



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Second Year MCA :

Trimester VI

Subject Code: MCA 261

Subject: TCP/IP Protocol Suite

Lectures per week (hours) : 3 Lectures + 1 Tutorial

Practicals per week (hours) : 4

Internal Assessment : 50 Marks

External Assessment : 50 Theory + 50 Practical Marks

Total Credits : 8

Prerequisite: Core Java

Aim:

The course is aimed to introduce the internetworking and TCP/IP protocol suite.

Objectives:

- (1) To understand the concept of data communication over Internet.
- (2) To learn the concepts of Internet security.
- (3) To make students familiar to connection less and connection oriented data transmission over web.

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	Classful Internet Addresses Address Resolution Protocol RAddress Resolution Protocol - Ip Connectionless Deli. System	9	10
Unit II	Datagram Routing – Error Handling – CIDR – UDP	9	15
Unit III	TCP – Mobileip Private Network Interconnection (Nat And VPN) Bootstrap And Autoconfiguration (BootP, DHCP)	9	15
Unit IV	Domain Name System (DNS), Remote Login (Telnet And Rlogin) - File Transfer And Access (Ftp, Tftp, Nfs) - Electronic Mail (SmtP, Pop, Imap, Mime) - World Wide Web (Http) - Internet Security And Firewall Design (Ipsec), IPv6	9	10
Total		36	50



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES
Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Outcomes:

Upon the completion of this course, the student will be able to:

1. Develop Internet based network applications efficiently.
2. Scrutinize & solve network related problems.
3. Design and setup network.

Reference Books:

- (1) Internetworking with TCP/IP (Volume – I), Duglas E Comer, PHI, 4th Edition.
- (2) Java Network programming, Elliotte Rusty Harold, O'Reilly, 2nd Edition.

Additional Reference Books:

- (1) TCP/IP Protocol Suite, Forouzan, TMH, 4th Edition
- (2) The Complete Reference Java 2, 5th Edition. (Herbert Schildt), Tata McGraw Hill.

Subject Code: MCA 261 **Subject:** TCP/IP Protocol Suite
Practicals per week (hours) : 4
Total Marks (Practical Exam) : 50

Topics to be covered in Practical Sessions

Sr. No.	Topics to be Covered	No. of Practicals
1.0	Core Java: IO Streams, AWT (Event delegation Model - Only Common Controls)	8
2.0	Networking programs - Simple Client Server Based on Default Servers	8
3.0	Programs for FTP, Telnet, and Chat	10
4.0	Programs for HTTP and talk Client & Servers are to be implemented trivially.	10
	Total	36



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Second Year MCA :

Trimester VI

Subject Code: MCA 262

Subject Name: Open Sources Technologies

Lectures per week (hours)	: 3 Lectures + 1 Tutorial
Practical per week (hours)	: 4 Practicals
Internal Assessment	: 50 Marks
External Assessment	: 50 Theory + 50 Practical Marks
Total Credits	: 8

Prerequisite: Knowledge of HTML and DHTML with basic programming concept.

Aim:

The course is aimed to give knowledge of dynamic website development using open source technology.

Objectives:

- (1) To understand concept of open source technology and its benefits.
- (2) To make students familiar about web server and its working.
- (3) To learn to manage and access MYSQL database.

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	Introduction of Open Source Technologies. Introduction to various Open Source Technologies. Benefits of Open Source Technology over proprietary software's, Types of Open Source Technologies, Installation of PHP /MySQL /Apache, Introduction of scripting, Syntax – Variables – Control Structure and Functions in PHP, Passing information in PHP (GET, POST).	9	08
Unit II	String, Array and Number Handling in PHP Strings – Functions in PHP, Creating – Retrieving – Inspecting – Deleting – Iteration using Arrays, Numerical types, Mathematical Operators, Mathematical functions. MySQL Administration Basic MySQL commands, Managing MySQL using PhpMyAdmin Tool, Import and Export.	9	10
Unit III	Integration of PHP 6 and MySQL 5.0 Connecting – Making Queries- Fetching datasets – Error checking using MySQL, Creating MySQL databases with PHP, Data types – Functions in MySQL Performing Database Queries, Integrating Web Forms and Databases, Stored Procedure and Stored Functions.	7	16



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Unit IV	Advanced PHP	11	16
	OOP features in PHP, Transformation of Arrays, Regular Expression in PHP, Cookies and Sessions in PHP, Sending Email with PHP, File reading and writing in PHP.AJAX and its implementations for rich User Interface.		
	Total	36	50

Outcomes:

Upon the completion of this course, the student will be able to:

1. Convert existing static website to dynamic website by embedding PHP.
2. Apply critical concept like session tracking and session management for dynamic website development.
3. Develop effective web application using PHP and MYSQL rapidly.

Reference Books:

1. PHP6 and MYSQL Bible, Steve Suehring, Tim Converse and Joyce Park, Willey India Edition, 1st Edition.

Additional Reference Books:

1. Beginning PHP, APACHE, MYSQL Web development, Narmore, Gerner, Willey Dreamtech India Pvt. Ltd., 1st Edition.
2. Sams Teach Yourself PHP, MySQL and Apache All in One, Julie Meloni, Pearson Education, 4th Edition.
3. MYSQL Bible, Steve Suehring, Willey India Edition, 1st Edition.
4. PHP and MYSQL Projects, Valade, Willey Dreamtech India Pvt. Ltd., 1st Edition.
5. Developing PHP/MySQL websites with Dreamweaver MX, Downes-Powel, Dream Tech Press, 1st Edition.
6. Macromedia studio MX Bible, Evans, Willey India Dream Tech Pvt. Ltd, 1st Edition.



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Subject Code: MCA 262 **Subject Name:** Open Source Technologies
Practical per week (hours) : 4
Total Marks (Practical Exam) : 50

Topics to be covered in Practical Sessions

Sr. No.	Topics to be Covered	No. of Practical
1.0	Developing Web Pages 1.1 HTML 1.2 DHTML using CSS 1.3 Exploration of Dreamweaver for web page design. 1.4 Use of Form tag in HTML/DHTML 1.5 Embedding PHP with HTML 1.6 Passing information using PHP	12
2.0	Integration of PHP / MySQL 2.1 Database management using PhpMyAdmin tool. 2.2 Making connection with database using PHP script. 2.3 Creating dynamic table. 2.4 Using OOP features in PHP script. 2.5 Using session and cookies in PHP script. 2.6 Using file handling in PHP script.	12
3.0	Development of dynamic website. (Various web sites will be given to students in group)	12
	Total	36



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Second Year MCA :

Trimester VI

Subject Code: MCA 263 **Subject Name:** Elective – I (Linux Kernel Programming)

Lectures per week (hours)	: 3 Lectures + 1 Tutorial
Practicals per week (hours)	: 4
Internal Assessment	: 50 Marks
External Assessment	: 50 Theory + 50 Practical Marks
Total Credits	: 8

Prerequisite: Basic knowledge of Linux Operating Systems. Students are expected to have a working knowledge of the C programming language.

Aim:

This course is aimed to introduce the concept of Linux internals and Kernel programming.

Objectives:

- (1) To familiarize students with the Compilation of Kernel
- (2) To build and run a new linux kernel Module
- (3) To make familiar with kernel configuration

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	Introduction to Linux - OS Compiling the kernel Building and running a new linux kernel	9	12
Unit II	Issues in kernel configuration. The care and feeding of loadable kernel modules	9	13
Unit III	Writing and running your first kernel module Working with Makefile	9	12
Unit IV	Building a “vmlinux” file Header files Building a new Kernel	9	13
	Total	36	50

Outcomes:

Upon the completion of this course, the students will be able to:

1. Develop kernel modules
2. Customize the Linux Kernel

Reference Books:

- (1) Kernel Linux Programming, 3/E, beck, Pearson Education India
- (2) Linux Kernel Internals, Michael Beck, Addison-Wesley, 2nd Edition



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Additional Reference Books:

- (1) Understanding the Linux Kernel, Daniel Pierre Bovet, Marco Cesati, O'Reilly Media 3rd Edition

Subject Code: MCA 263 **Subject Name:** Elective – I (Linux Kernel Programming)

Practicals per week (hours) : 4

External Assessment : 50 Practical Marks

Topics to be covered in Practical Sessions

Unit No.	Topics to be Covered	No. of Lectures
Unit I	Building and running a new linux kernel	9
Unit II	Kernel configuration and building	9
Unit III	Writing and loading your very own module	9
Unit IV	Building a “vmlinux” file Building a new Kernel	9
	Total	36



Second Year MCA :

Trimester VI

Subject Code: MCA 263

Subject: Advanced Software Engineering using IBM Rational Suite

Lectures per week (hours) : 3 Lectures + 1 Tutorial

Practicals per week (hours) : 4

Internal Assessment : 50 Marks

External Assessment : 50 Theory + 50 Practical Marks

Total Credits : 8

Prerequisite: OOAD using UML

Aim:

The course is aimed to learn and apply best practices of software engineering using IBM Rational Suite CASE tools and practical case study based approach

Objectives:

1. To learn and apply best practices of software engineering by applying them on case studies of software projects.
2. To learn and use IBM Rational Suite as Case tool for applying software engineering best practices and Rational Unified Process (RUP).
3. To learn how to manage and track software requirements using CASE tools.
4. To learn Rational Unified Process and IBM tools and technology for forward engineering and reverse engineering.
5. To learn software testing concepts and automation testing using IBM Rational Robot.

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	<p>Introduction to Software Engineering Best Practices and IBM Rational Suite Symptoms of software development problems and their root causes, Best practices of software engineering, Develop iteratively: waterfall model v/s iterative development, risk profiles Manage requirements: aspects of requirements management and traceability Use component architectures: What is a component, purpose and advantage of using component based architecture, Model visually: why model visually, visual modeling with UML and UML diagrams Continuously verify quality: software problems, their correction costs, testing dimensions of quality, FURPS (functionality, usability, reliability, performance and supportability), test each iteration and test suites,</p>	9	10



Manage change: configuration management, change tracking, version control

Introduction to IBM Rational Suite, components of IBM Rational Suite, integrated use of different CASE tools in software engineering

Introduction to Rational Unified Process (RUP)

Achieving best practices through RUP process, RUP process, guidelines, phases, iterations and disciplines of RUP, RUP organization by time, RUP organization by content.

Unit II **Software Requirements Management using Rational Requisite Pro** 9 10

Understanding requirements, functional and non-functional requirements, identifying basic flow and alternative flows, Using IBM Rational Requisite Pro as CASE tool for managing requirements, adding requirements, document types – vision, glossary, supplementary specification, use case specification, stakeholders request document, track relationship between requirements, creating relationships (traces) between requirements and model elements

Case Study

Consider Problem statement of a system, vision, identifying features and requirements, functional, non-functional, identify actors, subsystems and adding different requirements in Requisite Pro, identify basic and alternative flows, map requirements to use case and create traceability using Requisite Pro.

Unit III **Applying Unified Process for Analysis and Design using IBM Rational Software Architect (RSA)** 9 18

Introduction to IBM Rational Software Architect, basic user interface, projects and task, modeling perspectives and views, creating and organizing projects and models, Analysis v/s design models, creating use case model and activity diagram using requirements from Requisite Pro, creating design model, Use case realization for developing solution using sequence, communication and class diagram in IBM RSA.

Case Study

Convert requirements to analysis model, convert analysis model to design model, Use case realization, design model to Java project code and using development features of RSA, using rapid application development features of RSA to complete the application.



Unit IV **Software Testing using IBM Rational Robot** 9 12

Introduction to testing, types of testing, functional v/s non-functional testing, manual testing and automated testing.

Test Cases

What is Test case, its use, format of test case, writing test cases, executing test cases and results

Functional and Automation Testing using Rational Robot and Rational Test Manager

Introduction to Rational Robot and its features, Introduction to test manager and projects, test planning, test scripts and test suites, test automation, recording a test script and playback, adding verification points, comparing results of test script, types of verification points, Using Data pool for data driven testing using Rational Test Manager, taking data from file, adding data pool commands to a GUI script.

Total 36 50

Outcomes:

Upon the completion of this course, the student will be able to:

1. Apply software engineering best practices to real life projects
2. Proficiency in using IBM Rational Suite Case tools for enhancing quality in software within time and budget constraints.

Reference Books:

- (1) Essentials of IBM Rational Requisite Pro v7.0, Student Manual, IBM Rational University, 2006.
- (2) Essentials of IBM Rational Software Architect (RSA), v7.0, Student Manual, IBM Rational University, 2007.
- (3) Essentials of Visual Modeling with UML 2.0, Student Manual, IBM Rational University, 2004.
- (4) Mastering Object Oriented Analysis and Design with UML 2.0, Student Manual, IBM Rational University, 2004.
- (5) Essentials of functional testing with IBM Rational Robot, Student Manual, IBM Rational University, 2004.
- (6) Essentials of Rational Unified Process (RUP), Student Manual, IBM Rational University, 2007.



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Additional Reference Books:

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education, 1st Edition, 2005.
2. Visual Modeling with IBM Rational Software Architect and UML: developerWorks Series, Terry Quatrani and Jim Palistrant, IBM Press, 2006.
3. UML 2 and the Unified Process, J Arlow and I Neustad, Pearson Education Limited, 2nd edition, 2007.
4. Software Engineering: A Practitioner's Approach, Roger S. Pressman, McGraw Hill Publication, 7th Edition, 2009.

Subject Code: MCA 263

Subject: Advanced Software Engineering using IBM Rational Suite

Practicals per week (hours) : 4

Total Marks (Practical Exam) : 50

Total Credits : 8

Topics to be covered in Practical Sessions

Sr. No.	Topics to be Covered	No. of Practicals
1.0	Introduction to IBM Rational Suite tools and Rational Unified Process (RUP) Rational Suite as complete lifecycle solution, Study of Rational Unified Process (RUP) structure and navigation facilities of RUP, RUP process, guidelines, phases, iterations and disciplines of RUP, student exploration of RUP knowledge base.	04
2.0	Software Requirements Management using Rational Requisite Pro Understanding requirements, functional and non-functional requirements, identifying basic flow and alternative flows, Using IBM Rational Requisite Pro as CASE tool for managing requirements, adding requirements, document types – vision, glossary, supplementary specification, use case specification, stakeholders request document, track relationship between requirements, creating relationships (traces) between requirements and model elements Case Study Consider Problem statement of a system, vision, identifying features and requirements, functional, non-functional, identify actors, subsystems and adding different requirements in Requisite Pro, identify basic and alternative flows, map requirements to use case and create traceability using Requisite Pro.	06



3.0

Applying Unified Process for Analysis and Design using IBM Rational Software Architect (RSA)

14

Introduction to IBM Rational Software Architect, basic user interface, projects and task, modeling perspectives and views, creating and organizing projects and models, Identify the structure of the following Rational Software Architect model templates: Use-case model, Analysis Model, Design model, Deployment model, Analysis v/s design models, creating use case model and activity diagram using requirements from Requisite Pro, creating design model, Use case realization for developing solution using sequence, communication and class diagram in IBM RSA.

Case Study

Convert requirements to analysis model, convert analysis model to design model, design model to Java project code and using development features of RSA, using rapid application development features of RSA to complete the application.

4.0

Software Testing using IBM Rational Robot

12

Introduction to testing and IBM Rational Robot, types of testing, functional v/s non-functional testing, manual testing and automated testing.

Writing Test Cases

What is Test case, its use, format of test case, writing test cases, executing test cases and results

Functional and Automation Testing using Rational Robot and Rational Test Manager

Introduction to Rational Robot and its features, Introduction to test manager and projects, test planning, test scripts and test suites, test automation, recording a test script and playback, adding verification points, comparing results of test script, types of verification points, Using Data pool for data driven testing using Rational Test Manager, taking data from file, adding data pool commands to a GUI script.

Total

36



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Subject Code: MCA 263

Subject: Artificial Intelligence

Lectures per week (hours)	: 3 Lectures + 1 Tutorial
Practicals per week (hours)	: 4
Internal Assessment	: 50 Marks
External Assessment	: 50 Marks
Total Credits	: 8

Prerequisite: Any programming language, data structures.

Aim:

The course is aimed to introduce the artificial intelligence and expert system development.

Objectives:

- (1) To understand the concept of artificial intelligence.
- (2) To make students familiar to Prolog or Lisp.

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	Problem formulation, Problem Definition – Production systems, Control strategies, Search strategies. Problem characteristics, Production system characteristics – Specialized production systems. Problem solving methods – Problem graphs, Matching, Indexing and Heuristic functions – Measure of performance and analysis of search algorithms - Game playing.	9	10
Unit II	Knowledge representation , Knowledge representation using Predicate logic, Introduction to predicate calculus, Resolution, Use of predicate calculus, Knowledge representation using other logic. Structured representation of knowledge - Basic plan generation systems – Strips – Advanced plan generation systems – K strips – D Comp. Expert systems – Architecture - Roles – Knowledge Acquisition – Meta knowledge, Heuristics - Knowledge representation – Production based system, Frame based system.	9	15
Unit III	Inference – Backward chaining, Forward chaining,	6	10



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Rule value approach, Fuzzy reasoning – Certainty factors, Bayesian probability - Strategic explanations – Why, Why not and how explanations. Learning – Machine learning, adaptive learning - Typical expert systems., **Artificial Neural Networks**

Unit IV	Prolog OR Lisp Programming	12	15
	Natural Language Understanding		
	Introduction to Expert System		
	Total	36	50

Outcomes:

Upon the completion of this course, the student will be able to:

1. Develop intelligence applications.
2. Design and develop knowledge based application.

Reference Books:

- (1) Artificial Intelligence, Elaine Rich and Kevin Knight, TMH (2nd Edition).
- (2) Artificial Intelligence, George F Luger, Pearson Education (5th Edition)

Additional Reference Books:

- (1) Artificial Intelligence: A Modern Approach, Stuart Russell and Peter Norvig, Prentice Hall (2nd edition)
- (2) Principles of Artificial Intelligence, N.J. Nilsson, Narosa.

Subject Code: MCA 263 **Subject:** Artificial Intelligence
Practicals per week (hours) : 4
Total Marks (Practical Exam) : 50

Topics to be covered in Practical Sessions

Sr. No.	Topics to be Covered	No. of Practical
1.0	Project development using LISP or Prolog	36
	Total	36



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Subject Code: MCA 263

Subject Name: Elective – I (Computer Graphics)

Lectures per week (hours)	: 3 Lectures + 1 Tutorial
Practicals per week (hours)	: 4
Internal Assessment	: 50 Marks
External Assessment	: 50 Theory + 50 Practical Marks
Total Credits	: 8

Prerequisite: Students are expected to have a basic Knowledge of common peripheral input devices and output displays and should have basic knowledge of the programming language and basic data structures.

Aim:

This course is aimed to provide basic principles needed to design, use and understand computer graphics system

Objectives:

- (1) To familiarize students with various hardware and software components of graphics system
- (2) To guide students with fundamental algorithms for the representation and display of two-dimensional graphics objects.
- (3) To introduce two-dimensional geometric transformations and viewing algorithm
- (4) To understand three-dimensional techniques and representation, transformation and viewing of three-dimensional object

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	A Survey of Computer Graphics Computer-Aided Design, Presentation Graphics, Computer Art, Entertainment, Education and Training, Visualization, Image Processing, Graphical User Interfaces Overview of Graphics Systems Video Display Devices, Raster Scan Systems, Random Scan Systems, Introduction to input devices Output Primitives-1 Points and Lines, Line-Drawing Algorithm (DDA and Bresenham), Loading the Frame Buffer, Circle-Generating Algorithm, Inside Outside Test, Boundary Fill Algorithm, Flood Fill Algorithm	9	12
Unit II	Attributes of Output Primitives Overview of Line and Curve Attributes, Color and	7	13



	Two-Dimensional Geometric Transformation Basic Transformation – Translation, Rotation, Scaling Matrix Representation and Homogeneous Coordinates, Composite Transformation, General Pivot Point Rotation, General Fixed Point Scaling, Reflection and Shear		
Unit III	Two-Dimensional Viewing The Viewing Pipeline, Viewing Coordinate Reference Frame, Window to Viewport Transformation, Clipping Operations – Point Clipping, Line Clipping – Cohen – Sutherland, Liang – Barsky Line Clipping, Splitting Concave Polygons, Polygon Clipping – Sutherland – Hodgeman Polygon, Weiler-Atherton Polygon Clipping Graphical User Interface and Interactive Input Methods The User dialogue, Windows and Icons, Accommodating Multiple Skill Levels, consistency, Minimizing Memorization, Backup and Error Handling, Feedback Three-Dimensional Concepts Three-Dimensional Display Methods	9	13
Unit IV	Three-Dimensional Object Representation Polygon Surfaces and Tables, Plane Equations, Spline Representations, Parametric and Geometric Continuity Conditions, Overview of Cubic Spline Interpolation Methods, Bezier Curves and Surfaces Three-Dimensional Geometric and Modeling Transformation Translation, Rotation, General Three-Dimensional Rotations, Overview of Scaling and Reflection Three-Dimensional Viewing Viewing Pipeline, Viewing Coordinates, Projections – Parallel and Perspective Projections	11	12
	Total	36	50

Outcomes:

Upon the completion of this course, the students will be able to:



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

1. Use algorithms for representation and display of two-dimensional graphics objects
2. Efficiently use programming techniques to implement graphics routines for graphics application
3. Apply three-dimensional technique for three-dimensional representation

Reference Books:

- (1) Computer Graphics, C Version, Hearn and Baker, Pearson Education, 2nd Edition
- (2) Linux Administration Handbook, Evi Nemeth, Garth Snyder, 2nd Edition, Pearson Edition Asia.

Additional Reference Books:

- (1) The 'C' Odyssey C++ and Graphics, Meeta Gandhi, Tilak Shetty and Rajiv Shah, First Edition
- (2) Computer Graphics, V K Pachghare, Laxmi Publication Pvt Ltd, Second Edition

Subject Code: MCA 263 **Subject Name:** Elective – I (Computer Graphics)
Practicals per week (hours) : 4
Total Marks (Practical Exam) : 50

Topics to be covered in Practical Sessions

Unit No.	Topics to be Covered	No. of Practicals
Unit I	Line and Circle drawing objects using different algorithms and OpenGL functions	8
Unit II	Fill area implementations using OpenGL and 2D Transformation (translation, rotation, scaling) other transformation (shearing and reflection), composite transformation	16
Unit III	Point and Line Clipping implementation using algorithms and OpenGL functions	12
Total		36



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Subject Code: MCA 263 Subject Name: Elective – I (Search Engine Optimization)

Lectures per week (hours)	: 3 Lectures + 1 Tutorial
Practicals per week (hours)	: 4
Internal Assessment	: 50 Marks
External Assessment	: 50 Theory + 50 Practical Marks
Total Credits	: 8

Prerequisite: knowledge of Internet, HTML

Aim:

To provide the knowledge of search engine Optimization using On Page and off page optimization

Objectives:

- (1) To understand the concept and mechanism of Search Engine Optimization.
- (2) To understand various Methods of on page optimization.
- (3) To understand various Methods of off page optimization.
- (3) To understand analytics on search engine optimization.

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	Basics of Search Engine Optimization Basics of Internet - Domain Name, Hosting, DHTML Introduction to search Engines Classification of search engines, Working of search engines, How search engines rank pages? Requirement Gathering and Analysis Business Anlalysis, Competitor Analysis, Keyword Research and Analysis	9	12
Unit II	On Page Optimization Website planning & Structure, Landing Page Optimization Optimization - Tuning the pages - Key Concepts – Prominence, Weight, Density, Proximity, Frequency Optimization of HTML Elements - Title & Heading Tags, Meta Keywords & Description Tags, Image Alt text & Anchor text, Filenames, JavaScript, CSS & Tables Content Copywriting & Optimization, Rich Media Content & Search Engine Optimization Auditing and Improving the Website - Detecting and	9	13



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

	fixing site Visibility Issues, Detecting and fixing site Usability Problems Sitemap Creation & Submission, Robots.txt Creation & Maintenance, Static & Dynamic Websites, Canonical Tags		
Unit III	Off Page Optimization Submission of website to search engines, directories, pay-for-performance search engines. Recovering from Supplemental Results / Banned Site Link Marketing - Link popularity and Quality, SERP, Page rank, local rank, Link building strategies and Techniques, Effects of Press Releases, Article Submissions, Blog Submissions DMOZ vs. Directory Submissions, Social Media Optimization, Techniques to avoid or use at your own risk(Search Engine Spamming) - Black hat SEO – White hat SEO, Spamming Issues – Do's & Don'ts, Code of Ethics	9	13
Unit IV	Introduction to online Advertising Pay per click advertising – Introduction and Major PPC Providers. SEO Tools Keyword Research - Google Adwords External Keyword Research Tool, Google Insights for Search, Google, Yahoo, Bing & Ask.com Suggest Tool, Google Webmaster Central, Yahoo Siteexplorer, Web Analytics Monitoring Google Analytics, Google Webmaster Central, Yahoo Siteexplorer, Bing Webmaster	9	12
	Total	36	50

Outcomes:

Upon the completion of this course, the students will be able to:

1. familiarize with various Methodology of search engine optimization
2. Students will be able to optimize one website using search engine optimization.

Reference Books:



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

- 1) Search Engine Optimization An Hour a Day, Jennifer Grappone, Gradiva Couzin, Sybex(John Wiley and sons)
- 2) The Art of SEO, Eric Enge, Stephan Spencer, Rand Fishkin, Jessie C. Stricchiola, O'Reilly Media, Inc.
- 3) Search Engine Optimization Bible, 1st Edition, Jerri L. Ledford, Wiley

Subject Code: MCA 263 **Subject Name:** Elective – I (Search Engine Optimization)

Practicals per week (hours) : 4

Total Marks (Practical Exam) : 50

Topics to be covered in Practical Sessions

Sr. No.	Topics to be Covered	No. of Practicals
1	Apply Search Engine Optimization on Website On Page Optimization Off Page Optimization Analytics on Optimization	36
	Total	36



Subject Code: MCA 264

Subject: Dissertation

Lectures per week (hours) : 4 Tutorial

Practicals per week (hours) : 4

Internal Assessment : 50 Marks

External Assessment : 150 Marks

Total Credits : 8

Aim:

To provide experience to the students in analyzing, designing, developing innovative applications or research oriented projects

Objectives:

Dissertation aims to provide a real opportunity to the students to explore a subject of their interest from within or outside the course curriculum. As a part of dissertation, the student can

- Review of ongoing research work published in reputed journals or proceedings of conferences of repute
- Make an initial attempt to do some innovative or research oriented work under the guidance of faculty member.
- Present the study/results/system outputs of some innovative applications or experiments in case of research project
- Study and analysis of recent and emerging trends in computer, information and communication technology

Guidelines

- Dissertation projects can be of following types:
 - Study and analysis of recent and emerging trends in computer, information and communication technology
 - Review and literature study of ongoing research work published in reputed journals or proceedings of conferences of repute
 - Design of model, framework, architecture or algorithm for specific research topic.
 - Innovation applications on latest tools and technology with innovative functionality and features, or new ideas or solution to solve problems.
 - Students have to work in the project in teams (maximum 2 students).
 - The Student project teams will be assigned to internal project guides.
 - Students have to give periodic project reviews about the status and progress of their project to their internal guides.
-
- The projects may involve part or all the system development life-cycle phases.



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

- Student has to prepare a dissertation report in which all the details about the project have to be documented.

Evaluation

- The internal evaluation will be on the basis of periodic reviews and internal presentation of the analysis and design documentation of the dissertation.
- External evaluation will be on the basis of final dissertation presentation and the dissertation report prepared by the students.
- Evaluation of innovative/research projects will be on the basis of efforts applied, literature study, methodology, results, conclusion and due weightage will be given to literature survey, analysis, model, design, architecture or algorithm developed. In such projects, number of screens or MIS reports or database design will not be the criteria for evaluation.

If You Can



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

*If you can keep your head when all about you
Are losing theirs and blaming it on you,
If you can trust yourself when all men doubt you,
But make allowance for their doubting too;

If you can wait and not be tired by waiting,
Or being lied about, don't deal in lies,
Or being hated, don't give way to hating,
And yet don't look too good, nor talk too wise:

If you can dream and not make dreams your master;
If you can think - and not make thoughts your aim;
If you can meet with Triumph and Disaster
And treat these two impostors just the same;

If you can bear to hear the truth you've spoken
Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
And stoop and build 'em up with worn-out tools:

If you can make one heap of all your winnings
And risk it on one turn of pitch-and-toss,
And lose, and start again at your beginnings
And never breathe a word about your loss;

If you can force your heart and nerve and sinew
To serve your turn long after they are gone,
And so hold on when there is nothing in you
Except the Will which says to them: 'Hold on!'

If you can talk with crowds and keep your virtue,
Or walk with Kings - nor lose the common touch,
If neither foes nor loving friends can hurt you,
If all men count with you, but none too much;

If you can fill the unforgiving minute
With sixty seconds' worth of distance run,
Yours is the Earth and everything that's in it,
And - which is more - you'll be a Man, my son!*

“The man who has confidence in himself gains the confidence of others.”