Integral University, Lucknow
Department of Computer Application

STUDY & EVALUATION SCHEME

Master of Computer Application (MCA)

w. e. f. Session 2016-17

Year III[rd] Sem V[th]

S. No	Subject Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessionals			Exam	
			L	T	P	CT	TA	Total	ESE	
Theory Subjects										
1.	IMCA-501	Web Technology	3	1	0	25	25	50	100	150
2.	Elective III	(Any one of the following) *IMCA-502(1)/(2)/(3)/(4)	3	1	0	25	25	50	100	150
3.	IMCA-503	.Net Framework and C#	3	1	0	25	25	50	100	150
4.	Elective IV	(Any one of the following) *IMCA-504(1)/(2)/(3)/(4)	3	1	0	25	25	50	100	150
5.	IMCA-505	Artificial Intelligence and Neural Network	3	1	0	25	25	50	100	150
6.	IMCA-506	Cyber Law and E-Security	3	1	0	25	25	50	100	150
Labs										
7.	IMCA-571	Web Technology Lab	0	0	3	25	25	50	50	100
8.	IMCA-572	.Net Framework and C# Lab	0	0	3	25	25	50	50	100
9.	IMCA-573	Colloquium	0	0	2	15	10	25	25	50
10.	GP-501	General Proficiency						50		50
		Total	**18**	**6**	**8**				**G. Total**	**1200**

Elective III

1. IMCA-502 (1) Software Testing and Quality Assurance
2. IMCA-502 (2) Software Reliability
3. IMCA-502 (3) Agile Methodology
4. IMCA-502 (4) Simulation and Modeling

Elective IV

1. IMCA-504 (1) Digital Image Processing
2. IMCA-504 (2) Human Computer Interaction
3. IMCA-504 (3) Soft Computing
4. IMCA-504 (4) Mobile Computing

IMCA-501 WEB TECHNOLOGY

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-I

History of the Web, Growth of the Web, Protocols Governing the Web, Introduction to Cyber Laws in India, Introduction to International Cyber Laws, Web Project, Web Team, Team Dynamics. [8]

UNIT-II

Communication Issues, The Client, Multi-departmental & Large Scale Websites, Quality Assurance and Testing, Technological Advances and Impact on Web Teams. [8]

UNIT-III

HTML: Formatting Tags, Links, List, Tables, Frames, Forms, Comments in HTML, DHTML.
JavaScript: Introduction, Documents, Forms, Statements, Functions, Objects in JavaScript, Events and Event Handling, Arrays, Forms, Buttons, Checkboxes, Text Fields and Text Areas. [8]

UNIT-IV

Introduction to PHP and AJAX

XML: Introduction, Displaying an XML Document, Data Interchange with an XML Document, Document type Definitions, Parsers using XML, Client-Side usage, Server Side usage. [8]

UNIT-V

Common Gateway Interface (CGI), PERL, RMI, COM/DCOM, VBScript, Active Server Pages (ASP). [8]

TEXT BOOK:

1. Burdman, "Collaborative Web Development", Addison Wesley.
2. Sharma & Sharma, " Development E-Commerce Sites," Addison Wesley
3. Ivan Bayross, "Web Technologies Part II", BPB Publications.

IMCA-502 (1) SOFTWARE TESTING AND QUALITY ASSURANCE

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-I

Software Testing Fundamentals: Software Testing, Its purpose, Goal and Objectives. Effective Software Testing, Types of Testing, Principles of Software Testing, Testing and Debugging. Psychology and Economics of Software Testing.

Software Testability: Testability artifacts, Testability Facilitators, Estimation and Analysis. **Testing:** Program inspection, Walkthrough and Reviews. **Principles of Static Testing:** General Methodology and Automated Techniques, Dynamic Testing. [8]

UNIT-II

Black Box Testing: Equivalence Partitioning, Boundary Value Analysis, Robustness Testing, Syntax Testing, Finite State Testing. **White Box Testing:** White Box Technique, Modeling, Basic Path Testing, Control Structure Testing, Mutation Testing, Gray Box Testing.

Software Testing Strategies: Strategic Issues and Premises, Unit Testing, Integration Testing, Validation Testing, Syntax Testing, Regression Testing, Software Component Testing, Testing Real Time Systems, Models for Software Testing. [8]

UNIT-III

System Testing: Recovery Testing, Security Testing, Stress Testing, Performance Testing, **Planning for Software Testing:** Test Plan Specification, Leveled Test Plan, Development of test plan, Master test plan, Phase wise test plan. **Building Test Cases:** White-Box Test Cases and Test Procedures, Test Data Selection and Outputs, Black-Box Test Cases and Test Procedures, Testing Specialized Systems, Object Oriented Testing: Pertinent Issues, Object Oriented Testing Model and Test Strategy. [8]

UNIT-IV

Testing in Agile Environment: Features of Agile Development, Agile Testing, Extreme Programming and Testing, **Software Fault Tolerance:** Objective and Need, Software Failure, Principles and techniques of Software Fault Tolerance, Fault based Testing Methods.

Testing Measurements and Tools: Test Standards, Product Defects, Process Measures, **Test Tools:** Test Planning and Management Tools. [8]

UNIT-V

Quality Assurance and Standards: Quality Concepts, Quality Control, Quality Assurance, Cost of Quality, **Software Quality Assurance:** Background Issues and SQA Activities; Software Reviews, Formal Technical Reviews, Formal Approaches to SQA, **Software Reliability:** Measures of Software Reliability and Availability, Software Safety, ISO 9000 Quality standards: ISO Approach to Quality Assurance System, ISO 9001 Standards, SQA Planning Assurance, SQA Plan, Software Testing and QA, Configuration Management. [8]

TEXT BOOK:

1. Glenford J. Myers, Tom Badgett, Corey Sandler, “The Art of Software Testing”, John Wiley & Sons, Inc.
2. K. Mustafa, R. A. Khan, “Software Testing: Concepts and Practices”, Alpha Science, Oxford, UK
3. R. A. Khan , “Software Quality: Concepts And Practice”, Alpha Science, Oxford, UK
4. W.M Perry, “Effective methods for Software Testing” , Wiley Publication

IMCA-502(2) SOFTWARE RELIABILITY

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-I

Reliability Fundamentals: Need for Reliability Engineering, Definition, Causes of Failures, Catastrophic Failures and Degradation Failures, Characteristic types of Failures, Useful life of Components, Exponential Case of Chance Failures, Reliability Measures, Failure Data Analysis.

Reliability Mathematics: Probability Theory, Random Variables, Discrete Distributions, Continuous Distributions, Stochastic Processes, Markov Chains. [8]

UNIT-II

Reliability Analysis Of Series Parallel Systems: Reliability Block Diagrams, Series systems, Parallel Systems, Series Parallel Systems, Open and Short Circuit Failures, Standby Systems.

Reliability Analysis of Non-series Parallel Systems: Path Determination, Boolean Algebra Methods, A Particular Method, Cut Set Approach, Delta Star Method, Logical Signal Relations Method, Bayes Theorem Method. [8]

UNIT-III

Reliability Prediction: Purpose, Classification, General Requirements, Prediction Methodologies, Software Prediction, Packages, Role and limitation of Reliability Prediction.

Reliability Allocation: Subsystems Reliability Improvement, Apportionment for new Units, Criticality, Redundancy, Techniques for Reliability Optimization, Signal Redundancy, Time Redundancy, Hardware Redundancy.

Maintainability And Availability: Forms of Maintenance, Measures of Maintainability and Availability, Maintainability Function, Availability Function, Two Unit Parallel System with Repair, Preventive Maintenance, Provisioning of Spares. [8]

UNIT-IV

Reliability Testing: Types of Testing, Component Reliability Measurements, Parametric Methods, Confidence Limits, Accelerated Testing, Equipment Acceptance Testing, Reliability Growth Testing

Software Reliability: Software Reliability and Hardware Reliability, Failures and Faults, Software Reliability, Software Reliability Models, Execution Time Component, Calendar Time Component.

Reliability Analysis of Special Systems: Phased Mission Systems, Common Cause Failures, Reliability and Capacity Integration. [8]

UNIT-V

Economics of Reliability Engineering: Effect of Reliability on Cost, Reliability Achievement Cost Models, Reliability Utility Cost Models, Availability Cost Models for Parallel Systems, Cost Effective Choice of Subsystems, Replacement Policies.

Reliability Management: Management Objectives, Top Managements Role in Reliability and Quality Control Programs, Cost Effectiveness Considerations, Management Matrix, Reliability and Quality Control Facilities and Equipment, Reliability Data. [8]

TEXT BOOK:

1. K.K. Aggarwal, "Reliability Engineering" Springer Science & Business Media.
2. E Balaguruswami, "Reliability Engineering", TMH.

IMCA-502(3) AGILE METHODOLOGY

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT I

Introduction: Software Product Development, Iterative Development, Risk Driven, Client Driven, Iterative Planning, Time Boxed Iterative Development, Evolutionary and Adaptive Development, Evolutionary Requirements Analysis, Early Top Ten High-level Requirements and Skilful Analysis, Evolutionary and Adaptive Planning, Incremental Delivery, Evolutionary Delivery, The Most Common Mistake, Specific Iterative and Evolutionary Methods. [9]

UNIT II

Agile and its Significance: Agile Development, Classification of Methods, The Agile Manifesto and Principles, Agile Project Management, Embrace Communication and Feedback, Simple Practices and Project Tools, Empirical versus Defined and Prescriptive Process, Principle Based versus Rule Based, Sustainable Discipline, The Human Touch, Team as a Complex Adaptive System, **Agile Hype:** Specific Agile Methods, The Facts of Change on Software Projects, Key Motivations for Iterative Development, Iterative Requirements Challenge, Problems with the Waterfall Model. Research Evidence, Early Historical Project Evidence, Standards Body Evidence, Leader Evidence, Business Case for Iterative Development, Historical Accident of Waterfall Validity. [9]

UNIT III

Agile Methodology: Method Overview, Lifecycle, Work Products, Roles and Practices Values, Common Mistakes and Misunderstandings, Sample Projects, **Process Mixtures:** Adoption Strategies, Fact versus Fantasy, Strengths versus other History. [8]

UNIT IV

Case Study: Agile, Motivation, Evidence, Scrum, Extreme Programming, Unified Process, Evo-Practice Tips. [6]

UNIT V

Agile Practicing and Testing: Project Management, Environment, Requirements, Test, The Agile Alliances, Manifesto, Supporting the Values, Agile Testing, Nine Principles and Six Concrete Practices for Testing on Agile Teams. [8]

TEXT BOOK:

1. Elisabeth Hendrickson, “Agile Testing”, Quality Tree Software Inc 2008.
2. Craig Larman, “Agile and Iterative Development-A Manager’s Guide”, Pearson Education.
3. Alistair, “Agile Software Development series”, Cockburn.

IMCA-502 (4) SIMULATION AND MODELING

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-1

System Definition and Components, Stochastic Activities, Continuous and Discrete Systems, System Modeling, Types of Models, Static and Dynamic Physical Models, Static and Dynamic Mathematical Models, Full Corporate Model, Types of System Study. [8]

UNIT-II

System Simulation, Nature and Techniques of Simulation, Comparison of Simulation and Analytical Methods, Types of System Simulation, Real Time Simulation, Hybrid Simulation, Simulation of Pure-pursuit Problem, Single-Server Queuing System and an Inventory Problem, Monte-Carlo Simulation, Distributed Lag Models, Cobweb Model. [9]

UNIT-III

Simulation of Continuous Systems, Analog vs. Digital Simulation, Simulation of Water Reservoir System, Simulation of a Servo System, Simulation of an Autopilot, Discrete System Simulation, Fixed Time-step vs. Even to Even Model, Generation of Random Numbers, Test for Randomness, Monte-Carlo Computation vs. Stochastic Simulation. [8]

UNIT-IV

System Dynamics, Exponential Growth Models, Exponential Decay Models, Modified Exponential Growth Models, Logistic Curves, Generalization of Growth Models, System Dynamic Diagrams.

Introduction to SIMSCRIPT: Program, System Concepts, Origination and Statements, Defining the Telephone System Model. [8]

UNIT-V

Simulation of PERT Networks, Critical Path Computation, Uncertainties in Activity Duration, Resource Allocation and Consideration, Simulation Languages and Software, Continuous and Discrete Simulation Languages, Expression Based Languages, Object Oriented Simulation, General Purpose vs. Application Oriented Simulation Packages, CSMP-III, MODSIM-III. [7]

TEXT BOOK:

1. Geoffrey Gordon, “System Simulation”, PHI.
2. Jerry Banks, John S. C Barry, L. Nelson, David M. Nicol, “Discrete Event System Simulation”, Pearson Education.
3. V P Singh, “System Modeling and simulation”, New Age International.
4. Averill M. Law, W. David Kelton, “System Modeling and Simulation and Analysis”, TMH.

IMCA-503 .NET FRAMEWORK AND C#

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-I

The .NET Framework: Introduction, Origin of .NET Technology, .Net Framework Architecture, Common Language Runtime, Common Type System, Common Language Specification, The Base Class Library, Intermediate language, Just-in- Time Compilation, Garbage Collection, Assemblies, Unified Classes. [8]

UNIT-II

C# Basics: Introduction, Data Types, Identifiers, Variables & Constants, C# Statements, Reading and Writing through Console [Console Class], Object Oriented Concepts, Use of Ref, Out and Params Keywords, Boxing and Unboxing, Arrays and Strings, Delegates and Events, Properties, Indexes, Attributes. [8]

UNIT-III

C# Using Libraries: Namespace-System, System Collections, Input Output, Exception Handling, Multi-Threading, Networking and Sockets, Versioning, Unsafe Mode, Generic. [8]

UNIT-IV

Advanced Features Using C#: Web Services, Windows Services, **Windows Form:** The Class Hierarchy of Windows Forms, The Controls and Components, Life Cycle of Window Application, Web Forms and Web Forms Controls, C# in Web Application, ADO .Net: ADO .NET Data Architecture, Data Provider, Connected and Disconnected Database, Messaging, Reflection, COM, Localization and Globalization. [8]

UNIT-V

Advanced Features Using C#: Distributed Application in C#, XML and C#, Graphical Device Interface with C#, Introduction to LINQ, J query. [8]

TEXT BOOK:

1. Jeffrey Richter, "Applied Microsoft .Net Framework Programming", Microsoft Press
2. Fergal Grimes, "Microsoft .Net for Programmers", SPD
3. TonyBaer, Jan D. Narkiewicz, Kent Tegels, "Understanding the **.**Net Framework", Wrox Publication.
4. Shibi Panikkar and Kumar Sanjeev, "C# with **.**NET Framework", Firewall Media.
5. Shildt, "C#**:** The Complete Reference", TMH
6. Anne Boehm, Joel Murach "ASP.NET 4 Web Programming with C#", Murach Books.

IMCA-504(1) DIGITAL IMAGE PROCESSING

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-I

Introduction and Fundamentals: Motivation and Perspective, Applications, Components of Image Processing System, Element of Visual Perception, A Simple Image Model, Sampling and Quantization,

Image Enhancement in Spatial Domain: Introduction, Basic Gray Level Functions.

Piecewise-Linear Transformation Functions: Contrast Stretching, Histogram Specification, Histogram Equalization, Local Enhancement, Enhancement using Arithmetic/Logic Operations, Image Subtraction, Image Averaging, Basics of Spatial Filtering, Smoothing, Mean filter, Ordered Statistic Filter, Sharpening ,The Laplacian. [8]

UNIT-II

Image Enhancement in Frequency Domain: Fourier Transform and the Frequency Domain, Basis of Filtering in Frequency Domain, Filters, Low-pass, High-pass: Correspondence Between Filtering in Spatial and Frequency Domain, Smoothing Frequency Domain Filters, Gaussian Lowpass Filters, Sharpening Frequency Domain Filters, Gaussian Highpass Filters, Homomorphic Filtering.

Image Restoration: A Model of Restoration Process, Noise Models, Restoration in the presence of Noise only Spatial Filtering.

Mean Filters: Arithmetic Mean filter, Geometric Mean Filter, Order Statistic Filters, Median Filter, Max and Min filters, Periodic Noise Reduction by Frequency Domain Filtering, Bandpass Filters, Minimum Mean square Error Restoration. [8]

UNIT-III

Color Image Processing: Color Fundamentals, Color Models, Converting Colors to different models, Color Transformation, Smoothing and Sharpening, Color Segmentation.
Morphological Image Processing: Introduction, Logic Operations involving Binary Images, Dilation and Erosion, Opening and Closing, Morphological Algorithms, Boundary Extraction, Region Filling, Extraction of Connected Components, Convex Hull, Thinning, Thickening. [8]

UNIT-IV

Registration: Introduction, Geometric Transformation, Plane to Plane transformation, Mapping, Stereo Imaging, Algorithms to Establish Correspondence, Algorithms to Recover.

Depth Segmentation: Introduction, Region Extraction, Pixel-Based Approach, Multi-level Thresholding, Local Thresholding, Region-Based Approach.

Edge and Line Detection: Edge Detection, Edge Operators, Pattern Fitting Approach, Edge Linking and Edge Following, Edge Elements Extraction by Thresholding, Edge Detector Performance, Line Detection, Corner Detection. [8]

UNIT-V

Feature Extraction: Representation, Topological Attributes, **Geometric Attributes Description:** Boundary-Based Description, Region-Based Description, Relationship,

Object Recognition: Deterministic Methods, Clustering, Statistical Classification, Syntactic Recognition, Tree Search, Graph Matching. [8]

TEXT BOOK:

1. Rafael C. Gonzalvez and Richard E. Woods, "Digital Image Processing", Pearson Education.
2. R.J. Schalkoff, "Digital Image Processing and Computer Vision", John Wiley and Sons.
3. A.K. Jain, "Fundamentals of Digital Image Processing", Prentice Hall.

IMCA-504(2) HUMAN COMPUTER INTERACTION

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-I

Introduction: A Brief History of Human Computer Interaction, Needs, Advantages, Disadvantages, User Interface: Types of User Interface, Importance of Good Design, Benefits of Good Design, Rational of WIMP (Window, Icon, Menus & Pointing Devices) Interfaces, Human Input-Output Channels, Human Memory, Thinking, Design of Interactive System, Computer Input-Output Devices for Interactive Users, A Brief History of Screen Design. [8]

UNIT-II

Virtual Reality System: Introduction, Devices for Virtual Reality and 3D Interaction, Sensors and Special Devices, Interaction, Model of Interaction, Human Factors, Interaction Styles, Interactivity, Paradigms for Interaction, Multi-model Interaction.

Guidelines in HCI: Shneiderman's Eight Golden Rules, Norman's Seven Principles, Norman's Model of Interaction, Nielsen's Ten Heuristics with Example of its Use, Heuristic Evaluation. [8]

UNIT-III

Design Process: Interaction Design, Process of Design, User Focus, Navigation Design.

HCI in the Software Process: Software Life Cycle, Usability Engineering, Prototyping, Techniques for Prototyping, Design Rationale, Design Rules.

Implementation Supports: Elements of Windowing System, User Interface Management System. [8]

UNIT-IV

Evaluation: Goal of Evaluation, Types of Evaluation, Evaluation Techniques, User Support System, Requirements of User Supports, Approaches to User Support, Adaptive Help Systems, Techniques for Knowledge Representation.

Models: Cognitive Model, Hierarchal Model, Linguistic Model, Physical and Device Model, Organizational Issues, Capturing Requirements, Fitts' Law and Hick-Hyman's Law. [8]

UNIT-V

Communication and Collaboration Model: Conversation, Text Based Communication, Task Analysis, Knowledge-Based Analysis, Sources of Information and Data Collection, Uses of Task Analysis, Dialogs Design Notation, Diagrammatically Notation, Textual Dialog Notation, Dialogs Semantics, Dialog Analysis and Design, Hypertext, Multimedia and World Wide Web. [8]

TEXT BOOK:

1. Alan Dix, Janet Finlay, Abowd, "Human Computer Interaction", Pearson Education.
2. Soren Lauesen , "User Interface Design", Pearson Education.
3. Wilbert O Galitz , "The Essential Guide to User Interface Design", Wiley DreamTech.
4. Ben Shneidermann, "Designing the User Interface", Pearson Education

IMCA-504 (3) SOFT COMPUTING

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-I

Neural Networks: Introduction and Architecture**,** Introduction to Soft Computing Methods, Neuron, Nerve Structure and Synapse, Artificial Neuron and its Model, Activation Functions. **Neural Network Architecture:** Single Layer and Multilayer Feed Forward Networks, Recurrent Networks, **Various Learning Techniques:** Perception and Convergence Rule, Auto-associative and Hetro-associative Memory. [8]

UNIT-II

Neural Networks Back Propagation Networks Architecture: Perceptron Model, Solution, Single Layer Artificial Neural Network, Multilayer Perception Model, Back Propagation Learning Methods, Effect of Learning Rule Co-efficient, Back Propagation Algorithm, Factors Affecting Back Propagation Training, Applications. [8]

UNIT-III

Fuzzy Logic-Introduction: Basic Concepts of Fuzzy Logic, Fuzzy Sets and Crisp Sets, Fuzzy Set Theory and Operations, Properties of Fuzzy Sets, Fuzzy and Crisp Relations, Fuzzy to Crisp Conversion. [8]

UNIT-IV

Fuzzy Logic: Membership, Rules, Membership Functions, Inference in Fuzzy Logic, Fuzzy if-then Rules, Fuzzy Implications and Fuzzy Algorithms, Fuzzification & Defuzzification, Fuzzy Controller, Industrial Applications. [8]

UNIT-V

Genetic Algorithm (GA): Fundamentals of Genetic Algorithms, Basic Concepts, Working Principle, Procedures of GA, Flow Chart of GA, Genetic Representations, Encoding, Fitness Function, Application of GA. [8]

TEXT BOOK:

1. George Klir, Bo Yuan, "Fuzzy sets and Fuzzy logic", PHI.
2. K. Mehrotra, "Elements of Artificial Neural Network".
3. S. Rajsekaran & G.A. Vijayalakshmi Pai, "Neural Networks, Fuzzy Logic and Genetic Algorithm: Synthesis and Applications" Prentice Hall of India.
4. N.P.Padhy, "Artificial Intelligence and Intelligent Systems, Oxford University Press.
5. Siman Haykin, "Neural Networks", Prentice Hall of India.
6. Timothy J. Ross, "Fuzzy Logic with Engineering Applications", Wiley India.
7. Kumar Satish, "Neural Networks" , Tata Mc Graw Hill.

IMCA-504 (4) MOBILE COMPUTING

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-I

Introduction to Mobile Communications and Computing: Introduction to Mobile Computing, Applications, Limitations, and Architecture.

Cellular Overview: Cellular Networks, Cellular Concept, Channel Allocation, Location management, Handoff.

GSM: Air-interface, Mobile Services, System Architecture: Radio subsystem, Network and Switching Subsystem, Operation Subsystem, **Protocols:** Localization and Calling, Handover. [8]

UNIT-II

Wireless LANs and Application: WLAN, Wireless Standards, Wireless LAN, Infrared vs Radio Transmission, Infrastructure Networks, Adhoc Networks, Wireless applications, Mac issues, Mobile IP.

Wireless Application Protocol: Architecture, Protocol Stack, Application Environment, IEEE Applications. **Access Technologies**: Bluetooth, GPRS, 802.11, CDMA.

Mobile Phone Technologies: 1G, 2G, 2.5G, 3G. [8]

UNIT-III

Database Issues: Hoarding Techniques, Caching Invalidation Mechanisms, Client Server Computing with Adaptation, Power-aware and Context-aware Computing, Transactional Models, Query Processing, Recovery, Quality of Service Issues. [8]

UNIT-IV

Mobile Ad-Hoc Networks (MANET): Characteristics, Performance Issues, TCP Issues, Disconnected Operations, Data Broadcasting and Mobile Agents, Routing in Mobile Hosts.

Routing Protocols: Global State Routing (GSR), Destination Sequenced Distance Vector Routing (DSDV), Dynamic Source Routing (DSR), Ad Hoc on Demand Distance Vector Routing (AODV), Temporary Ordered Routing Algorithm (TORA), QoS in Ad Hoc Networks, Applications. [8]

UNIT-V

Platform/Operating Systems for Application Development: Introduction to Palm OS, Windows CE, Embedded Linux, J2ME, Symbian.

Android Application Development: Overview of Android, Devices Running Android, Development Tools for Android, Features of Android, Architecture of Android, Libraries, Software Development Kit. [8]

TEXT BOOK:

1. J. Schiller, "Mobile Communications", Addition Wesley Publication
2. A.Mehrotra, "GSM System Engineering", Addition Wesley Publication
3. M. Heijden, M. Taylor,"Understanding WAP", Artech House Publication
4. Reto Meier, "Professional Android Application Development", Wrox Publications,

5. Ed Burnette, “Hello Android, Introducing Google’s Mobile Development Platform”, Pragmatic Programmers
6. Lauren Dercy and Shande Conder, “Sams teach yourself Android application Development”, Sams publishing
7. Asoke K Talukdar, Roopa R. Yavagal, “Mobile Computing”, Tata McGraw Hill
8. Hansmann, Merk, Nicklous, Stober, “Principles of Mobile Computing”, Springer.

IMCA-505 ARTIFICIAL INTELLIGENCE AND NEURAL NETWORK

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT -I

Introduction to AI: Application of AI, Problem, Problem Space & Searches: Problem Characteristics, Simple Problem Solving, Examples, Searching for Solution.

Uninformed Search Strategies: Breadth- First Search, Depth-First Search, Depth Limited Search and Iterative Deepening Search.

Informed Search Strategies: BFS, A* Algorithms, RBFS, and Hill-Climbing, Constraint Satisfaction Problem, Mean-End-Analysis, Optimal Decision in Games.

[8]

UNIT-II

Knowledge Representation Concept: Representation and Mapping, Approaches to Knowledge Representation. **First Order Predicate Logic:** Representing Simple Facts in Logic, Computable Functions and Predicates, Rules of Interface, Resolution, Unification & Lifting, Forward and Backward Chaining, Introduction to PROLOG, **Weak Slot-and-Filler Structure:** Semantic Nets Partitioned Nets, Minskey Frames. [9]

UNIT -III

Natural Language Processing: Introduction, Overview of Linguistics, Grammar & Languages, Parsing Techniques, Semantic Analysis & Representation Structure, Natural Language Generation, Natural Language Systems, Introduction to Learning, Introduction to Expert System. [8]

UNIT -IV

Neural Networks: Terminology, Neural Network Architecture, Perceptrons, Linear Seperability. **Perceptron Training Algo:** Termination Criteria, Choice of Learning Rate, Non-numeric Input. **Modifications:** Pocket Algo, Adalines. [7]

UNIT-V

Supervised/Unsupervised Learning: Back Propagation, Adaptive Multilayer Network, Prediction Networks, Winner-Take-All Networks, Hamming Networks, Max Net, Simple Competitive Learning, Counter Propagation, Neo Cognition. **Associative Models:** Hopfield Network, Brain-State-in-a-Box Network, Boltzmann Machines. [8]

TEXT BOOK:

1. Rich & Knight, "Artificial Intelligence" TMH.
2. DAN W. Patterson, "Introduction to AI & Expert Systems", PHI.
3. S. Russell and P. Norvig "Artificial Intelligence A Modern Approach", PHI.
4. K. Mehrotra, Mohan, Ranka "Elements of Artificial Neural Networks" Penram International Publishing.

IMCA-506 CYBER LAW AND E-SECURITY

w.e.f. Session 2016-17

L	T	P
3	1	0

UNIT-I

Electronic Commerce: Technology and Prospects, Definition of E- Commerce, Economic Potential of Electronic Commerce, Incentives for Engaging in Electronic Commerce, Forces Behind E-Commerce, Advantages and Disadvantages, Architectural Framework, Impact of E-Commerce on Business.

Network Infrastructure for E- Commerce: Internet and Intranet Based E-Commerce, Issues, Problems and Prospects, Network Infrastructure, Network Access Equipments, Broadband Telecommunication (ATM, ISDN, and Frame Relay). [8]

UNIT-II

Mobile Commerce: Introduction, Wireless Application Protocol, WAP Technology, Mobile Information Device, Mobile Computing Applications, E-Commerce Issues of privacy, Wireless Computing-Security challenges in Mobile Devices, Security Threats to E-Commerce, Virtual Organization, Business Transactions on Web, E-Governance and EDI, Concepts in Electronics Payment Systems-Cash, Credit/Debit Cards, E-Agreement. [8]

UNIT-III

Information Security: Information Systems and its Importance, Role of Security in Internet and Web Services, Principles of Information Security, Classification of Threats and Attacks, Security Challenges, Security Implication for Organizations, **Security Services:** Authentication, Confidentiality, Integrity, Availability and other terms in Information Security, Information Classification and their Roles.

Digital Signatures: Technical Issues, Legal Issues, Electronic Records, Digital Contracts and Requirements of Digital Signature System. [8]

UNIT-IV

Fundamentals of Cyber Law: Jurisprudence of Cyber Law, Object and Scope of the IT Act 2000, Introduction to Indian Cyber Law, Unicitral Model Law, ISP Guideline. Intellectual Property Issues and Cyber Space, Indian Perspective, Overview of Intellectual Property related Legislation in India, Patent, Copy Right, Trademark Law, Law related to Semiconductor Layout & Design. [8]

UNIT-V

Investigation and Ethics: Cyber Crime, Cyber Jurisdiction, Cyber Crime and Evidence Act, Treatment of different Countries of Cyber Crime, Ethical Issues in Data and Software Privacy, Plagiarism, Pornography, Tampering Computer Documents, Data Privacy and Protection, Domain Name System, Software Piracy, Issues in Ethical Hacking.

Internet Security Threats: Hacking, Cracking, Sneaking, Viruses, Trojan horse, Malicious Code & Logic Bombs, Introduction to Biometric Security and its Challenges, Finger Prints.
Cyber Crime Forensic: Case Study in Cyber Crime. [8]

TEXT BOOK:

1. Ravi Kalakota, Andrew Winston, "Frontiers of Electronic Commerce", Addison Wesley.
2. Bajaj and Nag, "E-Commerce The Cutting Edge Of Business", TMH
3. Harish Chander, "Cyber Law and IT Protection", PHI Publication.
4. Merkov, Breithaupt, "Information Security", Pearson Education.
5. Farooq Ahmad,"Cyber Law in India", Pioneer Books.
6. K. K. Singh, Akansha Singh, "Information Security and Cyber law", Umesh Publication, Delhi.

IMCA-571 WEB TECHNOLOGY LAB

w.e.f. Session 2016-17

L	T	P
0	0	3

1. Design a HTML page to display your CV.
2. Design a HTML form to reserve a railway ticket.
3. Write a Java Script program that finds the greatest common divisor of two numbers.
4. In the form mentioned in problem 2 to reserve a railway ticket add the following validations using java Script.
    - From City A to City B.
    - Age of passengers should not be greater than 100.
    - Name of the passenger should be a string of a maximum length 20.
5. Write a program for illustrating client/server side scripting with help of ASP.
6. Write a piece of code in XML for creating DTD, which specifies set of rules.
7. Create style sheet in CSS/XSL and display the document in Internet Explorer.
8. Basic programs based on PHP.
9. Basic programs based on AJAX.
10. **Mini Project**: Develop a web portal.

IMCA-572 .NET FRAME WORK AND C# LAB

w.e.f. Session 2016-17

L	T	P
0	0	3

Window Application:

1. A program of Jagged Array.
2. A program of binary operator Over loading
3. A program using delegation in which addition and subtraction of two integer value possible.
4. A program-using Interface.
5. A program using Multi-Threading.
6. A program using Exception Handling.
7. A program to display the caption, height of command button into label.
8. Design a form to take employee/Student information by using basic controls and display the information on the new form.(Use labels, Textbox, List, Radio button, etc).
9. Creating a window form through which user can enter details of employee: empid, empname, basic salary, sex, date of birth, date of joining, designation, total income, total deduction and gross salary will be calculated automatically.
10. Also in above program all details of employee will appear in Grid and depending upon the selection particular actual record will appear on the form.

Web Application:

1. Create a web site of your name that takes your details as input such as name, address, hobbies, class, collage etc. Use the validator control to validate the information also shows your information.
2. Create an ASP.Net Web page that lists the details of customer from customer's database table in a sortable Data Grid with paging option. The Data Grid should display three columns; for the customers' ids, names, phone numbers. The user should be able to sort the Data Grid by customer ID.
3. Write an application to create a web services.

IMCA-573 COLLOQUIUM

w.e.f. Session 2016-17

L	T	P
0	0	2

The aim of the subject is to develop ability of a student to carry out literature survey and independent study of advanced subject/topic/matters in the field of Computer Science and Information technology and its application. At the beginning of semester a list of colloquium topic should be displayed on the notice board by the department and/or on the institution web site. Every Student must select a topic of his choice. The student is required to conduct rigorous study/survey on the subject under the supervision of the faculty member of the department, prepare a report and present it in presence of all the students of his class at the end of semester. The comments and criticism of the topic/subject will be discussed for the benefit of all the students. The evaluation will be carried out by the department based on the presentation.