M.Sc-(computer Science)

Courses of Study M.Sc Computer Science

S.No	Course code	Title of the Course	CIA Marks	ESE Marks	Total Marks	Credits
	I Semester					
1	34111	Design and Analysis of Algorithms	25	75	100	4
2	34112	Applied Mathematics for Computer Science	25	75	100	4
3	34113	Advanced Java Programming	25	75	100	4
4	34114	Lab – Advanced Java Programming	25	75	100	4
		Total	**100**	**300**	**400**	**16**
	II Semester					
1	34121	Computer System Architecture	25	75	100	4
2	34122	Distributed Operating System	25	75	100	4
3	34123	.Net Programming	25	75	100	4
4	34124	Lab – .Net Programming	25	75	100	4
		Total	**100**	**300**	**400**	**16**
	III Semester					
1	34131	Cryptography and Network Security	25	75	100	4
2	34132	Cloud Computing	25	75	100	4
3	34133	Web Technology	25	75	100	4
4	34134	Lab – Web Technology	25	75	100	4
		Total	**100**	**300**	**400**	**16**
	IV Semester					
1	34141	Data Mining and ware housing	25	75	100	4
2	34142	Mobile Application Development	25	75	100	4
3	34143	Artificial Intelligence and Expert Systems	25	75	100	4
4	34144	Project	25	75	100	4
		Total	**100**	**300**	**400**	**16**
		Grand Total	**400**	**1200**	**1600**	**64**

Detailed Syllabi

SEMESTER I

Course Code	Title of the Course
34111	**DESIGN AND ANALYSIS OF ALGORITHMS**

Course Outcome:

- Able to understand the various algorithmic problem solving methods.

Unit No.	Contents
	BLOCK 1: INTRODUCTION
1	**Introduction**: notion of algorithm, fundamentals of algorithmic problem solving, important problem types, fundamentals of analysis of algorithm efficiency
2	**Asymptotic notations:** Big-oh notation, omega notation, theta notation
3	**Performance analysis:** space complexity, time complexity, pseudo code for algorithms
	BLOCK 2 : MATHEMATICAL ANALYSIS OF NON RECURSIVE ALGORITHMS
4	**Analysis of Recursive algorithms**: algorithms for computing Fibonacci numbers
5	**Empirical analysis of algorithms:** Brute force, selection sort, Bubble sort, sequential sort
6	**Closet-pair and convex-hull problems:** Divide and conquer, merge sort, quick sort, Binary search, Strassens matrix multiplication
	BLOCK 3 : DYNAMIC PROGRAMMING AND SEARCH BINARY TREES
7	**General method:** computing a Binomial coefficient, warshalls and Floyds algorithms, optimal search Binary trees, knapsack problems
8	**Greedy Technique:** General method
9	**Applications :** prims algorithm, kruskals algorithm, dijikstras algorithm
	BLOCK 4 : SORTING AND OPTIMIZATION PROBLEM
10	**Sort and Searching algorithms:** decrease and conquer, Insertion sort, Depth first search and Breadth first search, Topological sorting
11	**Generating combinatorial objects:** Transform and Conquer, presorting, Heap and Heap sort
12	**Optimization Problems:** Reductions, Reduction to Graph Problems
	BLOCK 5 : BACKTRACKING AND GRAPH TRAVERSALS
13	General method: 8 queens problem, sum of subsets, Graph colouring, Hamiltonian cycle, Branch and Bound, assignment problem, knapsack problem, travelling salesman pobles
14	Graph traversals: connected components, spanning trees, NP hard and NP complete problems

Course Code	Title of the Course
34112	APPLIED MATHEMATICS FOR COMPUTER SCIENCE

Course objective

- To understand the basics of normal forms
- To understand the concept of graph theory

Course outcome

- Able to understand the graph theory
- Able to know transportation problem and solutions

Unit No.	Contents
	BLOCK 1: INTRODUCTION
1	Logic : TF statements, connectives, atomic and compound statements,
2	WFF, truth table of a formula,
3	Tautology, tautological implications and equivalence of formulae
	BLOCK 2 : NORMAL FORMS
4	Principal normal forms
5	Theory of inference, open statements, quantifiers, valid formulae and equivalence,
6	Theory of inference for predicate calculus
	BLOCK 3 : GRAPH THEORY
7	Basics concept of graph theory
8	Matrix representation of graphs
9	Trees : Definition, Spanning trees, Rooted trees, Binary trees
	BLOCK 4 : LINEAR PROGRAMMING PROBLEM
10	Mathematical foundations, graphical solutions
11	Slack of variables, simplex method, two phase method
	BLOCK 5 : TRANSPORTATION PROBLEM
12	Transportation table, solutions of transportation problem
13	Testing for optimality, assignment problem
14	The assignment method, special cases in assignment problems

Text Books:

1. Discrete Mathematics – Dr. M.K.Venkataraman, Dr N.Sridharan, N.Chandrasekaran- The National Publishing Company – Reprint 2003 (Unit I, II and III)

2. Operation Research – Kantiswarap, P.K.Gupta, Man Mohan- Sultan Chand & Sons – Reprint 2011.

Course Code	Title of the Course
34113	ADVANCED JAVA PROGRAMMING

Course Objective

- To understand the advanced concepts in Java Programming
- To understand Internetworking using Java Programming

Course Outcome

- Able to write Programs using JDBC concept
- Able to write Servlet Programs

Unit No.	Contents
	BLOCK 1: INTRODUCTION
1	Introduction : JDBC overview, connection class, meta data function
2	SQL Exception, SQL warning
3	Statement, Result set, Other JDBC classes
	BLOCK 2 : INETADDRESS
4	Inetaddress, TCP/IP client sockets, TCP/IP server sockets
5	URL, URL connection, Data grams
6	Client/Server applications using RMI
	BLOCK 3 : BDK AND DESIGN PATTERNS
7	Bean Development Kit, JAR files, Introspection
8	Design Patterns for properties, Events and methods
9	Constrained Properties, Persistence, Customizers
	BLOCK 4 : SERVLETS
10	Life cycle of servlet, Generic Servlet, HTTP servlet
11	Reading Initialization, Parameters, Reading Servlet Parameters
12	Cookies, Session Tracking
	BLOCK 5 : JAPPLET AND AWT CLASSES
13	JApplet, Buttons, Combo, Trees, Tables, Panes
14	AWT Classes, Working with Graphics, Color and Font

Text Books:

1. Patrick Naughton & Herbert Schildt, "The Complete Reference: Java 2", Tata
2. McGraw Hill, 1999. (Chapter - 18, 21, 24, 25, 26, 27)

3. Joseph Weber, "Using Java 2 Platform", Prentice Hall of India, 2000. (Chapter - 39, 40)

Books for Reference:

1. Deitel & Deitel, "Java How to Program", Prentice Hall, 5th Edition ,2002
2. Peter Haggar, "Practical Java: Programming Language Guide", Addison-Wesley Pub Co, 1st Edition, 2000

Course Code	Title of the Course
34114	LAB – ADVANCED JAVA PROGRAMMING

Course Objective:

- To understand to write applet programs
- To understand JDBC application programs

Course Outcome:

Able to develop Client/Server application programs using RMI

- Develop chat server using Java

Unit No.

Contents

BLOCK 1: INTRODUCTION

1

Simple Java program

2

Program using JDBC with create, insert table data

3

SQL Exception, SQL Warning

BLOCK 2 : INETADDRESS

4

Programs using TCP/IP client sockets, TCP/IP server sockets

5

Program with URL, URL connection, Data grams connection

6

Client/Server applications using RMI

BLOCK 3 : BDK AND DESIGN PATTERNS

7

Simple programs using Bean Development Kit, JAR files

8

Program with Design Patterns,

9

Program with Events and methods

BLOCK 4 : SERVLETS

10

Create a servlet to read the parameters

11

Programs using cookies

12

Programs with session tracking

BLOCK 5 : JAPPLET AND AWT CLASSES

13

Programs using JApplet, Buttons, Combo, Trees, Tables,Panes

Programs with AWT Classes, Working with Graphics,Color and Font

Reference Books

1. Joseph Weber," Using Java 2 Platform" PHI ,2000

II Semester

Course Code	Title of the Course
341 21	COMPUTER SYSTEM ARCHITECTURE

Course Objective:

- To understand the computer system architecture, design
- To understand the Instruction Level Parallelism, memory optimizations

Course Outcome:

- Able to learn the computer design
- Able to learn the memory optimization, storage systems

Unit No.	Contents
	BLOCK 1: FUNDAMENTALS
1	Introduction : Definition, trends, power in IC, cost
2	Performance : Dependability, measuring, reporting and summarizing performance
3	Quality: Quality principles of computer design, performance
	BLOCK 2 : ILP CONCEPTS
4	Introduction: concepts and challenges, Basic computer techniques for exposing ILP, reducing branch costs with prediction, data hazards
5	Scheduling : dynamic scheduling, hardware based speculation, multiple issue and static scheduling, advanced techniques for instruction delivery and speculation
6	Limitations of ILP: hardware and software speculation, multithreading
	BLOCK 3 : THREAD LEVEL PARALLELISM
7	Multiprocessor and thread level parallelism: Introduction, symmetric shared memory architecture
8	Performance and architectures: performance of symmetric shared memory multiprocessors, Distributed shared memory architectures
9	Synchronization models: synchronization, model of memory consistency, cross cutting issues

BLOCK 4 : MEMORY HIERARCHY DESIGN

10 Introduction : Optimization of cache performance, memory technology and optimizations

11 Protection: virtual memory and virtual machines

12 Issues : crosscutting issues in the design of memory hierarchies

BLOCK 5 : STORAGE SYSTEMS

13 Introduction : advanced topics in Disk storage, real faults and failures, I/O performance, reliability measures and benchmarks

14 Issues : a little queuing theory, crosscutting issues, designing and evaluating and I/O system, the Internet Archive Cluster

Course Code	Title of the Course
341 22	**DISTRIBUTED OPERATING SYSTEMS**

Unit No.	Contents
	BLOCK 1: FUNDAMENTALS
1	Introduction : what is distributed operating system, Evolutions, models
2	Issues in designing distributed computing system
3	Introduction to computer networks: Network types, LAN, WAN,
	communication protocols, Internetworking, ATM technology
	BLOCK 2 : MESSAGE PASSING
4	Introduction: features, issued in PC message passing, synchronization
5	Buffering, multidatagram messages, Encoding and Decoding
6	Process addressing, failure handling, group communication
	BLOCK 3 : DISTRIBUTED SHARED MEMORY
7	Introduction: General architecture of DSM system, Design and
	implementation issues of DSM, Granularity, structure of shared
	memory consistency models, Replacement strategy, Thrasing
8	Other approaches to DSM, Heterogeneous DSM, advantages
9	Synchronization: Introduction, clock synchronization, Event ordering,
	mutual Exclusion, Deadlock, Election algorithm
	BLOCK 4 : DISTRIBUTED FILE SYSTEM
10	Introduction : Desirable features, file modes, file accessing models
11	File sharing semantics, file caching schemes, file replication
12	Fault Tolerence, atomic transaction, Design principles

BLOCK 5 : SECURITY

13	Introduction : potential attacks to computer system, cryptography, authentication
14	Access control, Digital Signatures, Design Principles

Course Code	Title of the Course
341 23	.NET PROGRAMMING

Course Objective:

- To understand the .NET frameworks
- To understand the object oriented programming concepts in an .Net technology

Course Outcome:

- Able to learn visual basic .Net from basics to file handling
- Able to learn the ADO.Net and security models

Unit No.	Contents
	BLOCK 1: .NET FRAMEWORKS
1	Introduction: CLR, namespace, assemblies, class library
2	Basic Terminology: .Net component, .Net garbage collection
3	Oops concept: class, objects, structures, modules, abstraction, encapsulation, inheritance, polymorphism, overloading, overriding, shadowing
	BLOCK 2 : VISUAL BASIC.NET
4	**Introduction:** Data types, operators, arrays, dynamic arrays, String handling
5	Control statements: Conditional and looping statements, sub procedures and functions
6	Windows Forms: MDI form, events, msgbox, inputbox, Dialogboxes, passing forms, RichTextBoxes, Labels, Link labels
	BLOCK 3 : WINDOWS CONTROLS
7	Introduction: Buttons, checkbox, radio buttons, panel, list boxes, combo boxes, scrollbars, splitters, track bars, pickers, notify icons, timers, menus
8	Tree and list view: toolbars, status bars, progress bars, tab controls
9	Debugging and Error Handling: Types of errors, Exceptions and structured ExceptionHandling
	BLOCK 4 : ASP.NET
10	Introduction: file types, Importing namespaces, usage of Global.asax file, The page class, HttpRequest, HttpResponse, Server Utility

11 Basic web controls: List controls, validation and Rich controls, Data controls, custom controls

12 Overview of AJAX controls

BLOCK 5 : ADO.NET

13 Introduction: Database access in the Internet world, characteristics, Data objects, Data namespace

14 SQL Basics: Data binding controls, Data set, Data table, Data row, data column, data list, data grid

Course Code	Title of the Course
341 24	LAB – .NET PROGRAMMING

Unit No.	Contents
	BLOCK 1: .NET FRAMEWORK
1	Programs using variables, constants and data types
2	Programs using arrays and dynamic arrays
3	Program using control flow statement
	BLOCK 2 : VISUAL BASIC.NET
4	Programs using functions and procedures, MDI forms, events
5	Programs using msgbox, inputbox, dialog boxes, working with multiple forms
6	Anchoring and docking controls, event handling, RichTextBoxes
	BLOCK 3 : WINDOWS CONTROLS
7	Programs using windows common controls
8	Programs using menus, built in dialog boxes, Image lis, tree and list views
9	Programs using toolbars, statusbars, progressbars, tab controls, graphics and file handling
	BLOCK 4 : ASP.NET
10	Writing ASP programs using HttpRequest and HttpResponse
11	Develop an application for ASP web controls, list controls, validation and rich controls, Data controls
12	Develop an application for HTML server controls, custom controls, logging and error handling
	BLOCK 5 : ADO.NET
13	Database applications using ADO.NET
14	Accessing a database using SQL commands, Data binding controls, DataList

Text Book:

1. Visual Basic .Net programming, Steve Holzner, Dreamtech press.
2. The complete reference for ASP.Net, Mathew macdonald, TMH

Books for Reference:

1. Visual Basic .Net programming Bible, Bill Evjen, JasonBeres, Wiley dreamtech press.

III SEMESTER

Course Code	Title of the Course
341 31	CRYPTOGRAPHY AND NETWORK SECURITY

Course Objective:

- To understand the computer security concepts
- To understand the Data Encryption Standard mechanism

Course Outcome:

- Able to know AES, RSA cryptography principles
- Able to know Digital Signatures, E-mail security

Unit No.	Contents
	BLOCK 1: COMPUTER SECURITY INTRODUCTION
1	Introduction: The OSI security architecture, security attacks,
2	security services, security mechanisms, A model for network security
3	Classical Encryption Techniques: symmetric cipher model, substitution techniques
	BLOCK 2 : BLOCK CIPHERS AND DES
4	Block cipher principle, the data encryption standard, The strength of DES,
5	Differential and Linear cryptanalysis, Block cipher design principles
6	Advanced Encryption Standard: Finite Field arithmetic , AES structure, AES transformation function, Implementation
	BLOCK 3 : PUBLIC KEY CRYPTOGRAPHY AND RSA
7	Principles of public-key cryptosystems, The RSA algorithms
8	Other public key cryptosystems: Diffie-Helman key Exchange, Elgamel cryptographic system
9	Elliptic curve cryptography, pseudorandom number generation based on asymmetric cipher
	BLOCK 4 : MESSAGE AUTHENTICATION CODES
10	Message authentication requirements, functions, message authentication Codes
11	Security of MACs, MAC based Hash functions, MAC based ciphers
12	Digital Signatures: ElGamal Digital Signature scheme, schnorr digital

signature schemes, digital signature standard

BLOCK 5 : TRANSPORT LEVEL SECURITY

13 Web security considerations, Socket layer and transport layer and transport layer security

14 Electronic mail security: pretty good privacy, IP security overview, IP security policy, encapsulating security payload

Text Book:

1. William Stallings, “Cryptography and Network Security Principles and Practice”, Pearson, 5th Edition.

Book for Reference:

1. William Stallings - “Data Communication” - Pearson

Course Code	Title of the Course
341 32	CLOUD COMPUTING

Course objective:

- To understand service oriented architecture and virtual storage applications

Course outcome:

- Able to know cloud computing Environments
- Able to know cloud virtualization technology

Unit No.	Contents
	BLOCK 1: CLOUD COMPUTING BASICS
1	Introduction: History, working with cloud computing, pros and cons of cloud computing, Benefits,
2	Developing cloud services, pros and cons of cloud service development, types of cloud service development
3	Discovering cloud services development services and tools
	BLOCK 2 : CLOUD COMPUTING FOR EVERYONE
4	Centralizing Email communications, collaborating to-do lists
5	Collaborating on household budgets, contact lists, communications across Community
6	Collaborating on schedules, collaborating on group project and events, cloud computing for corporation
	BLOCK 3 : CLOUD SERVICES
7	Exploring on-line calendar applications, Exploring online scheduling applications, Exploring online planning and task management
8	Collaborations with event management, contact management, project management, word processing and databases
9	Storing and sharing files and other online content
	BLOCK 4 : CLOUD COMPUTING ENVIRONMENT
10	Classification of cloud Implementation, Amazon web services, IaaS, VMware vCloud, Google AppEngine,PaaS, Windows Azure Platform, SaaS/PaaS, Microsoft Live

11 Comparison of cloud computing platforms

BLOCK 5 : CLOUD VIRTUALIZATION TECHNOLOGY

12 Introduction : Virtualization Defined, Benefits, server virtualization

13 Hypervisor management software, Logical Partitioning, VIO Server, virtual Infrastructure requirements

14 Cloud virtualization: Introduction, storage virtualization, Storage area networks, cloud server virtualization, virtualized Data Centre

Text Book:

1. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.

Book for Reference:

1.Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008.

Course Code	Title of the Course
341 33	WEB TECHNOLOGY

Objective:

- To understand the wide range of web technologies both client side and server side to provide exposure to the students in developing Rich Internet Applications.

Course Outcome:

- Able to know client side and server side programming

Unit No.	Contents
	BLOCK 1: HTML,XHTML AND STYLE SHEETS
1	**Introduction:** HTML, XML and WWW, Basic HTML, document Body, text, hyperlinks
2	Lists, using color and images, tables, multimedia objects
3	Style sheets: using styles, examples, formatting blocks of information
	BLOCK 2 : CLIENT SIDE PROGRAMMING
4	Introduction: Dynamic HTML, Java script, variables, string manipulations, mathematical functions, operators, arrays, functions
5	Regular expressions, cookies and Events
6	Dynamic HTML with Java script: Data validation, messages and confirmations, writing to a different frame, Rollover buttons, moving images
	BLOCK 3 : HOST OBJECTS
7	Browsers and DOM, DOM history and levels, Intrinsic event handling,
8	Representing web Data: XML, Documents and vocabularies, versions and declarations, namespaces
9	Java script and XML: Ajax, DOM based XML processing, SAX,XSL,XSLT,XPATH
	BLOCK 4 : SERVER SIDE PROGRAMMING
10	Java Servlets, history of web applications, The power of Servlets, HTTP servlet basics, the servlet API, page generations
11	The servlet Lifecycle: The servlet alternative, servlet reloading, Init and Destroy, single thread model, background processing, load on startup,

client side caching, server side caching

12 Retrieving information: the servlet, the server, the client

BLOCK 5 : JSP TECHNOLOGY

13 Introduction: Need, HTTP and servlet basics, HTTP request/response model, Servlets, anatomy of a JSP page, JSP application design with MVC

14 Setting up JSP Environment: Installing the JSDK, Installing Tomcat server, testing tomcat, creating, installing, running a JSP page

Text Books:

1. Web Programming: Building Internet applications, Chris Bates, Wiley India
2. Web technologies – A computer science perspective, Jeffrey C Jackson, Pearson Education,2006
3. Java server pages, Hans Bergsten, o'reilly,2010

Reference Books:

1. Robert W.Sebesta "Programming the world wide web" Pearson Education
2. Java servlet Programming, Joson Hunter, o'Reilly,2010
3. Bates, Developing web applications, wiley,2006.

Course Code	Title of the Course
341 34	LAB – WEB TECHNOLOGY

Course Objective:

- To understand the wide range of web technologies both client side and server side to provide exposure to the students in developing Rich Internet Applications.

Course Outcome:

- Able to develop client side and server side programming

Unit No.	Contents
	BLOCK 1: HTML,XHTML,STYLESHEETS
1	Programs using Basic HTML, text and hyperlinks
2	Programs using multimedia objects, XHTML
3	Programs using Style sheets
	BLOCK 2 : CLIENT SIDE PROGRAMS
4	Programs using JavaScript, Dynamic HTML, operators, arrays, cookies
5	Programs using Java script data validation, messages and confirmations
6	Programs using Rollover Buttons, writing to a Different frame, moving images
	BLOCK 3 : BROWSERS AND DOM
7	Programs using Intrinsic event handling, document tree
8	Representing web data, XML
9	Programs using Java script and XML, XSL, XSLT
	BLOCK 4 : SERVER SIDE PROGRAMS
10	Programs with simple Java Servlets
11	Programs with Init and Destroy, single thread model, client side caching and server side caching
12	Programs using Retrieving information from The Servlet-The Server-The Client
	BLOCK 5 : JSP PROGRAMS
13	Programs with simple JSP applications
14	Developing a program to access a database from a JSP page

Text Books:

1. Web Programming: Building Internet applications, Chris Bates, Wiley India
2. Web technologies – A computer science perspective, Jeffrey C Jackson, Pearson Education,2006
3. Java server pages, Hans Bergsten, o'reilly,2010

Reference Books:

1. Robert W.Sebesta "Programming the world wide web" Pearson Education
2. Java servlet Programming, Joson Hunter, o'Reilly,2010
3. Bates, Developing web applications, wiley,2006.

IV SEMESTER

Course Code	Title of the Course
34141	DATA MINING AND WAREHOUSING

Course objective:

- To learn design of data store of warehousing, Retrieving and mining information of warehouse

Course outcome:

- Able to know data mining techniques and trends
- Able to know associative rules, clustering techniques and web mining.

Unit No.	Contents
	BLOCK 1: DATAWAREHOUSING
1	Introduction: definition, architecture, warehouse schema, warehouse server, OLAP operations
2	Data warehouse technology: Hardware and operating system, warehousing software, Extraction tools, Transformation tools
3	Case studies: data warehousing in Government, tourism, Industry, Genomics data
	BLOCK 2 : DATA MINING
4	Introduction: definition, techniques, current trends in data mining
5	Different forms of knowledge: Data selection, cleaning, Integration, Transformation, Reduction and Enrichment
6	Data : types of data, data quality, data preprocessing, measures of similarity and dissimilarity, Exploration, summary statistics, visualization
	BLOCK 3 : ASSOCIATION RULES
7	Introduction: methods to discover association rule, apriori algorithm partition algorithm, pincher search algorithm
8	Dynamic Item set algorithm, FP Tree growth algorithm
9	Classification: Decision tree classification, bayesian classification, classification by Back propagation

BLOCK 4 : CLUSTERING TECHNIQUES

10 Introduction: clustering paradigms, partitioning algorithms, K means & K mediod algorithms, CLARA, CLARANS, Hierarchial clustering, DBSCAN,BIRCH, clustering algorithms, STIRR, ROCK, CACTUS

11 Machine Learning: supervised learning, unsupervised learning, machine learning and data mining

12 Neural networks: Introduction, use of NN, working of NN Genetic algorithm

BLOCK 5 : WEB MINING

13 Introduction : web content mining, web structure mining, web usage mining, text mining, Text clustering, Temporal, spatial, visual data mining, knowledge mining

14 Tools and techniques: using weka, Rapidminer and matlab

Text Book:

1. Arun K Pujari, Data mining Techniques, University press,2008
2. CSR Prabhu, Data warehousing-concepts, techniques and applications, Prentice Hall of India.

Book for Reference:

1. Jaiwan han, Michelinne Kambar, Data Mining: Concepts and Techniques, Harcourt India/Morgan Kauffman Publishers ,2008
2. Alex Berson, Stephen J Smith, Data warehousing, data mining&OLAP, TMH, 2004.

Course Code	Title of the Course
34142	MOBILE APPLICATION DEVELOPMENT

Course objective:

- To provide an overall knowledge about mobile devices, communication methodologies and its application development

Course outcome:

- Able to know mobile ecosystem, mobile information architecture
- Able to know J2ME architecture and development and case studies

Unit No.	Contents
	BLOCK 1: MOBILE ECOSYSTEM
1	Introduction: The mobile ecosystem, operators, networks
2	Devices : platforms, operating systems
3	Applications : application frameworks, applications, services
	BLOCK 2 : MOBILE DEVICE PROFILES
4	Categories : SMS, mobile websites, mobile web widgets
5	Native applications: Games, utility apps, location based services(LBS)
6	Apps : Informative apps, Enterprise apps
	BLOCK 3 : MOBILE INFORMATION ARCHITECTURE
7	Introduction : sitemaps, click streams, wireframes, prototyping, architecture
8	Mobile design : Interpreting design, Elements of mobile design
9	Mobile design tools : Designing for different device/ screens
	BLOCK 4 : J2ME
10	Introduction : J2ME architecture and development environment, small computing device requirements, Run-time environment, MIDlet programming
11	Languages : J2ME, J2ME SDK, J2ME wireless toolkit
	BLOCK 5 : CASE STUDY
12	Introduction : Google Android introduction, Android development Environment
13	Development framework, SDK, Eclipse, Emulator, Android AVD
14	Project framework: Apple IOS, RIM Blackberry, Samsung Bada, Nokia Symbian, Microsoft windows phone

Text Book:

1. Brian Fling, Mobile Design and Development, OReilly media,2009.
2. James Keogh, J2ME, The Complete Reference, TataMcHill,2003

Book for Reference:

1. Pei zheng and Lionel Ni, Smart phone and Next Generation Mobile Computing, Elsevier, 2006

2. Mark L.Murphy, Beginning Android", Apress 2009.

Course Code	Title of the Course
34143	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Course objective:

- To familiarize the basic concepts in artificial intelligence
- To understand the basic concepts in expert systems

Course outcome:

- Apply forward and backward reasoning algorithms, searching algorithms and optimization algorithms to create problem solving agents.
- Represent knowledge using propositional logic, inference rules and Bayesian networks.
- Design simple expert systems.
- Design algorithms for robotics and machine vision.

Unit No.	Contents
	BLOCK 1: PROBLEMS ANDSEARCH
1	Introduction: Concept of AI, approaches –Application areas Problem formulation- -Forward & Backward reasoning-Graphs & Trees
2	Measuring Problem solving agents: problem solving performance
3	Search Strategies-local search algorithms and optimization problems, Genetic Algorithms, terminology.
	BLOCK 2 : KNOWLEDGE REPRESENTATION
4	Relational knowledge & Procedural knowledge Propositional Logic – Syntax & semantics –Inference rules –Inference methods
5	Knowledge engineering process –Handling uncertain knowledge
6	Bayesian networks –Learning –Pattern recognition.
	BLOCK 3 : KNOWLEDGE BASED SYSTEMS
7	Expert systems–Components, Characteristic features of expert systems
8	Rule based system architecture-Using domain knowledge
9	Expert system shell -Explaining the reasoning and knowledge acquisition- Applications

BLOCK 4 : AI IN ROBOTICS

10	State space search -Block word & robot example -Path selection -Monkey & Banana problem AND –OR graph -Means end analysis in a robotic problem - Robot problem solving as a production system -Triangle table-Robot learning
11	Robot task planning -Phases in task planning -Symbolic spatial relationships - Obstacle avoidance -Graph planning.

BLOCK 5 : MACHINE VISION

12	Introduction –Functions in a vision system –Imaging devices –Lighting–A-D conversion–Quantization–Encoding image storage–Image data reduction
13	Segmentation techniques –Feature extraction –object recognition
14	Training the vision system –Robotic applications of machine vision

Text books

1 .Stuart Russel, Peter Norvig,"Artificial Intelligence: A Modern Approach-2 /e",2003,Pearson Education.

2. Elaine Rich, Kevin Knight,"Artificial Intelligence"2/e,1991, TMH.

References

1. Dan W.Patterson, "Introduction to Artificial Intelligence & Expert Systems", Seventh Indian

Reprint 1999, EEE, PHI.

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Course Code	Title of the Course
34144	**PROJECT**

1. The students will be allowed to work an any project based on the concepts studied in core courses

2. The following list of parameters taken into account for the evaluation of project work. Total marks: 100 (Internal : 25 marks, External:75 marks)