Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
37	IT 51	Advanced Internet Technology	30	70
Objective: To provide extension to web development skills acquired in second semester, so as to enhance the capability to develop web applications.				

UNIT	Unit Details
UNIT-1	**Internet Basics:** Overview of Internet, history, web system architecture, Uniform Resource Locator, HTTP protocol basics, HTTP request & response, Cookies and Sessions Basics, Introduction to MVC Architecture
UNIT-2	**HTML5:** Introduction and features, Elements: Semantic and non semantic, Attributes, HTML5 Forms: Input types, Form elements and Form Attributes, Graphics: Canvas, Scalable Vector Graphics, Multimedia: Audio, Video, Geolocations, HTML5 web storage, Introduction to HTML5 web Workers.
UNIT-3	**CSS 3:** Selectors, Box Model, Backgrounds and Borders, Image Values and Replaced Content, Text Effects,2D/3D Transformations, Animations, Multiple Column Layout, User Interface
UNIT-4	**Advanced PHP:** Object Oriented PHP: Classes, Objects, Constructors, Destructors, Inheritance, Interfaces, Dynamic Images: Creating & Displaying Images, Drawing Lines, Rectangle, Polygon, Ellipses, text, Applying Color fills, Exception Handling: Introduction, try, catch, throw, Custom Exceptions, Multiple Exceptions, Regular Expressions: POSIX Regular Expression functions, Perl Compatible Regular Expressions (PCREs), Introduction to PHP Extension and Application Repository (PEAR)
UNIT-5	**Ajax**: Introduction, XMLHttpRequest object and its methods, Cross Browser Usage, Ajax Request, Ajax Response, Ajax Events, Ajax and XML file, Ajax and PHP, Ajax and databases.
UNIT-6	**JQuery:** Introduction, Fundamentals of JQuery, Selectors, Methods to access Attributes, Traversing methods, Manipulators, Events, JQuery Animation Effects, Ajax and JQuery
UNIT-7	**Content Management System** Introduction to CMS –Setting site goals; Identifying target audiences, Wireframing and planning site function and flow
UNIT-8	**Joomla:** Introduction, features & benefits to JOOMLA ,Installation and Configuration, Creating and Configuring Menus, Installing and Configuring Templates

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	PHP6 and Mysql Bible	Steve Suehring, Tim Coverse, Joyce Park	Wiley-India Publication	1st Ed
2	The complete Reference PHP	Steven Holzner	McGraw Hill Publication	1st Ed
3	PHP in 24 Hours	Matt Zandstra	SAMS TechMedia	1st Ed
4	HTML5, CSS3, Ajax, PHP, Jquery	Kogent Learning Solutions Inc.	Wiley-India Publication	1st Ed
5	Ajax for Dummies	Steve Holzner	Wiley-India Publication	1st Ed
6	Joomla- Start to Finish	Jen Kramer	Wiley-India Publication	1st Ed
7	The Complete Reference: HTML and CSS	Powell	McGraw Hill Publication	5th Ed
8	Beginning Joomla!	Dan Rahmel	Apress	2nd Ed
9	Beginning Ajax with PHP	Lee Banin	Apress	1st Ed

Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
38	IT 52	Software Testing and Quality Assurance	30	70
Objective: This subject will enable student to learn Software Quality measures and Assurance practices used. Also various software testing techniques available through practical approach.				

UNIT	Unit Details
UNIT-1	**Software Quality Assurance:** Quality Concept, Definitions of Quality, QA, SQA, Quality factors, Software Quality Metrics, Process Improvement, Process and Product Quality, The SEI Process Capability Maturity model, ISO, Six-Sigma, Process Classification Need for SQA,SQA Activities, Building blocks of SQA, SQA Planning & Standards
UNIT-2	**Software Reliability & Verification & Validation:** Reliability Measures, Reliability models, Verification & Validation Planning, Software inspections, Automated static Analysis, Clean room Software Development
UNIT-3	**Software Testing Fundamentals:** Testing objectives, Test information flows, Testing lifecycle, Test Cases – meaning, Introduction to Test Case Designing, Test case design techniques.
UNIT-4	**Levels of Testing:** Unit Testing, Integration Testing, System Testing, Acceptance Testing, Alpha testing & Beta testing, Static vs. Dynamic testing, Manual vs. Automatic testing, Testers workbench, 11-steps of testing process
UNIT-5	**Different types of Testing:** Installation Testing, Usability testing, Regression testing, Performance Testing: Load Testing & stress testing, Security testing
UNIT-6	**Static & Dynamic Testing:** Static Testing Techniques, Review types: Informal Review, Technical or peer review, Walkthrough, Inspection, static analysis. Review Meeting, Review Reporting & Record keeping, Review guidelines & Review checklist, Data flow analysis, Control flow analysis, Cyclometric Analysis, Dynamic testing – need & Advantages.
UNIT-7	**Black Box & White Box Testing:** Functional Testing, Equivalence partitioning, BVA, Cause- Effect graphing, Syntax testing (Concept & Test case generation only), Structural Testing, Coverage testing, Statement coverage, Branch & decision coverage, Path coverage, Domain Testing, Non functional testing techniques, Validation testing Activities, Low level testing, High level testing, Black box vs. White Box.

UNIT-8	**Testing specialized Systems and Applications:** Testing object oriented software, Testing Web based Applications, Computer Aided Software testing tools (CAST) (only type & their purpose should be covered)

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Software Engineering	R. Pressmen	Techmax	6th Ed
2	Software Engineering	Sommerville	Katson	2nd Ed
3	Introducing Software Testing	Louise Tamres	Addison-Wesley Longman Publishing Co	1st Ed
4	Effective Methods for software Testing	William Perry	John Wiley & Sons	2nd Ed
5	Software Testing in Real World	Edward Kit	Pearson Education India	1st Ed
6	Software Testing Techniques	Boris Beizer	International Thomson Computer Press	2nd Ed
7	Software quality assurance: Principles and Practices	Nina Godbole	Narosa Publishing	1st Ed

Semester – V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
39	IT 53	Emerging Trends in Information Technology	30	70
Objective: The goal of emerging trends in information technology is to make aware of students about currents trends and technologies.				

UNIT	Unit Details
UNIT-1	**Introduction to Artificial Neural Network:** Human and computers, organization of the brain, biological neuron, biological and artificial models, characteristics of ANN, McCulloch-Pitts model, Artificial neuron model, operations of artificial neuron, types of neuron activation functions, ANN architectures, classification taxonomy of ANN –connectivity, learning strategy (Supervised, Unsupervised, Reinforcement), learning rules.
UNIT-2	**Feed Forward Artificial Neural Network:** Single layer-Introduction, perceptron model, perceptron learning rule, Capabilities and Limitations of perceptron model, Multilayer Perceptron(MLP), Backpropagation algorithm, Pattern Classification using Perceptron, Pattern Classification using MultilayerPerceptron(MLP), Applications of ANN.
UNIT-3	**Introduction to Fuzzy Logic:** Introduction to classical sets-properties, operations and relations, fuzzy sets- fuzzy relations, cardinalities, membership functions.
UNIT-4	**Fuzzy Logic System Components:** Fuzzification, membership value assignment, development of rule base and decision making system, defuzzification to crisp sets, defuzzification methods, Applications of Fuzzy Logic.
UNIT-5	**Introduction to Embedded System:** Feature and type of embedded system, components of embedded system, application of embedded system, palm devices
UNIT-6	**Recent Trends in Embedded Systems:** Processor power, Memory, Operating systems, Communication interfaces and networking capability, Programming languages, Development tools, Programmable Hardware.
UNIT-7	**Biometric Technologies:** Retina Scanning, Facial Recognition, Finger Print scanning, Hand geometry , DNA, RFID, Case Study.
UNIT-8	**Miscellaneous Concepts:** Introduction to Mobile Development Technologies- Android, iPhone, Develop simple "Hello World" mobile application using Android and iPhone.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Neural Networks	Simon Haykin	Pearson	2nd Ed
2	Introduction to Artificial Neural Networks using MATLAB 6.0	Sivanandam, Sumati, Deepa	TMH	2nd Ed
3	Fuzzy Logic	John Yen and Reza Langari	Pearson	1st Ed
4	Introduction to Fuzzy Logic using MATLAB	Sivanandam, Sumati, Deepa	Springer	1st Ed
5	Embedded/ Real-Time Systems	Dr. K.V.K.K. Prasad	DreamtechPress	1sr Ed
6	Embedded System	Raj Kamal	TMH	2nd Ed
7	E- World	Dr. Arpita Gopal	Excel	1st Ed
8	Unlocking Android- A Developers Guide	Frank Ableson	Manning	1st Ed
9	Learning iPhone Programming	Alasdair Allan	O'REILLY	1st Ed

Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
40	IT 54	Artificial Intelligence and Its Applications	30	70
Objective: The goals of AI research include reasoning, knowledge, planning, and learning, natural language processing (communication), perception and the ability to move and manipulate objects.				

UNIT	Unit Details
UNIT-1	**Introduction to Artificial Intelligence:** meaning and concept of Artificial Intelligence, AI Problems, Underlying Assumption of AI and AII Techniques. **Problems, Problem Spaces and Search:** Defining the problem as a state space search, production systems, problem characteristics, production system characteristics, Issues in the design of search programs.
UNIT-2	**Heuristic Search Techniques:** Depth first search, Breadth first search, Generate-and-Test, Hill Climbing, Best-First Search, Problem Reduction, Constraint Satisfaction ,Means-Ends Analysis, A* and AO* Algorithm.
UNIT-3	**Knowledge Representation Issues:** Approaches to Knowledge representation, Issues in Knowledge representation.
UNIT-4	**Using Predicate Logic:** Representing Simple Facts in Logic, Representing Instance and ISA Relationships, Computable Functions and Predicates, Resolution, Natural deduction.
UNIT-5	**Representing Knowledge Using Rules:** Procedural Vs. Declarative Knowledge, Forward Versus Backward Reasoning, Matching.
UNIT-6	**Reasoning and Learning:** What is reasoning? Introduction to Symbolic Reasoning and Statistical Reasoning, What is learning? Root Learning, Learning by taking advice, learning in problem solving.
UNIT-7	**Natural language processing and Expert system:** Introduction, Syntactic Processing, Semantic Analysis, Discourse and Pragmatic Processing, Introduction to expert system, Architecture of expert system, Introduction to MYCIN.
UNIT-8	**PROLOG- The Natural Language of Artificial Intelligence:** Introduction, converting English to prolog facts and rules, goals, Prolog terminology, variables, control structures, arithmetic operators, Matching in prolog

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Artificial Intelligence	Elaine Rich, Kevin Knight	TMH	2nd Ed
2	Introduction to Artificial Intelligence and Expert Systems	D W Patterson	PHI	2nd Ed
3	Artificial Intelligence	Patrick Winston	Person	3rd Ed
4	Artificial Intelligence A modern approach	Stuart Russell	Pearson	2nd Ed
5	Introduction to artificial Intelligence	Rajendra Akerkar	PHI	1st Ed

Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
41	IT 55	Object Oriented Analysis And Design	30	70

Objective: After completing this subject students will be able to Understand the requirements involved in object-oriented system development. Analyze requirements and produce an initial design. This subject also help to Learn to use the essential modeling elements in the Unified Modeling Language Draw the UML diagrams for object-oriented systems by using IBM Rational Rose.

UNIT	Unit Details
1	**Introduction to S/w Development:** Two views of software Developments: SSAD and OOAD. Why Object –Orientation?
2	**Object Paradigm:** Object and classes, Abstraction and encapsulation, Methods and Message Interfaces, Inheritance and Polymorphism.
3	**Object Oriented Methodologies:** Object Oriented Analysis :Coad Yourdon Object oriented Design:Grady Booch, Object Modelling Technique: Rumbaugh, Object Oriented Software engineering : Ivar Jacobson Unified Approach.
4	**Object-Oriented Systems Development process:** Rational Unified Process- Inception, Elaboration, Construction, Transition. Requirements Engineering ,Problem analysis, Understanding Stockholders need, Type of requirements, Use-case Model: Writing Requirements.
5	**Unified Modelling Language:** Introduction to UML, Introduction to UML Diagrams, UML notations- Generalization, Specialization, Aggregation, composition, Associations, Roles, Links, multiplicity, interface.
6	**Analysis:** Use-case Driven Object Oriented analysis, Develop use-case Model, Use-case Description, Documentation, Activity Diagram, Approaches for identifying classes- Noun Phrase approach, Conman Class Pattern approach, CRC approach and Use-Case Driven approach.
7	**Design Phases:** Translating Analysis Concept into Design, Optimizing classes and Objects- The Multi-tiered Architecture View, Object-to-Object Visibility, Sequence Diagram, Collaboration Diagram, Class Diagram, Specifying Object Interfaces, Designing the Data Access layer, Design User Interface layer, Designing System Interfaces, Controls and Security.
8	**Design Refinement:** Designing for Extensibility, Design for reusability, Checking Completeness and correctness.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Object Oriented System Development	Ali Bahrami	McGRAW-HILL	1st Ed
2	Object Oriented Analysis and Design	Mike O'Docherty	WILEY INDIA	1st Ed
3	Object Oriented Modeling and Design With UML	Michael R Blaha & James R Rumbaugh	PEARSON	2nd Ed
4	Object Oriented Analysis and Design using UML	Mahesh P.Matha	PHI	1st Ed
5	Object Oriented Analysis and Design	Grady Booch	PEARSON	2nd Ed
6	Object Oriented Analysis and Design using UML	Srimati H & Sriram H	SCITECH	1st Ed

Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
42	IT E51	Advanced Technology – Elective Cyber Law and IT Security	70	00
Objective: To learn IT security – threats, detection and prevention mechanism. Also to get exposure about different Cyber Laws and provisions.				

UNIT	Unit Details
UNIT-1	**Object and Scope of the IT Act:** Genesis of IT Acts, Object and Scope of the Act. Information Security Management System: Guidelines, Lifecycle, Implementation, pitfalls and benefits.
UNIT-2	**Encryption And Digital Signature:** Symmetric Cryptography, Asymmetric Cryptography, RSA Algorithm, Public Key Encryption, Technology behind Digital Signature, Creating a Digital Signature, Verifying a Digital Signature, Digital Signature and PKI, Digital Signature and the Law.
UNIT-3	**E-Governance and IT Act 2000:** Legal recognition of electronic records, Legal recognition of digital signature, Use of electronic records and digital signatures in Government and its agencies.
UNIT-4	**Certifying Authorities:** Need of Certifying Authority and Power, Appointment, function of Controller, Who can be a Certifying Authority, Digital Signature Certifications, Generation, Suspension and Revocation Of Digital Signature Certificate.
UNIT-5	**Cyber Regulations Appellate Tribunal and Cyber Crimes:** Establishment & Composition Of Appellate Tribunal, Powers of Adjudicating officer to Award Compensation, Powers of Adjudicating officer to Impose Penalty Tampering with Computer Source Documents, Hacking with Computer System, Publishing of Information Which is Obscene in Electronic Form, Offences: Branch of Confidentiality & Privacy Offences: Related to Digital Signature Certificate.
UNIT-6	**Concurrency Control and Reliability:** Concurrency control in centralized database systems, Concurrency control in DDBs, Distributed concurrency control algorithms, Deadlock management Reliability issues in DDBs, Types of failures, Reliability techniques Commit protocols, Recovery protocols.
UNIT-7	**Transaction Management In Distributed Object base Systems:** Additional demands of object base transactions, Transaction model extensions and alternatives, Classification of correctness criteria, Survey of Object base transaction models.

UNIT-8	**Mobile database security:** Mobile database systems introduction and concept related to mobile database and information security.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Cyber Law in India	Farooq Ahmad	Pioneer Books	2nd Ed
2	Information Technology Law and Practice	Vakul Sharma	Universal Law Publishing Co. Pvt. Ltd.	2nd Ed
3	The Indian Cyber Law	Suresh T Vishwanathan	Bharat Law house New Delhi.	2nd Ed
4	Hand book of Cyber & E-commerce Laws	P.M. Bakshi & R.K.Suri	Bharat Law house New Delhi.	4th Ed
5	Guide to Cyber Laws	Rodney D. Ryder	Wadhwa and Company Nagpur.	2007
6	The Information Technology Act,2000	Bare Act	Professional Book Publishers – New Delhi.	4th Ed

Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
42	IT E51	Programming Language Paradigms	70	00
Objective: To learn programming languages structures, components and syntaxes.				

UNIT	Unit Details
UNIT 1	**Language Design Issue:** Short History - Development of early languages, Evolution of software architecture. Role of Programming languages - Attributes of language, Language paradigms, Language standardization. Programming Environment -Effects on language design, Environment framework
UNIT 2	**Impact of machine architecture Operation of Computer:** Computer Hardware- six major parts, Data, Operations, Sequence Control, Data access, Storage management, Operating environment. Firmware Computers, Translators and Virtual architectures - Translator Software simulation.
UNIT 3	**Virtual computers & Binding times:** Language Implementation, Hierarchies of virtual machines, Binding & Binding times, Language Translation Issue - General syntactic Criteria, Syntactic Elements of language, Stages in translation - Analysis of source program, Synthesis of object program.
UNIT 4	**Elementary Data Types:** Properties of types and Object - Data objects, variables and constants, Data types, Declarations, Type checking and type conversion, Assignment and initialization. Scalar data types- Numeric data types, Enumerations, Booleans, Characters. Composite data types- Character strings, pointers and programmer-constructed data objects.
UNIT 5	**Sequence Control:** Implicit & Explicit Sequence control, Sequencing with Arithmetic Expression- Tree structure representation, Execution time representation, Sequence control between statements- Basic statements, Structured sequence control
UNIT 6	**Subprogram Control:** Subprogram Sequence Control - Simple call return subprograms, Recursive sub program, Examples in C & C++, Attributes Of Data Control- Name & referencing environments, Static and dynamic scope, Block structure, Local data & local referencing Environments. Parameter Transmission-Actual and Formal Parameters, Methods for Transmitting Parameters. Explicit Common Environments- Dynamic Scope, State Scope and Block Structure.

UNIT 7	**Storage Management:** Element requiring storage, Programmer and system controlled storage, Static storage management, Heap storage management.
UNIT 8	**Language Summaries:** Language summaries of C++ & JAVA

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Programming Languages	Terrance W. Pratt, Marvin V. Zelkowitz, T. V. Gopal	Pearson Education	4th Ed
2	Programming Languages: Principles and Paradigms	Allen B Tucker	TechMax	2nd Ed
3	Paradigms of Programming	U.K. Tiwari	A.B. Publication	1st Ed
4	Programming Languages Principles And Paradigms	Robert Noonan, Allen Tucker	McGraw-Hill Company	2nd Ed
5	Programming Language Concepts	Ghezzi C & Jazayeri M	Weley	3rd Ed
6	Concepts of programming Languages	Robert W Sebesta	Pearson	7th Ed
7	Programming Language principles & practices	Kenneth C Louden	Thomson	2nd Ed

Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
42	ITE51	Advanced Technology – Elective Unix Internals	70	00
Objective: This is the core subject that student will learn. This subject will teach them To learn Unix Operating system calls and processes and understand them through small programs. This subject will also create foundation for student to learn other complex operating systems concepts.				

UNIT	Unit Details
UNIT-1	**Introduction to UNIX:** Evolution of Unix, Features, System structure, File System, System calls for file I/O, File Sharing, Concept of File descriptor duplication, File Control.
UNIT-2	**Files and Directories**: File status, File types, Permission, ownership and related System call. File system, Links, File times Directory related functions.
UNIT-3	**Standard I/O Library**: Streams, Buffering, open, read & write on streams, Binary I/O, Formatted I/O Temporary Files.
UNIT-4	**Environment of Unix Process:** Process invocation and termination, Environment variables & List Memory Layout of C program & memory management routines.
UNIT-5	**Process control:** Process identifiers, system calls related to Multitasking, Race condition Zombie & Orphan process, system measurement, scaling and scale construction techniques
UNIT-6	**Process relationship &Signals:** Sessions, Controlling Terminal, Job Control haring data among parent & Child using Files, Signal Concepts, Signal handling, Important signals: kill, raise, alarm, pause, and abort.
UNIT-7	**Advanced I/O:** Record Locking, Streams, I/O Multiplexing, Memory Mapped I/O, various Read and write.
UNIT-8	**Inter Process Communication:** Pipes, FIFO, System V IPC (Message Queue, Semaphore, Shared Memory)

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Advanced Programming in the UNIX environment.	W.R.Stevdens	Addison Wesley	3rd Ed
2	The C Odyssey UNIX	Meeta Gandhi	BPB Publications,	3rd Ed
3	UNIX Concepts and Application	sumitabha das	Tata McGraw-Hill	4th Ed
4	UNIX power and tools	Shelley Powers	shroff publishers	3rd Ed

Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
42	IT E51	Advanced Technology – Elective Distributed Database Management System	70	00
Objective: This subject will help to understand distributed databases, data fragmentation, data sites and other techniques used. This subject will also create foundation for student to learn other complex databases.				

UNIT	Unit Details
UNIT-1	**Introduction:** Distributed data processing, What is a DDBMS, Advantages and disadvantages of DDBMS, Problem areas, Overview of database and computer network concepts.
UNIT-2	**Distributed database Management System Architecture**: Transparencies in a distributed DBMS, Distributed DBMS architecture Global directory issues.
UNIT-3	**Distributed Database Design** : Alternative design strategies, Distributed design issues, Fragmentation, Data allocation.
UNIT-4	**Query Processing Issues** : Objectives of query processing, Characterization of query processors, Layers of query processing, Query decomposition, Localization of distributed data.
UNIT-5	**Optimizing Distributed Queries** : Factors governing query optimization, Centralized query optimization, Ordering of fragment queries, Distributed query optimization algorithms.
UNIT-6	**Distributed Object Management:** Object model features, Fundamental object management issues, DOM architectures, Object caching, Object clustering, Object migration, Distributed object base systems.
UNIT-7	**Query Processing & Transaction Management In Distributed Object base Systems :** Problems in accessing distributed objects, Distributed object assembly problem, Strategies for distributed object assembly , The transaction concept, Goals of transaction management, Characteristics of transactions, Taxonomy of transaction models.
UNIT-8	**Concurrency Control**: Concurrency control in centralized database systems, Concurrency control in DDBs, Distributed concurrency control algorithms, Deadlock management.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Principles of Distributed Database Systems.	M.T. Özsu and P. Valduriez	Prentice-Hall	2nd Ed
2	Distributed Object Management	Morgan-Kaufmann	Prentice-Hall	3rd Ed
3	Distributed Databases Principles and Systems	S. Ceri and G. Pelagatti	McGraw Hill Book Company	3rd Ed
4	Advances in Object-Oriented Database Systems	Springer-Verlag	ACM Press	2nd Ed
5	Modern Database Systems - The Object Model, Interoperability, and Beyond.	W. Kim (editor).	ACM Press	1st Ed

Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
42	ITE51	Advanced Technology – Elective Cloud and Green Computing	70	00
Objective: To learn and understand benefits of cloud computing and also to learn consequential benefits of green computing such as reduction in energy consumption and improvement in resource performance and efficiency				

UNIT	Unit Details
UNIT-1	**CLOUD INTRODUCTION:** Cloud Computing Fundamentals,: Cloud Computing definition, Types of cloud, Cloud services: Benefits and challenges of cloud computing, Evolution of Cloud Computing , usage scenarios and Applications , Business models around Cloud.
UNIT-2	**CLOUD SERVICES AND FILE SYSTEM:** Types of Cloud services: Software as a Service - Platform as a Service –Infrastructure as a Service - Database as a Service, Monitoring as a Service, Communication as services. Service providers- Google App Engine, Amazon EC2, Microsoft Azure, Sales force
UNIT-3	**COLLABORATING WITH CLOUD:** Collaborating on Calendars, Schedules and Task Management – Collaborating on Event Management, Contact Management, Project Management – Collaborating on Word Processing ,Databases – Storing and Sharing Files- Collaborating via Web-Based Communication Tools
UNIT-4	**SECURITY, STANDARDS:** Security in Clouds: Cloud security challenges – Software as a Service Security, Common Standards: The Open Cloud Consortium – The Distributed management ,Task Force
UNIT-5	**APPLICATIONS:** Standards for application Developers –Standards for Messaging –Standards for Security, End user access to cloud computing, Mobile Internet devices and the cloud.
UNIT-6	**Green Computing introduction:** What is green computing ?,need for green computing, manufacturing of pc's,green manufacturing
UNIT-7	**Green Product**: energy use of pc ,reducing energy consumption, Energy star, how to save energy while working with internet, ,how to save energy while working with computer
UNIT-8	**Green disposal:** disposal of component, other solution reuse, refurbish, recycling

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Cloud Computing for Dummies	Bloor R., Kanfman M., Halper F. Judith Hurwitz	Wiley India Edition	3rd Ed
2	Cloud Computing Implementation Management and Strategy"	John Rittinghouse & James Ransome	CRC Press	1st Ed
3	Cloud Computing : "A Practical Approach"	Antohy T Velte	McGraw Hill,	2nd Ed
4	Sustainable ICTs and Management Systems for Green Computing	Wen Chen Hu, Naima Kaabouch	IGI Global Snippet	2nd Ed
5	Green Home Computing For Dummies	By Woody Leonhard, Katherine Murray	Wiley India Edition	1st Ed

Semester - V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
43	IT 51L	Software Testing & CASE Tool LAB	50	--

Objective: To make student accustom with various automated tools used for Software Design and Development, Testing, Project Management etc.

Unit Details

1. Use of Case Tools such as **IBM Rational Rose** for system analysis & design
2. Designing UML Diagrams
3. Use of any Manual testing tools
4. Use of any Automated Testing Tools such as **Win Runner**
5. Use of Automated Testing Tool(Selenium)
6. S/W Configuration Management Tool(SCCS).

Note: Student has to check there own developed software through any automated testing tool

Semester – V				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
44	IT 52L	Mini Project based on AIT	50	--

Objective: To develop commercial web based application using the technologies learnt in AIT.

Project Work: This mini project is based on subject Advanced Internet Technology in semester V. Projects such as Online Reservations, Social Networking based on HTML5, Ajax, JQuery, PHP and Joomla, which will give idea to the students about commercial web application development and it will help them for final semester project.

- Project must be done in a group of 2 to 4 students.
- Use Object Oriented Methodology to design system.
- Use any database
- Final evaluation will be done based on
  1. Project Demonstration
  2. Power Point Presentation

The marks of the mini project would be given on the basis of internal assessment of the project as given below.

Sr.No.	**Mini Project Marks Distribution(50)**	
1	Synopsis	5
2	UML diagrams	10
3	Database Design	5
4	Input-Output Design(Forms/Reports)	20
5	Project Report/Viva/ Presentation	10
	Total	**50**

Semester - VI				
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
46	IT 61P	Project Work	200	300

Objective: To develop a commercial applications using different web, mobile or desktop application development technologies learnt during the course. Also the use of OOAD tools and techniques learn by student.

Project Work: This major project is based on any technology (Dynamic website development, Mobile applications or Desktop applications) learnt by students during the course. This project will give hands-on experience on software development.

- Project must be done individually or a group of maximum 2 students.
- Project must include MDI parent for Windows Application and Master Pages for Web & Mobile Application with database connectivity and validations.
- Use MYSQL, Oracle or SQL Server as a Database.
- Final evaluation will be done by:
  1. Project Demonstration
  2. Power Point Presentation
- The marks of the major project would be given on the basis of internal & external examiners assessment of the project as given in the Course Structure.

General Instruction Regarding Preparation of Project Report
For MCA-III Semester – VI

Sr.No	Specifications	Details
1.	Number of copies of project report	1 Institute copy + 1 Company Copy + m copies, where m indicates number of students in a group
2.	Binding	Black color hard binding
3.	Embossing	Golden Color
4.	Page size	A4
5.	Page color	White
6.	Left Margin	1.5 inch
7.	Other Margins (Top, Bottom,	1 inch
8.	Chapter Headings	Times New Roman
9.	Chapter Headings Font Size	18, Bold, Uppercase
10.	Headings Font	Times New Roman
11.	Headings Fond Size	14, Bold, Uppercase
12.	Subheadings Font	Times New Roman
13.	Subheadings Font Size	12,Bold, uppercase
14.	Text Body Font	Times New Roman
15.	Text Body Font Size	12, Normal, Sentences case
16.	Line Spacing	1.5
17.	Header	Project Title, Right Align, Font size 8
18.	Footer	Page Numbers

Format For Title Page : The Guidelines regarding the documentation and scope of project are mentioned here below

A

PROJECT REPORT ON

<TITLE OF THE PROJECT>

FOR

<COMPANY NAME>

SUBMITTED BY

<NAME OF STUDENT/S>

UNDER THE GUIDANCE OF

<NAME OF GUIDE>

SUBMITTED TO

< NAME OF THE UNIVERSITY>

FOR THE PARTIAL FULFILLMENT OF

MCA-III, SEM-VI

Through

<Name of Institute>

<Year>

Project Report Contents :

- Title Page
- Companies Project Completion Certificate
- Guides Project Completion Certificate
- Declaration by student
- Acknowledgement
- INDEX with printed Page Numbers
- **Chapter 1 : Introduction**

  1.1 Organization Profile

  1.2 Existing System and Need for System

  1.3 Scope of Work

  1.4 Operating Environment – Hardware and Software

  1.5 Detail Description of Technology Used
- **Chapter 2: Proposed System**

  2.1 Proposed System

  2.1.1 Feasibility Study

  A. Technical Feasibility
  B. Economical Feasibility
  C. Operational Feasibility

2.2 Objectives of System

2.3 User Requirements

- **Chapter 3: Analysis & Design**

  3.1 Architecture Overview

  3.2 Class Diagram

  3.3 Use Case Diagrams

  3.4 Activity Diagram

  3.5 Sequence Diagram

  3.6 Collaboration Diagram

  3.7. State Transition diagram (If applicable)

  3.8 Deployment & Component Diagram

  3.9 File/ Database Design

- **Chapter 4: User Manual**

  4.1 Operations Manual / Menu Explanation

  4.2 Forms & Reports (With Data)

  4.3 Test Procedures and cases

- **Drawbacks and Limitations**
- **Proposed Enhancements**
- **Conclusions**
- **Bibliography**
- **ANNEXURE**
- **SAMPLE CODE**