar – APRESS (SPD) 2. PHP advance for the World Wide Web – Larry Edward Ullman – peachpit press 3. Advance PHP for Web professionals – Christopher Cosentino – Pearson education 4. Expert PHP 5 Tools – Dirk Merkel – PACKT (SPD) 5. PHP – A Beginners Guide – Ashok Appu’ – Wiley Dreamtech India Pvt Ltd. 6. Learning PHP 5 – David Sklar – O’Reilly (SPD) 7. Beginning PHP 5.1 For Beginners – Iyan Byross, Sharanam Shah- The Team (SPD) 8. Beginning PHP 5 – Dave W Mercer, Allent Kent, Steven D Nowicki, David Mercer, Dan Squire , Wankyu Choi – Dreamtech 9. Programming with CodeIgniter, Yehuda Zadik, 10. Web Application Development with Yii & PHP 5 editors, J. Winesett,
Teaching Methodology	Discussion, Independent Study, Seminars / Assignment
Evaluation Method	30% Internal assessment is based on class attendance, participation, class test, quiz, assignment / seminar, internal examination etc. 70% assessment is based on end semester written examination

Course : 302 : MOBILE APPLICATION DEVELOPMENT

Course Code	302
Course Title	Mobile Application Development
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The purpose of the course is to make student capable of implementing the concepts, methods and tools of mobile applications development using Android for development, management and maintenance of mobile device based application
Course Objective	To Provide in-depth knowledge of most recent Mobile Devices Application Development technology.
Pr-requisite	Understanding of Java Programming, Object Oriented Concepts and Networks
Course Out come	After completion of this course, the student will be capable to develop, manage and maintain mobile device based application using Android.
	<p>Unit -1 Introduction to Mobile Devices</p> <ul style="list-style-type: none"> 1.1 Pervasive computing, 1.2 Definition, Evolution of Mobile Devices, 1.3 Categories and Features of Mobile Devices, <p>Unit -2 Smart Identification of mobile devices</p> <ul style="list-style-type: none"> 2.1 Smart cards-its hardware and software 2.2 Communication between On-card and Off-card Parts 2.3 Smart Labels and Tokens 2.4 Smart Sensors and Actuators <p>Unit -3 Introduction to Android</p> <ul style="list-style-type: none"> 3.1 Open standards for mobile devices (OHA) 3.2 Introduction to various mobile device OS 3.3 Architecture of Android OS 3.4 Introduction to Android SDK 3.5 Embedded Browsers 3.6 Types of Android Applications-Foreground Applications, Background Services and Intent Receivers, Intermittent Applications, Widgets and Containers <p>Unit -4 Programming with Android</p> <ul style="list-style-type: none"> 4.1 Android Development tools <ul style="list-style-type: none"> 4.1.1 The Android Virtual Device and SDK Manager 4.1.2 The Android Emulator 4.1.3 Delvik Debug Monitor Service (DDMS) 4.1.4 The Android Debug Bridge (ADB) 4.2 Creating Applications and Activities <ul style="list-style-type: none"> 4.2.1 Application Manifest and Application Life cycle,

	<p>Application Priority and Process States</p> <p>4.2.2 Creating and Using Resources</p> <p>4.2.3 Working with Android Application Class</p> <p>4.2.4 Working with android activities-Activity Life cycle, Activity stakes, Activity States, Activity Lifetimes, Android Activity Classes</p> <p>4.3 Creating User Interface (4)</p> <p>4.3.1 Fundamental Android UI Design</p> <p>4.3.2 Working with Views and Layouts, Drawable Resources</p> <p>4.3.2 Resolution and Density Independence</p> <p>4.3.4 Working with Menus and Messages</p> <p>4.3.5 Building Rich User Interfaces-Animations, Canvas, Surface View and Interactive controls</p> <p>4.4 Working with Intents, Broadcast Receivers, Adapters and The Internet</p> <p>4.4.1 Intents, Intent filters, Linkify, Event broadcasting, Pending Events</p> <p>4.4.2 Native Adapters and their usage</p> <p>4.4.3 Connecting and using Internet Resources Dialog classes-Alert Dialog, specialist Input dialogs, Using Activities as Dialogs, Managing and displaying Dialogs</p> <p>Unit 5 Advance Android Programming</p> <p>5.1. Files, Saving States and Preferences</p> <p>5.1.1 Saving Simple application Data</p> <p>5.1.2 Creating and saving preferences, Retrieving Shared Preferences</p> <p>5.1.3 Preference activity and Preferences Framework</p> <p>5.1.4 Saving Activity State, Saving and Loading Files, Including Static Files as Resources</p> <p>5.1.5 File Management tools</p> <p>5.2. Database and Content Providers</p> <p>5.2.1 Android Databases-Working with SQLite Databases</p> <p>5.2.2 Content Providers- Creating and using Content Providers</p> <p>5.3. Audio, Video and Using the Camera</p> <p>5.3.1 Playing and recording Audio and Video</p> <p>5.3.2 Working with the Camera</p> <p>5.3.3 Working with Media and MediaStore</p> <p>5.4. Deploying Android Application</p> <p>Self Study – PhoneGap</p>
Reference Book	1. Principles of Mobile computing, 2 nd Edition - Uwe Hansmann,

	<p>Lothar Merck, Martin S. Nicklous, Thomas Stober - Springer Publication</p> <p>2. Professional Android 2 Application Development - Reto Meier - WROX Publication- Wiley-India, 2009</p> <p>3. J2ME: The Complete Reference - James Edward - James Edward - Publication, 2009</p> <p>4. Inside Microsoft Windows CE - John Murray - Microsoft Press 2007</p> <p>5. The Symbian OS Architecture Sourcebook: Design and Evolution of a Mobile Phone OS - Ben Morris - Wiley Publications I</p> <p>6. Beginning Java ME Platform Beginning from Novice to Professional) 3rd Edition - Ray Rischpater - Apress Publication 2008</p> <p>7. Android Essentials - Chris Haseman- Apress Publication 2009</p> <p>8. Beginning Android - Mark L Murphy - Wiley India Pvt Ltd 2009</p> <p>9. Pro Android - Sayed Y Hashimi and Satya Komatineni - Wiley India Pvt Ltd 2009</p> <p>10. Android Wireless Application Development 2nd Edition - Lauren Darcey, and Shane Conder Pearson Education,2011</p>
Teaching Methodology	Discussion, Independent Study, Seminars / Assignment
Evaluation Method	30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 70% assessment is based on end semester written examination

Course : 303 : SOFTWARE TESTING

Course Code	303
Course Title	Software Testing
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The course gives students an idea about Software Testing fundamentals and practice followed to test the software.
Course Objective	To Provide in-depth knowledge of most Software Testing and Industrial practices in it..
Pr-requisite	Basic Understanding of Programming and Software Engineering
Course Out come	After completion of this course, the student will be capable of implementing the concepts, methods and tools of software testing.
Course Content	<p>Unit -1 Software Testing</p> <ol style="list-style-type: none"> 1.1 Role of Testing 1.2 Failure, Error, Fault, and Defect 1.3 Precision and Accuracy 1.4 Verification and Validation 1.5 Objectives of Testing 1.6. Concept of Complete Testing 1.7 Central Issue in Testing 1.8 Testing Activities <p>Unit-2 Testing Techniques</p> <ol style="list-style-type: none"> 2.1. White-Box and Black-Box Testing 2.2. Static Black-Box Testing-Testing the specification <ol style="list-style-type: none"> 2.2.1. High Level Specification Review 2.2.2. Specification attributes Checklist 2.2.3. Specification Terminology Checklist 2.3 Dynamic Black-box Testing <ol style="list-style-type: none"> 2.3.1 Test-to-Pass and Test-to-Fail 2.3.2 Equivalence Partitioning 2.3.3 Data Testing-Testing for Boundary conditions, Sub-Boundary conditions, Default, Empty, Null, Zero, None, Invalid, Wrong, Incorrect, Garbage Data 2.3.4 State Testing-Testing Software's Logic flow, Testing states to Fail 2.3.5 Orthogonal Array Testing 2.4 Static White-Box Testing – Code Examination <ol style="list-style-type: none"> 2.4.1 Formal Code Reviews –Peer Reviews, Walkthroughs, Inspections 2.4.2 Examining adherence to coding standards and guidelines 2.4.3 Generic Code Review Checklist-Data Reference errors, Data Declaration Errors, Computation Errors,

	<p>Control Flow Errors, Comparison errors, Subroutine Parameter Errors, Input/Output Errors, Other checks</p> <p>2.5 Dynamic White-Box Testing</p> <p>2.5.1 Data coverage-data flow, Sub-boundaries, Formulas and Equations, Error forcing</p> <p>2.5.2 Code coverage-program statement and Line coverage, Branch coverage, condition Coverage, Control Flow</p> <p>2.5.3 Unit and Integration Testing</p> <p>2.6 Debugging- Process, Considerations, Debugging Approaches</p> <p>2.7 Functional Testing, Ad-hoc Testing</p> <p>2.8 System Testing - Stress, Load, Performance, Security, etc.</p> <p>2.9 Acceptance Testing</p> <p>Unit 3 Testing of Web Application</p> <p>3.1 Testing Concepts for WebApps</p> <p>3.2 The Testing process</p> <p>3.3 Content Testing</p> <p>3.4 User Interface Testing</p> <p>3.5 Component Level Testing</p> <p>3.6 Navigation Testing</p> <p>3.7 Configuration Testing</p> <p>3.8 Security Testing</p> <p>3.9 Performance Testing</p> <p>Unit 4 Testing Tools</p> <p>4.1. Automation of Test Execution, Requirement tracking, High Level Review</p> <p>4.2. Types of Test Tools</p> <p>4.2.1. Test management and Control</p> <p>4.2.2. Test Case Generation,</p> <p>4.2.3. Test Recording and playback,</p> <p>4.2.4 Regression Testing</p> <p>4.3 Selection and Introduction of Test Tools</p> <p>4.3.1 Tool Selection and Introduction criteria</p> <p>4.3.2 Cost Effectiveness of Tool Introduction</p> <p>4.4 Study of Open Source & Proprietary/Commercial Tools for</p> <p>4.4.1 Unit Testing</p> <p>4.4.2 Functional Testing</p> <p>4.4.3 Load and Performance Testing.</p> <p>Unit 5 Test Recording and Reporting</p> <p>5.1. A Bug's Lifecycle</p> <p>5.2. Bug Reporting guidelines</p> <p>5.3. Reporting for reproducibility</p> <p>5.4. Reporting Severity and Priority of each bug.</p> <p>5.5. Test Incident Report</p> <p>5.6. Bug Tracking System- Manual and Automated</p>

Reference Book	<ol style="list-style-type: none"> 1. Software Testing - Ron Patton - Techmedia Publication, 2000 2. Software Testing and Quality Assurance - Kshirasagar Naik and Priyadarshi Tripathy WILEY 3. .Software Engineering A practitioner’s approach- Roger S Pressman - McGraw Hill 4. Effective Methods for Software Testing – William E. Perry - WILEY 5. Software Testing Tools – Dr K.V.K.K Prasad – dreamtech 2006 6. Software Testing Foundations – Andreas Spillner, Tilo Linz, Hans Schaefer – Shroff Publioshers and Distributors 7. Software Testing: Principles and Practices – Srinivasan D and Goplaswamy R - Pearson Education , 2006 8. Foundation of Software Testing – Aditya P. Mathur – Pearson Education custom edition 2000 9. Software Engineering Concepts – Fairley R E – Mc-Graw Hill 10. Software Engineering - Lewis T G - Mc-Graw Hill 11. Fundamentals of Software Engineering – Carlo Ghezzi 12. IEEE Standard for software user documentation - std 1063-1987 13. Software Engineering – A Programming approach – D. Bell, I Morrey – PHI 14. Pragmatic Software Testing – Rex Black – WILLEY 15. Software Testing Concepts and Practices – K Mustana and R.A.Khan – Narosa Publication 16. Testing Object Oriented systems: Models, Patterns and tools – Robert V Binder – Addison Wesley, 1996 17. The art of Software Testing – G J Myers – Wiley 18. Software Quality Assurance – Milind Limaye – Macgraw Hill Publication 2011.
Teaching Methodology	Discussion, Independent Study, Seminars / Assignment
Evaluation Method	<p>30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc.</p> <p>70% assessment is based on end semester written examination</p>

Course : Elective -A

Course Code	ELECTIVE A
Course Title	CLOUD COMPUTING
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The course gives students an idea about Cloud Computing fundamentals and Cloud Based Systems.
Course Objective	To provide comprehensive knowledge of Cloud based systems and aspects related to it.
Pre-requisite	Basic Understanding of Types and Categories of Information Systems, Web and Web based Application Development.
Course Out come	After completion of this course, the student will gain comprehensive knowledge of Cloud based systems and aspects related to it.
Course Content	<p>Unit 1 Evolution of Cloud Computing</p> <ol style="list-style-type: none"> 1.1 Introduction to Web Services-SOAP, WDL, UDDI, characteristics, benefits and impact on EDI 1.2 Introduction to Web 2.0 and Web 3.0 1.3 SOA Fundamentals - Evolution, characteristics of SOA, Basic SOA architecture, infrastructure services, SOA Enterprise Software models 1.4 Virtualization 1.5 Moving towards Cloud Computing <p>Unit 2 Fundamentals of Cloud</p> <ol style="list-style-type: none"> 2.1 Cloud characteristics-On Demand Service, Ubiquitous Network Access, Location Independent Resource Pooling, Rapid Elasticity. 2.2 Cloud Benefits and Barriers 2.3 Cloud Types-Public, Private, Hybrid, Community, Shared Private, Dedicated Private 2.4 Security in public cloud - Multi-tenancy, Security Assessment, Shard Risk, Staff Security Screening, Distributed Data Centers, Physical Security, Policies, Coding, Data Leakage. 2.5 Cloud Computing Essentials <ol style="list-style-type: none"> 2.5.1 Cloud Computing Architectural Framework 2.5.2 Cloud Deployment Models 2.5.3 Virtualization in Cloud Computing 2.5.4 Parallelization in Cloud Computing 2.5.5 Security for Cloud Computing <p>Unit 3 Cloud Service Models</p> <ol style="list-style-type: none"> 3.1 Infrastructure as a Service <ol style="list-style-type: none"> 3.1.1 Server virtualization 3.1.2 Storage virtualization 3.1.3 Network virtualization

3.2 Platform as a Service (PaaS)

- 3.2.1 Azure
- 3.2.2 Google AppEng
- 3.2.3 Hadoop
- 3.2.4 Salesforce

3.3 Software as a Service (SaaS)-Characteristics, Open SaaS and SOA

- 3.3.1 Cloud services
- 3.3.2. Web portal
- 3.3.3. Web OS

3.4 Identity as a Service(IDaaS)

- 3.4.1 Network Identity Service Classes
- 3.4.2 IDaaS Interoperability-user authentication, Authorization Markup Languages

3.5 Compliance as a Service(CaaS)

Unit 4 Cloud Based Systems

4.1. Cloud Based Storage

4.1.1 Provisioning Cloud Storage – Unmanaged and Managed cloud

storage, creating cloud storage systems, virtual storage containers.

4.1.2 Cloud Backup solutions-types, features, cloud attached backups.

4.1.3 Cloud storage Interoperability- Cloud Data Management Interface(CDMI), Open cloud Computing Interface(OCCI)

4.2. Cloud Based Productivity Software

4.2.1 Productivity applications and Characteristics

4.2.2 Online Office systems- Acrobat.com, Google Docs, Microsoft Office Web apps etc.

4.3. Cloud based Webmail Services

4.3.1 Cloud Mail Services-Google Gmail, Windows Live Hotmail, Yahoo! Mail, Mail2Web.

4.3.2 Syndication services- RSS and Atom protocols, NewsReaders, News aggregators

4.4. Cloud based Communicating systems

4.4.1 Instant Messaging clients, Interoperability, Micro-blogs or Short Message Services

4.4.2 Collaboration Technologies

4.4.3 Social Networks for communication

4.5. Cloud based Media and Streaming

4.5.1 Introduction to Streaming Process and Protocols

4.5.2 Audio Streaming , VoIP applications-Skype, Google Voice, Google Talk

4.5.3 Video Streaming formats, Television based streaming, Youtube.

	<p>Unit 5 Mobile Cloud</p> <p>5.1. Using Smartphones with the cloud</p> <p>5.2. Mobile Interoperability</p> <p>5.3. Performing Service Discovery</p> <p>5.3.1 Context Aware Services</p> <p>5.3.2 MEMS</p> <p>5.3.3 Location awareness</p> <p>5.3.4 Push services</p> <p>5.4. Short Message Service(SMS)</p> <p>5.5. WAP and Other Protocols</p> <p>5.6. Performance synchronization</p>
Reference Book	<ol style="list-style-type: none"> 1. Cloud Computing: Principles and Paradigms – R. Buyya et al – Wiley 2010 2. Cloud Computing : Principles Systems and Application – L Gillam et al - Springer 2010 3. Cloud Computing Bible – Sosinsky - Wiley – India, 2011 4. Cloud Computing Second Edition Dr. Kumar Saurabh – Wiley – India, 2012 5. Service Oriented Architecture: Concepts , Technology and Design – Thomas Erl – Prentice Hall publication, 2005 6. Understanding Enterprise SOA – Enterprise Service Oriented Architecture – Eric Pulier, Hugh Taylor – Dreamtech Press 2008 7. Cloud Computing – Insight into New Era Infrastructure – Dr Kumar Saurabh – Wiley India 2012 8. Understanding SOA with Web Services – Sanjiva Weerawarana, Franscisco Cubera, Frank Leymann, Tony Storey, Donald F Ferguson, Eric Newcomer, Greg Lomow – Addison Wesley Publication, 2004 9. Enterprise Service Bus – Dave Chappell - O’Reilly Publications 2004
Teaching Methodology	Discussion, Independent Study, Seminars / Assignment
Evaluation Method	30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 70% assessment is based on end semester written examination

Course : Elective -B

Course Code	ELECTIVE B
Course Title	DISTRIBUTED DATABASE MANAGEMENT SYSTEM
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2015
Purpose of Course	The course gives students an idea about Distributed Database System and Query processing in Distributed Database System.
Course Objective	To provide comprehensive knowledge of Distributed Database Systems and aspect related to it.
Pre-requisite	Deep understanding of Database Management System concepts, Database Design, Database Management, Database Storage, Querying and Query Processing, Query Evaluation and Optimization and Object Oriented Concepts.
Course Out come	After completion of this course, the student will gain comprehensive knowledge of Distributed Database Systems and aspects related to it.
Course Content	<p>Unit 1 Introduction to Distributed database Management System</p> <ol style="list-style-type: none"> 1.1 Distributed data processing, What is a DDBMS? 1.2 Advantages and disadvantages of DDBMS. 1.3 Problem areas, Overview of database and computer network concepts 1.4 Architecture 1.5 Transparencies in a distributed DBMS 1.6 Distributed DBMS architecture Global directory issues <p>Unit 2 Distributed Database Design</p> <ol style="list-style-type: none"> 2.1 Alternative design strategies 2.2 Distributed design issues 2.3 Fragmentation, Data allocation <p>Unit 3 Query Processing Issues & query optimization in distributed databases</p> <ol style="list-style-type: none"> 3.1 Objectives of query processing, Characterization of query processors 3.2 Layers of query processing, Query decomposition 3.3 Localization of distributed data 3.4 Factors governing query optimization 3.5 Centralized query optimization, Ordering of fragment queries 3.6 Distributed query optimization algorithms <p>Unit 4 Distributed Object Management and query processing</p> <ol style="list-style-type: none"> 4.1 Object model features 4.2 Fundamental object management issues 4.3 DOM architectures 4.4 Object caching, Object clustering, Object migration 4.5 Distributed object base systems 4.6 Problems in accessing distributed objects 4.7 Goals of Distributed object assembly problem 4.8 Strategies for distributed object assembly

	<p>Unit 5 Transaction Management in Distributed Databases</p> <p>5.1 The concept of 'transaction'</p> <p>5.2 Goals of transaction management, Characteristics of transactions</p> <p>5.3 Taxonomy of transaction models</p>
Reference Book	<ol style="list-style-type: none"> 1. Principles of Distributed Database Systems - M.T. Özsu and P Valduriez – Prentice-Hall 2. Principles of Distributed Database Systems, 3rd edition - M.T. Özsu and P Valduriez – Springer , 2011 . 3. Distributed Object Management By Morgan Kaufman - M.T. Özsu and P Valduriez (editor) - 4. Distributed Databases Principles and Systems – S. Ceri and G.Pelagatti – Macgraw Hill Book Company ISBN : 5. Oracle 9i Distributed Database Replication Manual Mordern Database systems. 6. The Object Model Interoperability and Beyond - W.KIM(editor) – APRESS 7. Advances in Object-Oriented Database Systems – A.Dogac, M.T Ozsu, A Billiris and T.Sellis (editors) - Springer –Verlag 8. Object Oriented Database System – Approaches & Architectures - C.S.R PRABHU - PHE Pub. 9. Fundamental of Database Systems 3rd edition – Elinisky & Navathe – Addison Welsey 10. Database Management Systems – Raghu Ramkrishnana and Johannes Gehrke – McGraw Pub.
Teaching Methodology	Discussion, Independent Study, Seminars / Assignment
Evaluation Method	30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 70% assessment is based on end semester written examination

Course : Elective -C

Course Code	ELECTIVE C
Course Title	MULTIMEDIA SYSTEMS
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The course gives students an idea about Multimedia Systems .
Course Objective	The aim of this course is to provide knowledge of the basic concepts and techniques related to Multimedia System
Pre-requisite	Students should be familiar with basics of computer graphics and multimedia..
Course Out come	After completion of this course, the student will gain knowledge of basic concepts and techniques related to Multimedia System
Course Content	<p>1. Computer graphics</p> <ul style="list-style-type: none"> 1.1 Fundamentals 1.2 Vector graphics 1.3 Shapes 1.4 Transformations and Filters 1.5 3-D Graphics 1.6 Bitmapped graphics 1.7 Resolution 1.8 Image Manipulation 1.9 Geometrical Transformation 1.10 Combining Vectors and Bitmaps 1.11 File Formats <p>2. Video & Animation</p> <ul style="list-style-type: none"> 2.1 Digitizing Video 2.2 Video Standards 2.3 Video Compression techniques 2.4 Digital Video Editing and Post-Production 2.5 Streamed Video and Video Conferencing 2.6 Captured Animation and Image Sequences 2.7 'Digital Cel' and Sprite Animation 2.8 Key Frame Animation 2.9 3-D Animation <p>3. Sound</p> <ul style="list-style-type: none"> 3.1. The Nature of Sound 3.2. Digitizing Sound 3.3. Processing Sound 3.4. 4.4 Compression 3.5. Formats 3.6. MIDI 3.7. Combining Sound and Picture

	<p>4. Distributed Multimedia System</p> <ul style="list-style-type: none"> 4.1. Operating System Introduction to DMS 4.2. Main Features of DMS 4.3. Resources Management of DMS 4.4. Networking 4.5. Multimedia 4.6. Distributed Multimedia Servers 4.7. Distributed Multimedia Application <p>5. Multimedia Data Compression</p> <ul style="list-style-type: none"> 5.1 Data Compression Terminology 5.2 A Classification of Data Compression Terminology 5.3 Data Compression Technology 5.4 Compression Standards 5.5 Image Compression 5.6 Video compression 5.7 Audio compression
Reference Book	<ul style="list-style-type: none"> 1. Digital multimedia 3/e illustrated – Chapman, Nigel P. Chapman, Jenny Chapman – Wiley , 2009 2. Multimedia – Making it Work – Tay Vaudhan Tata Mcgraw Hill ISBN 3. Streaming Multimedia – Steve Mack - John Wiley 4. Multimedia Communication System - LPE Pearson – Education Publication.
Teaching Methodology	Discussion, Independent Study, Seminars /Assignment
Evaluation Method	30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 70% assessment is based on end semester written examination

Course : Elective -D

Course Code	ELECTIVE D
Course Title	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The course gives students an idea about basic of Expert Systems and its architecture..
Course Objective	The aim of this course is to provide knowledge of the basic concepts and techniques of AI and Expert System.
Pre-requisite	Students should be familiar with Advance computing, algorithms and data structures.
Course Out come	After completion of this course, the student will gain knowledge of basic concepts and techniques related to Expert System
Course Content	<p>Unit 1 Introduction to AI and Knowledge Overview</p> <ol style="list-style-type: none"> 1.1. Overview of AI and its application area 1.2. Automated reasoning & Theorem proving, Natural Language, Understanding & Semantic modeling, Modeling Human performance 1.3. AI problem characteristics 1.4. Definition and importance of knowledge 1.5. Overview knowledge representation <ol style="list-style-type: none"> 1.5.1 Structured Knowledge- Associative networks, Frame structures , Conceptual dependencies and Scripts 1.6. Overview of knowledge organization 1.7. Overview of knowledge search and manipulation <ol style="list-style-type: none"> 1.7.1 Search techniques - Uninformed search, Informed search 1.7.2 Introduction to matching Techniques 1.8. Overview of Knowledge acquisition 1.9. Knowledge learning types 1.10. General learning models <p>Unit 2 Inference</p> <ol style="list-style-type: none"> 2.1 Introduction 2.2 Trees, Lattices and Graphs 2.3 Deductive logic 2.4 Rules of Inference 2.5 Resolutions 2.6 Forward and backward chaining <p>Unit 3 Reasoning under Uncertainty</p> <ol style="list-style-type: none"> 3.1. Uncertainty 3.2. Errors and Induction 3.3. Probability

	<p>3.4. Temporal Reasoning and Backward Induction 3.5. Uncertainty in inference chain 3.6. Uncertainty and Rules 3.7. Approximate reasoning</p> <p>Unit 4 Expert System</p> <p>4.1 Overview of Expert System 4.2 Characteristics of an Expert System 4.3 Development of Expert System and Technology 4.4 Expert System Application and Domain 4.5 Elements of an Expert System 4.6 Production system 4.7 Artificial Neural System</p> <p>Unit 5 Design of Expert System and Expert System Architecture</p> <p>5.1. Stages in development of an Expert System 5.2. Software Engineering and Expert System 5.3. The Expert System Life Cycle 5.4. Expert System Life Cycle Model 5.5. Overview of expert System Tools 5.6. Expert System Shells 5.7. Black Board Architecture 5.8. Truth Maintenance Architecture System 5.9. Rule Induction by Machine Learning</p>
Reference Book	<p>1 Expert Systems : Principles and Programming – Joseph C Giarratano, Gary D Riley Course Technology 2 Introduction to Expert Systems – Peter Jackson – Addison Wesley Publishing Company 3 Artificial Intelligence : A Modern Approach (second Edition) – Stuart Russell and Peter Norvig 4 Intelligence and Expert Systems – Dan W. Patterson – PHI 5 Foundation of Artificial Intelligence and Expert Systems – V.S Janakiraman, K.Sarukesi, P.Gopalkrishnan – Macmillan(2002) 6 Introduction of Artificial Intelligence – Charniak . E – Narosa Publishing House.</p>
Teaching Methodology	Discussion, Independent Study, Seminars and Assignment
Evaluation Method	30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 70% assessment is based practical examination at the end of semester.

Course : 306 Practical on Advanced PHP Programming

Course Code	306
Course Title	Practical on Advanced PHP Programming
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The purpose of the course is to make students capable of implementing concepts, methods and tools learnt in course 301 Advance PHP Programming.
Course Objective	The Objective of these course is to to enable students to develop web applications in PHP
Pr-requisite	Programming Skill in Structured and Object Oriented Programming, Scripting Skills in HTML, Basics of Operating Systems, Networks and Database systems, Concepts of Web, HTTP etc.
Course Out come	After completion of this course, the student will be capable of developing professional web applications using PHP.
Course Content	The students will be required to carry out practical in Web Application Development on the topics covered in Paper 301: "Advanced PHP Programming" using the methods and tools discussed there in. A Journal must be prepared for the practical work done.
Reference Book	.As Per Paper 301
Teaching Methodology	Lab Work
Evaluation Method	30% Internal assessment is based on Practical attendance, problem solving and , internal examination etc. 70% assessment is based practical examination at the end of semester.

Course : 307 Practical on Mobile Programming

Course Code	307
Course Title	Practical on Mobile Programming
Credit	3
Teaching per Week	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The purpose of the course is to make students capable of implementing concepts, methods and tools learnt in course 302 Mobile Application Development
Course Objective	The Objective of these course is to enable students to develop applications for Mobile devices
Pre-requisite	Programming Skill in Structured and Object Oriented Programming, Scripting Skills in HTML, Basics of Operating Systems and Database systems, Concepts of Networks, Web, HTTP etc.
Course Out come	After completion of this course, the student will be capable of developing professional mobile applications using Android
Course Content	The students will be required to carry out practical in Mobile Application Development on the topics covered in Paper 302: "Mobile Application Development" using the methods and tools discussed there in. A Journal must be prepared for the practical work done.
Reference Book	.As Per Paper 302
Teaching Methodology	Lab Work
Evaluation Method	30% Internal assessment is based on Practical attendance, Problem Solving , internal examination etc. 70% assessment is based practical examination at the end of semester.

Course : 308 Practical on Software Testing

Course Code	308
Course Title	Practical on Software Testing
Credit	3
Teaching per Week	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The purpose of the course is to make students capable of implementing concepts, methods, tools and techniques of software testing learnt in course 303 Software Testing
Course Objective	The Objective of these course is to enable students to Test desktop and Web Applications.
Pr-requisite	Basic understanding of Programming and Software Engineering
Course Out come	After completion of this course, the student will be capable of performing various types of testing on Software and Web Applications.
Course Content	The students will be required to carry out practical on Software Testing on the topics covered in Paper 303: "Software Testing" using the methods and tools discussed there in. A Journal must be prepared for the practical work done.
Reference Book	.As per paper 303
Teaching Methodology	Lab Work
Evaluation Method	30% Internal assessment is based on Practical attendance, Problem Solving, internal examination etc. 70% assessment is based practical examination at the end of semester.

Course : 401 Project

Course Code	401
Course Title	PROJECT
Credit	24
Teaching per Week	2 Students / hour / Week
Minimum weeks per Semester	15 (Project work, Self-Study, examination, preparation, holidays etc.)
Last Review / Revision	June 2013
Purpose of Course	
Course Objective	To expose students to industrial practices and activities of software engineering and train them about the same
Pr-requisite	Knowledge of Advanced Programming, Latest Technologies and Tools and Software Engineering
Course Out come	After completion of this course, the student will be capable to start professional career and/or research work in the field of Information Technology
Course Content	<p>Entire semester is allocated for a full-time project work. All the students have to undergo a project preferably in an industry or any reputed institute. The students must prepare documentation of the project work done as per the software Engineering Guidelines. At the end of the semester, the students have to submit their project report in bounded form to the respective institution. The project presentation and viva – voice will be conducted on the basis of it.</p> <p>The students have to submit the following reports to their respective institution:</p> <ol style="list-style-type: none"> 1. Project Joining Report 2. Appropriate name of the project 3. Monthly Progress Report duly sign by the concern external guide 4. Project Completion Certificate 5. Institution/College Certificate 6. Software Coding declaration...(if industry/organization doesn't permit students to submit the source code) <p>Without such reports student will not be allowed to appear in his/her final Project Presentation and Viva-Voice</p>
Reference Book	---
Teaching Methodology	Project guidance, review
Evaluation Method	<p>30% Internal assessment is based on project presentation and/or demonstration and viva-voice examination.</p> <p>70% assessment is based Project Presentation and/or demonstration and viva-voice examination at the end of semester.</p>

Course : 402 Seminar

Course Code	402
Course Title	SEMINAR
Credit	6
Teaching per Week	4 Students / hour / Week
Minimum weeks per Semester	15 (Project work, Self-Study, examination, preparation, holidays etc.)
Review / Revision	June 2015
Purpose of Course	The purpose of the course is to make student capable of gaining additional knowledge (besides the curricula) in the field of information technology by self learning practices and presenting and/or demonstrating it .
Course Objective	Additional knowledge building in the field of Information Technology using self-learning practice.
Pr-requisite	Basic Knowledge of Information Technology theories, activities, methods, techniques & tools
Course Out come	After completion of this course, the student will have gained some additional knowledge (besides the curricula) in the field of information technology by self learning practices and will be capable of presenting and/or demonstrating it
Course Content	<p>In this paper students will have to select any topic related to information technology field– preferably based on the current trends and technologies for the seminar. Individual student is required to prepare a seminar report. At the end of the semester student has to submit seminar report with satisfactory detail study in the bounded form to the respective institution. The seminar presentation and viva voice will be conducted on the basis of selected topic at the end of the semester.</p> <p>The students have to submit the following documents to their respective institution:</p> <ol style="list-style-type: none"> 1. Name and abstract of the Topic selected. 2. Monthly Progress Report duly signed by the concern internal guide 3. Work Completion Certificate by internal guide 4. Institution/College Certificate
Reference Book	.-----
Teaching Methodology	Seminar Guidance and Report
Evaluation Method	<p>30% Internal assessment is based on seminar presentation and viva-voice examination.</p> <p>70% assessment is based on seminar presentation and viva-voice examination at the end of semester</p>