Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore-641 043, Tamil Nadu, India
M.Sc Information Technology
Scheme of Instruction & Examination
(for the students admitted from 2017 - 2018 & onwards)

Part	Subject Code	Name of papers/component	Hours of Instruction/Week		Scheme of Examination				
			Theory	Practical	Duration of Exam	CIA	CE	Total	Credit
First Semester									
I	17MITC01	Mathematical Foundation for Information Technology	5	-	3	40	60	100	4
	17MITC02	Advanced Java Programming	4	-	3	40	60	100	3
	17MITC03	Design And Analysis of Algorithms	4	-	3	40	60	100	3
	17MITC04	Cloud Computing	5	-	3	40	60	100	4
	17MITC05	Social Network Mining	4	-	3	40	60	100	4
	17MITC06	Advanced Java Programming –Practical I	-	6	3	40	60	100	4
II		*CSS*	2	-	-	-	-	-	-
Second Semester									
I	17MITC07	Internet of Things	4	-	3	40	60	100	3
	17MITC08	Soft Computing	4	-	3	40	60	100	3
	17MITC09	Internet and Web Programming	4	-	3	40	60	100	3
	17MITC10	Open Source Technologies	4	-	3	40	60	100	3
	17MITC11	Web Technologies-Practical II (Open Book)	-	3	3	100	-	100	4
	17MITC12	Open Source –Practical III	-	4	3	40	60	100	4
	17MITC13	Mini Project	1	-	-	100	-	100	2
		Interdisciplinary course	4	-	3	40	60	100	4
II		CSS	2	-	-	-	-	-	1
		Professional Certification	-	-	-	-	-	-	2
Internship during Summer vacation for one month									

		Third Semester							
I	17MITC14	Technical Communication	3	-	3	100	-	100	3
	17MITC15	Big Data Analytics	4	-	3	40	60	100	3
	17MITC16	Information Security	4	-	3	40	60	100	3
	17MITC17	Digital Image Processing	4	-	3	40	60	100	3
	17MITC18	Data Analytics - Practical IV	-	6	3	40	60	100	4
	17MITC19	Mobile Application Development - Practical V	-	6	3	40	60	100	4
	17MITC20	Software Project Management(Self Study)	1	-	3	40	60	100	4
		Multidisciplinary course	2	-	3	100	-	100	2
II	17MITC21	Internship	-	-	-	100	-	100	2
		Fourth Semester							
I	17MITC22	Project Work and Viva Voce	30	-	-	100	100	200	6
		Total credits								**85**

Part II Components

	Any semester except 4th semester	MOOC Course	-	1	2	2
		Total			**85**+**2**	

Note: Minimum 85 Credits to earn the degree

Other Course to be undergone by the Students

1. MOOC Course   - 2 Credits

Other Courses offered by the Department

1. 17MITI01- Cyber Forensics
2. 17MITM01 - ICT for Learning

MATHEMATICAL FOUNDATION FOR INFORMATION TECHNOLOGY

Semester I   **Hours of Instruction/week: 5**
17MITC01   **No of credits: 4**

Objectives:
1. To learn the concepts of set theory, functions and relations.
2. To understand the formal languages and acquire knowledge of finite automata.
3. To calculate critical path.

UNIT-I   BASIC SET THEORY   **15**
Basic Definitions - set operations - Venn Diagrams - Algebraic laws of set theory - Relations - Types of relations - Properties of relations - Functions - Types of functions

UNIT-II   FORMAL LANGUAGES   **15**
Languages and Grammar - Phrase structure Grammar – Types of Phrase structure Grammar - Context Free Languages.

UNIT-III   FINITE STATE AUTOMATA   **15**
Finite state Automata -Deterministic Finite State Automata (DFA)- Non Deterministic Finite state Automata(NFA) - Equivalence of DFA and NFA - Equivalence of NFA and Regular Languages.

UNIT-IV   PERT and CPM   **15**
Introduction - Critical Path analysis-Distinction between PERT and CPM- Applications of Network Techniques-Advantages of Network Techniques –Limitations and difficulties in using network.

UNIT-V CORRELATION AND REGRESSION   **15**
Karl Pearson's coefficient of correlation - Rank correlationRegression equations - Difference between Correlation and Regression.

                                                                                               Total Hours: 75

Course Outcomes:
On successful completion of this course, the student will be able to

1. Illustrate simple set relationships in probability, statistics and computer science.
2. List out the operations on formal languages.
3. Understand the algorithm used to turn an NFA in to an equivalent DFA.
4. Apply PERT and CPM in project scheduling problems.
5. Identify the impact of varied factors on business sales and profits using regression analysis.

TEXT BOOKS

1. T.Veerarajan, *"Discrete Mathematics with Graph theory and Combinatorics",* Tata Mcgraw Hill Education Pvt.Ltd, New Delhi, 2010. (Unit I, II & III)
2. KantiSwarup,P.K.Gupta,& Manmohan *,"An Introduction to Management Science operation research"* sultan chand and sons,2010.(Unit IV)
3. PA. Navanithan ,*"Business Mathematics and Statistics",* Jai publishers,2008.(Unit V)

REFERENCES

1. G.Balaji, *"Discrete Mathematics",* Balaji Publishers, 2008.(Unit I)
2. Hopcroft and Ullam*,"Introduction to Automata Theory, Languages and   Computation"*, Narosa Publishing House, Delhi, 2002.
3.RM. Somasundaram, *"Discrete Mathematical Structures",* Prentice Hall of India   Pvt.Ltd, New Delhi, 2003

ADVANCED JAVA PROGRAMMING

Semester I   **Hours of Instruction/week: 4**

17MITC02   **No of credits: 3**

Objectives:

1. To recall the features and basic concepts of core java and object oriented programming.
2. To understand about the distributed strategies of Java using RMI and java networking concepts.
3. To learn to apply different events and applet programming.
4. To enumerate the JDBC-ODBC connectivity through servlets.
5. To know about the advanced features of Java such as JSP and Java Beans.

UNIT I   BASIC CONCEPT   **12**
JAVA – Features and Characters of JAVA - Object-Oriented Programming – Encapsulation –
Inheritance – Polymorphism - Overriding– Constants -Variables – Types – Swing features –
Difference between Swing and AWT components.

UNIT II   DISTRIBUTED APPLICATION AND NETWORKING   **12**
Client/Server communication - Overview of the RMI – Advantages of RMI – RMI Architecture –
Developing RMI Applications – Parameters in RMI - Java Virtual Machine - Java Serialization -
Java Networking.

UNIT III   APPLETS AND EVENTS   **12**
Applets - HTML applet tags – Order of Applet initialization – Sizing graphics – Mouse Event
Handling – Examples of key event handling - The Delegation Event Model – Event class and event
listener.

UNIT IV   JDBC AND SERVLETS   **12**
JDBC Vs ODBC – Types of JDBC Drivers – Basic operations on JDBC. Features of servlets –
Servlet lifecycle service – Steps to run the servlet program – Cookies Vs Session – Database
Connectivity with JDBC using Servlet.

UNIT V   JSP and EJB   **12**
Define JSP – Advantages of JSP – JSP tags - Servlet Vs JSP – JSP Syntax Basics – JSP Directories
– EJB Benefits – Types of Enterprises Beans – Session Bean with types – Entity Bean – Entity
Beans Vs Session Beans – Message Driven Beans.
.
                                                              Total Hours: 60

Course Outcomes:

On successful completion of this course, the student will be able to

1. Gain knowledge and usage of basic programming elements, functions and file handling in Java.
2. Demonstrate the client/server application through java networking.
3. Use the event handling and able to adapt applet programming strategy.
4. Acquire Knowledge about the ODBC-JDBC connectivity, servlets, cookies and sessions.
5. Use the JSP and Java Beans Technology for efficient programming.

REFERENCES
1. Professional Java Server Programming, SubrahmanyanAllamaraju and Cedric Bues, Apress, SPD, 2005.
2. Java The Complete Reference, Herbert Schildt, Tata McGraw-Hill, Eighth edition, 2011.
3. Advanced Java for Students, Dr.AshwinMetha and Sarika Shah, The X team, Published by SPD Pvt. Ltd, 2012.
4. Jamie Jaworski, "Java Unleashed" , SAMS Techmedia Publications 1999.
5. Jim Keogh," The Complete Reference J2EE", Tata McGrawHill Publishing Company Ltd,2002.

DESIGN AND ANALYSIS OF ALGORITHMS

Semester I   **Hours of Instruction/week: 4**
17MITC03   **No of credits: 3**

Objectives:
1. To describe the fundamental techniques to design efficient algorithms and to analyze their running time.
2. To derive and solve recurrences describing the performance of divide and conquer algorithms.
3. To find optimal solution by applying the greedy method.
4. To solve problems using algorithm design methods such as the dynamic programming, backtracking and branch and bound.
5. To analyze the performance and complexity of parallel models.

UNIT I   INTRODUCTION   **12**

Introduction to algorithms, Analyzing algorithms. Divide and Conquer: General Method, Binary Search, Finding the maximum and minimum, Merge sort, Quick sort, Selection sort, Strassen's matrix multiplication.

UNIT II THE GREEDY METHOD   **12**

General method, Optimal storage on tapes, Knapsack problem, Job sequencing with deadlines, Optimal merge patterns, Minimum spanning trees, Single source shortest paths.

UNIT III   DYNAMIC PROGRAMMING   **12**

General method, Multistage graphs, All pairs shortest paths, Optimal binary search trees, 0/1 Knapsack, Travelling salesperson problem, Flow-shop Scheduling.

UNIT IV BASIC SEARCH AND TRAVERSAL TECHNIQUES   **12**

Techniques, Code optimization, AND/OR graphs, Game trees. Back Tracking: General method, 8-queens problem, Sum of subsets, Graph coloring, Hamiltonian cycles, Knapsack problem. Branch and Bound: General method, travelling salesperson problem.

UNIT V PARALLEL MODELS   **12**

Basic concepts – Performance measure parallel algorithms – Parallel complexity – Analysis of parallel addition – Parallel multiplication and division, Parallel Evaluation of general arithmetic expressions, First order Linear recurrence.

                                                              Total Hours:60

Course Outcomes:

On successful completion of this course, the student will be able to

1. Understand the basic techniques for designing algorithms.
2. Evaluate and estimate the performance of the algorithms.
3. Select the appropriate algorithm to solve a problem by considering the problem characteristics.
4. Construct efficient algorithms for simple computational tasks.
5. Compare parallel algorithms with respect to time and space complexity.

REFERENCES

1. Ellis Horowitz, SartajSahni, SanguthevarRajasekaran, "Fundamentals of Computer Algorithms", algotia Publications, 2011.
2. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, " Introduction to Algorithms", Massachusetts Institute of Technology, MIT Press, III Edition, 2009.
3. Sara Baase, Allen Van Gelder,Computer Algorithms, Pearson education, 2008.
4. Mark Allen Weiss "Data Structures and Algorithm Analysis", Benjamin/Cummings Pub. Co, 2007

CLOUD COMPUTING

Semester I   **Hours of Instruction/week: 5**

17MITC04   **No of credits: 4**

Objectives:

1. To provide students with the fundamentals and essentials of Cloud Computing.
2. To understand cloud models.
3. To facilitate the students to understand the cloud Infrastructure.
4. To explore significant cloud computing driven commercial systems such asGoogleApps, Microsoft Azure and Amazon Web Services .
5. To explain the security issues related to cloud computing.

UNIT I   CLOUD ARCHITECTURE AND MODEL   **15**

Technologies for Network-Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture.
Cloud Models:- Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud –Cloud Solutions - Cloud ecosystem – Service management – Computing on demand.

UNIT II   VIRTUALIZATION   **15**

Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation.

UNIT III   CLOUD INFRASTRUCTURE   **15**

Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.

UNIT IV   PROGRAMMING MODEL   **15**

Parallel and Distributed Programming Paradigms – MapReduce , Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine, Amazon AWS - Cloud Software Environments -Eucalyptus, Open Nebula, OpenStack, Aneka, CloudSim

UNIT V   SECURITY IN THE CLOUD   **15**

Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service   Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.

Total Hours: 75

Course Outcomes:

On successful completion of this course, the student will be able to

1. Assess various cloud models and services.
2. Describe Virtualization and classify its types.
3. Identify the infrastructure of cloud computing.
4. Demonstrate the use of Map-Reduce.
5. Analyse the Risks and challenges in Cloud environment.

TEXT BOOK

1.Michael Miller "CLOUD COMPUTING Web-Based Applications That ChangeThe Way You Work and Collaborate Online", Pearson Education, Edition-2009.

REFERENCES

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.
2. John W.Rittinghouse and James F.Ransome, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010.
3. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", TMH, 2009.
4. Kumar Saurabh, "Cloud Computing – insights into New-Era Infrastructure", Wiley India,2011.
5. George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud" O'Reilly
6. James E. Smith, Ravi Nair, "Virtual Machines: Versatile Platforms for Systems and Processes", Elsevier/Morgan Kaufmann, 2005.
7. Katarina Stanoevska-Slabeva, Thomas Wozniak, Santi Ristol, "Grid and Cloud Computing – A Business Perspective on Technology and Applications", Springer.
8. Ronald L. Krutz, Russell Dean Vines, "Cloud Security – A comprehensive Guide to Secure Cloud Computing", Wiley – India, 2010.
9. RajkumarBuyya, Christian Vecchiola, S.ThamaraiSelvi, 'Mastering Cloud Computing", TMGH,2013.
10. Gautam Shroff,Enterprise Cloud Computing,Cambridge University Press,2011
11. Michael Miller, Cloud Computing,Que Publishing,2008
12. Nick Antonopoulos, Cloud computing,Springer Publications,2010

SOCIAL NETWORK MINING

Semester I   **Hours of Instruction/week: 4**

17MITC05   **No of credits: 4**

<u>**Objectives:**</u>
1. To explain the fundamental concepts and processes of Social Networks and Semantic web.
2. To develop critical skills on network analysis appropriate to real world data.
3. To provide in-depth knowledge on community detection methods and algorithms.
4. To discover comprehensive knowledge on privacy in online Social Networks.
5. To teach various mining techniques to extract and classify data on Social Media.

UNIT I INTRODUCTION TO SOCIAL NETWORK ANALYSIS   **12**

Introduction to Web - Limitations of current Web – Development of Semantic Web – Emergence of the Social Web - Network analysis - Development of Social Network Analysis -Key concepts and measures in network analysis -Electronic sources for network analysis -Electronic discussion networks, Blogs and online communities, Web-based networks.

UNIT II MODELLING AND VISUALIZING SOCIAL NETWORKS   **12**

Visualizing Online Social Networks, Graph Representation - Centrality-Clustering -Node-Edge Diagrams, Visualizing Social Networks with Matrix-Based Representations-Matrix + Node-Link Diagrams, Hybrid Representations -Modelling and aggregating social network data-Ontological representation of social individuals, Ontological representation of social relationships.

UNIT III MINING COMMUNITITES IN WEB SOCIAL NETWROKS   **12**

Aggregating and reasoning with social network data, Advanced Representations -Extracting evolution of Web Community from a Series of Web Archive -Detecting Communities in Social Networks - Evaluating Communities - Methods for Community Detection & Mining - Applications of Community Mining Algorithms.

UNIT IV TRUST BASED USER MODELING AND PERSONALIZATION IN SOCIAL   **12**
MEDIA

Understanding and Predicting Human Behaviour for Social Communities - User Data Management, Inference and Distribution –User Modelling and Personalization in Social Media - Reality Mining -Context-Awareness -Privacy in Online Social Networks -Trust in Online Environment -Trust Models Based on Subjective Logic -Trust Network Analysis -Trust Transitivity Analysis -Combining Trust and Reputation for recommendation

UNIT V OPINION MINING IN SOCIAL NETWORKS   **12**

Opinion extraction – Sentiment classification and clustering -Temporal sentiment analysis -Irony detection in opinion mining-Wish analysis -Product review mining –Review Classification – Tracking sentiments towards topics over time.

                                                                     Total Hours: 60

Course Outcomes:

On successful completion of this course, the student will be able to
1. Summarize the essential components and functionalities of Social Networks.
2. Evaluate the strength and limitations of Social Networks.
3. Detect, discriminate and evaluate various social communities to mine the data.
4. Understand how to predict user behavior and to construct user model based on their preferences.
5. Administer various mining techniques to extract data.

TEXT BOOKS
1. Peter Mika, "Social networks and the Semantic Web", Springer, 1st edition2007.
2. BorkoFurht, "Handbook of Social Network Technologies and Applications", Springer, 1st edition, 2010.
3. Guandong Xu , Yanchun Zhang and Lin Li, "Web Mining and Social Networking –Techniques and applications", Springer, 1stedition, 2011.
4. Dion Gohand Schubert Foo, "Social information retrieval systems: emerging technologies and applications for searching the Web effectively", IGI Global snippet, 2008.
5. Max Chevalier, Christine Julien and Chantal Soulé-Dupuy, "Collaborative and social information retrieval and access: techniques for improved user modelling", IGI Global snippet, 2009.
6. Bing Liu, W eb Data Mining: Exploring Hyperlinks, Contents, and Usage Data, Springer, 2011.

REFERENCES
1. John G. Breslin Alexandre Passant and Stefan Decker, "The Social Semantic Web", Springer, 2009.
2. Lee Giles, Mark Smith, John Yen, "Advances in Social Network Mining and Analysis", Springer, 2010.
3. Ajith Abraham, Aboul Ella Hassanien, Václav Snášel, "Computational Social Network Analysis: Trends, Tools and Research Advances", Springer, 2009

ADVANCED JAVA PROGRAMMING -PRACTICAL I

Semester I   **Hours of Instruction/week:6**

17MITC06   **No of credits: 4**

Objectives:

1. To Practice an IDE like Eclipse or Netbeans for quicker coding/debugging.
2. To understand and develop the Client server programming using different networking concepts.
3. To Develop GUI applications to handle events with JDBC connectivity.
4. To learn to write reusable programs to solve specific problems.
5. To apply advanced Java features such as RMI, Servlets, JSP and Java Beans in programming.

List of Programs

1. Java program for multicasting messages.
2. Java program for broadcasting messages.
3. Java Applet program.
4. Java program using AWT itemListener.
5. Java program using AWT ActionListener.
6. Java program to create TCP chat Application.
7. Java program for Client Server Communication.
8. Java program for retrieving IP Address
9. Java program to store, delete and update data in a database with the support of JDBC-ODBC connectivity.
10. Java Servlet program to display cookie id
11. Java Servlet program to create a dynamic HTML form to accept and display user name and password with the help of 'get()' and 'post()' methods.
12. JSP program to implement form data validation to accept correct data.
13. JSP program for demonstrating creation and accessing Java Beans
14. Java program to demonstrate the use of Java Swing components,
15. Message transfer using RMI.

Total Hours : 90

Course Outcomes:

On successful completion of this course, the student will be able to

1. Use an IDE like Eclipse or Netbeans for quicker coding/debugging
2. Develop Client/server programming using different networking concepts
3. Demonstrate GUI applications to handle events with JDBC connectivity
4. Apply advanced Java features such as RMI, Servlets, JSP and Java Beans in programming.
5. Produce reusable and extensible design to minimize rework.

INTERNET OF THINGS

Semester II   **Hours of Instruction/week: 4**

17MITC07   **No of credits: 3**

Objectives:

1. To develop knowledge on basics of IoT, its physical and logical design, its levels and protocols used for communication.
2. To inculcate the comprehensive knowledge about the applications of IoT with case studies.
3. To compose a clear vision about IoT design methodology, IoT systems and Servers.
4. To illustrate about embedded, physical devices and online components.
5. To interpret the importance on integration of IoT with cloud, data analytics and tools for IoT.

UNIT 1   INTRODUCTION TO INTERNET OF THINGS   **12**
Introduction - Physical Design of IoT - Logical Design of IoT - IoT Enabling Technologies - IoT Levels & Deployment Templates

UNIT II   DOMAIN SPECIFIC IoTs   **12**
Home Automation – Cities – Environment – Energy - Retail – Logistics – Agriculture Industry - Health & Lifestyle - IoT and M2M.

UNIT III   DEVELOPING INTERNET OF THINGS   **12**
IoT Platforms Design Methodology - IoT Systems - IoT Physical Devices & Endpoints - IoT Physical Servers & Cloud Offerings

UNIT IV IoT DEVICES   **12**
IoT Prototyping – Embedded devices – Physical devices – Online Components – from Prototype to Reality

UNIT V   IoT TOOLS   **12**
Data Analytics for IoT- Tools for IoT - IoT and Big Data – IoT and Clouds

Total Hours: 60

Course Outcomes:

On successful completion of this course,the student will able to,
1. Interpret the fundamental functionalities of IoT and its architectural view.
2. Integrate real world day-to-day applications with IoT systems.
3. Construct IoT design methodology and explore IoT systems and servers.
4. Integrate physical, embedded devices and online components.
5. Organize IoT tools, IoT and Cloud, IoT and Data Analyics to enhance the performance.

REFERENCES
1. Designing the Internet of Things, HakinCassimally and AdrainMceweb, John Wiley and Sons Ltd. 2014.
2. Internet of things – A Hands on Approach , Bagha and Madisetti, 2014, ISBN-10: 0996025510, ISBN-13: 978-0996025515.
3. The Internet of Things, Samuel Greengard, The MIT Press Essential Knowledge series, 2015

SOFT COMPUTING

Semester II   **Hours of Instruction/week: 4**

17MITC08   **No of credits: 3**

Objective
1. To introduce students to soft computing concepts and techniques like genetic algorithm, neural networks, fuzzy logic and neurofuzzy.
2. To provide knowledge on Genetic algorithms and Machine learning based on Genetic algorithm.
3. To give knowledge on various functions of neural network.
4. To avail practical approach to fuzzy logic and various fuzzy systems.
5. To expose the students to different modeling using neurofuzzy.

UNIT I   INTRODUCTION TO SOFT COMPUTING

Evolution of Computing - Soft Computing Constituents – From Conventional AI to Computational Intelligence - Machine Learning Basics **12**

UNIT II   GENETIC ALGORITHMS   **12**

Introduction to Genetic Algorithms (GA) – Applications of GA - Building block hypothesis-Representation – Fitness Measures – Genetic Operators-. GA based Machine Learning.

UNIT III   NEURAL NETWORKS

Machine Learning using Neural Network, Adaptive Networks – Feed Forward Networks – **12** Supervised Learning Neural Networks – Radial Basis Function Networks - Reinforcement Learning – Unsupervised Learning Neural Networks – Adaptive Resonance Architectures – Advances in Neural Networks.

UNIT IV   FUZZY LOGIC

Fuzzy Sets – Operations on Fuzzy Sets – Fuzzy Relations – Membership Functions-Fuzzy Rules **12** and Fuzzy Reasoning – Fuzzy Inference Systems – Fuzzy Expert Systems – Fuzzy Decision Making.

UNIT V   NEURO-FUZZY MODELING

Adaptive Neuro-Fuzzy Inference Systems – Coactive Neuro-Fuzzy Modeling – Classification **12** and Regression Trees – Data Clustering Algorithms – Rule base Structure Identification – Neuro-Fuzzy Control – Case Studies.

Total Hours: 60

<u>Course Outcomes:</u>

On successful completion of this course, the student will be able to
1. Gain Knowledge about various machine learning and soft computing concepts, techniques like genetic algorithm, neural networks, fuzzy logic and neurofuzzy.
2. Examine Genetic algorithms and Machine learning based on Genetic algorithm techniques.
3. Gain knowledge on various function of Neural network .
4. Evaluate approach to fuzzy logic and different fuzzy systems.
5. Examine different modeling techniques using neurofuzzy.

REFERENCES

1. Jyh-Shing Roger Jang, Chuen-Tsai Sun, EijiMizutani, "Neuro-Fuzzy and Soft Computing", Prentice-   Hall of India, 2002.
2. Kwang H.Lee, "First course on Fuzzy Theory and Applications", Springer, 2005.
3. George J. Klir and Bo Yuan, "Fuzzy Sets and Fuzzy Logic-Theory and Applications", Prentice Hall, 1996.
4. James A. Freeman and David M. Skapura, "Neural Networks Algorithms, Applications, and Programming Techniques", Addison Wesley, 2003.
5. David E.Goldberg, "Genetic Algorithms in Search, Optimization and Machine Learning", Addison Wesley, 1989.
6. Mitchell Melanie, "An Introduction to Genetic Algorithm", MIT Press, 1996.
7. S.N.Sivanandam, S.N.Deepa, "Introduction to Genetic Algorithms", Springer, 2008 edition.

INTERNET AND WEB PROGRAMMING

Semester II   **Hours of Instruction/week: 4**

17MITC09   **No of credits: 3**

Objectives:

1. To endow students with principles, knowledge and skills for the design and construction of web enabled applications.
2. To provide a comprehensive knowledge on the semantics and syntax of HTML, CSS, Javascript, Servlets, and JSP.
3. To use Java script for dynamic effects and to validate form input entry.
4. To explain the concept of browsers and document object model.
5. To relate XML documents, AJAX,XPATH and XSLT.

UNIT I INTRODUCTION TO INTERNET & WORLD-WIDE WEB   **12**
History - Web Browsers - Web Servers - Uniform Resource Locator- Tools and Web Programming Languages Hypertext Mark Up Language (HTML) : Basic HTML page - Text Formatting – Table – Headers – Linking – Images –List -Meta Elements

UNIT II CASCADING STYLE SHEETS (CSS)   **12**
Inline, Internal and External Style Sheet - Conflicting Styles - Positioning Elements, Backgrounds, Element Dimensions, Text Flow and the - Box Model User Style Sheet Introduction to JavaScript Scripting (Client-side) : Introduction - Dynamic Welcome Page - Adding Integers – Arithmetic - Decision Making: Equality and Relational Operators

UNIT III JSP TECHNOLOGY   **12**
Model-View-Controller Paradigm - Introduction- Running JSP Applications - Basic JSP-JavaBeans Classes and JSP-Tag Libraries and Files Java Servlets : Architecture – Overview - Dynamic Content - Life Cycle- Parameter Data – Sessions – Cookies - URL Rewriting- Data Storage

UNIT IV BROWSERS AND THE DOM   **12**
Introduction to the Document Object Model - History and Levels - Intrinsic Event Handling - Modifying Element Style - The Document Tree - DOM Event Handling - Accommodating Noncompliant Browsers Properties of window

UNIT V REPRESENTING WEB DATA   **12**
XML-Documents and Vocabularies-Versions and Declaration-Namespaces JavaScript and XML: Ajax-DOM based XML processing Event-oriented Parsing: SAX-Transforming XML Documents-Selecting XML Data: XPATH-Template based Transformations: XSLT-Displaying XML Documents in Browsers

                                                          Total Hours: 60

Course Outcomes:

On successful completion of this course, the student will be able to

1. Enumerate thefundamental techniques necessary for the development of web-based applications.
2. Apply markup languages and stylesheets for processing, identifying, and presenting information in web pages.
3. Use scripting languages to transfer data and add interactive components to web pages.
4. Understand the different levels of document object model and their events.
5. Design a well formed and valid XML document.

REFERENCES :

1. Internet and World Wide Web: How to Program (Third Edition), Deitel and Goldberg Pearson Prentice Hall ISBN 0-13-124682-8
2. Programming The WWW Third Edition, Robert W. Sebesta, Pearson Prentice Hall.

OPEN SOURCE TECHNOLOGIES

Semester II   **Hours of Instruction/week: 4**

17MITC10   **No of credits: 3**

Objectives:
1. To introduce the concept of open Source Software.
2. To enable students to gain knowledge in PERL.
3. To understand the fundamentals of Python Programming.
4. To give an exposure to PHP programming concepts.
5. To explore MySQL Environment.

UNIT I   OPEN SOURCE SOFTWARE   12

Open Source Definition - The distribution terms of open source software - open source technology – importance - Free and Open Source Software (FOSS) - Benefits - Perspectives of Open Source software Open Standards **:** National Information Standards Organization (NISO) - The Digital Library Federation (DLF) - The Dublin Core Metadata Initiative - MARC standards - Resource Description and Access (RDA) -. Open Archives Initiative(OAI) – PMH - Search / Retrieval via URL (SRU) - SRW/CQL - Java Platform - Enterprise Edition (Java EE). Open Source Licenses **:** GNU General Public License (GPL) - GNU Lesser General Public License (LGPL) - GNU Affero General Public License (AGPL) - Apache License - Artistic License

UNIT II   PERL   12

An Overview of Perl – Variables – Statements - Scalar values - Operators - Control structures – regular expressions – Arrays - Hashes - List processing - Pattern Matching – File Handling

UNIT III   PHP   12

Basic Syntax of PHP – programming in web environment - Common PHP Script Elements - Using Variables - Constants – Data types - Operators ; Statements – Flow Control functions – Dates and Times - Working With Arrays -Using Functions – OOP - String Manipulation and Regular Expression - File and Directory Handling - Working With Forms

UNIT IV PYTHON   12

Variables **-** Data types – Strings - Operators – Control Statements - Loops - Sequences**:** Lists – Tuples - Sets – Dictionaries – File Handling -Exception – Handling exception

UNIT V   MySQL   12

Data Types - Primary Keys and Auto Increment Fields – Queries - SQL programs - Closing a Connection.- Create Database and Tables - Sorting Query Results – Database ODBC-: Connecting to MySQL with PHP, Inserting data with PHP, Retrieving data with PHP.

Total Hours: 60

Course Outcomes:

On successful completion of this course, the student will be able to

1. Choose appropriate open source software for the given problem.
2. Analyze various open source Technologies.
3. Correlate Perl, Python and PHP programming.
4. Develop programs using PHP.
5. Create database applications using PHP and MySQL.

REFERENCES

1. Chris DiBona, Danese Cooper and Mark stone O"Reilly,"Open Sources 2.0-The Continuing Evolution", First Edition, 2005.
2. Larry Wall, Tom Christiansen, Jon Orwart- O"Reilly, "Programming PERL" Third Edition, 2010.
3. Elliot White III, Jonathan.D.Eisenhamer, "PHP 5 in practice" pearson Education,2007.
4. Mark Lutz, O"Reilly, "Programming Python 4E" ,2011.
5. Paul Du Bois,O"ReillyPublishers,"My SQL- Cookbook",Second Edition,2010.

WEB TECHNOLOGIES -PRACTICAL II
(OPEN BOOK)

Semester II   **Hours of Instruction/week: 3**

17MITC11   **No of credits: 4**

Objectives:
1. To gain knowledge in fundamental techniques for the development of web-based applications.
2. To impart students with essential knowledge in HTML, CSS, XML, DTD, XSL and DHTML filters.
3. To describe the basics of python programming.
4. To illustrate the use of with decision making statements and looping in python.
5. To discusson file handling in python

List of Programs:
1. Create a Web page using HTML Basic tags, tables, frames and forms.
2. Programs using XML .DTD and CSS
3. Programs using XML and XSL
4. Develop application using DHTML Filters.
5. Write a Python program which accepts the user's first and last name and print them in reverse order with a space between them
6. Write a Python program which accepts a sequence of comma-separated numbers from user and generate a list and a tuple with those numbers.
7. Write a Python program to display the examination schedule.
8. Write a Python program to create a histogram from a given list of integers.
9. Write a Python program to compute the distance between the points (x1, y1) and (x2, y2).
10. Write a Python program to determine profiling of Python programs.
11. Write a python program to access environment variables.
12. Write a Python program to sort three integers without using conditional statements and loops.
13. Write a Python program to calculate midpoints of a line.
14. Write a Python program to create a copy of its own source code.
15. Write a Python program to get the effective group id, effective user id, real group id, a list of supplemental group ids associated with the current process.
16. Write a Python program to divide a path on the extension separator.
17. Write a Python program to retrieve file properties.

Total Hours :45

On successful completion of this course, the student will be able to
1. Create web pages using several technologies such as HTML, CSS, XML, XSLT and DHTML.
2. Construct and debug simple python programs.
3. Make use of data structures such as lists, tuples, and dictionaries.
4. Develop python programs with conditionals and loops.
5. Understandfile handling operations

Semester II   **Hours of Instruction/week: 4**

17MITC12   **No of credits: 4**

Objectives:

1. To provide skills and knowledge necessary to create dynamic database-driven websites using PHP and MySQL.
2. To understand PHP and MYSQL data types, logic controls, built-in and user-defined functions.
3. To gain knowledge on working .with form data
4. To comprehend complex queries of MySQL.
5. To retrieve, insert, update, and delete data from MySQL in PHP environment.

List of Programs:
1. Use of conditional and looping statements in PHP
2. Program using arrays
3. Usage of array
4. Creating user defined functions
5. Creation of files
6. File manipulation using PHP
7. Creation of sessions
8. Creation of cookies
9. Creating simple applications using PHP
10. Creating simple table with constraints
11. Insertion, Updation and Deletion of rows in MYSQL tables
12. Searching of data and sorting by different criteria
13. Demonstration of joining tables
14. Program Using subqueries
15. Program using aggregate functions
16. Working with set operators
17. Working with string, numeric and date functions
18. Database connectivity in PHP with MySQL
19. Validating Input
20. Creating simple webpage using PHP

                                                             Total Hours :60

Course outcomes:
On successful completion of this course, the student will be able to
1. Validate input using PHP.
2. Construct cookies and sessions.
3. Develop Web applications using PHP and MYSQL.
4. Create tables and Test various MySQL database queries.
5. Establish PHP and MYSQL database connectivity.

TECHNICAL COMMUNICATION

Semester III   **Hours of Instruction/week: 3**

17MITC14   **No of credits: 3**

Objectives:
1. To acquire basic knowledge about technical communication.
2. To explain the active listening skills and their types.
3. To gain knowledge about the fundamentals of effective writing.
4. To recite about the technical reports and their importance.
5. To devise interviews and their characteristics

UNIT IBASICS OF TECHNICAL COMMUNICATION   **9**

Process, Characteristics, Levels, Flow, Networks and Importance. Barriers to Communication: Interpersonal, Intrapersonal, and Organizational. Non Verbal Communication: Kinesics, Proxemics, Paralinguistics, Chronemics. Technology in Communication: Software for Creating, Messages, Software for writing Documents, Software for Presenting Documents, and Transmitting Documents

UNIT IIACTIVE LISTENING   **9**

Types, Traits of a good Listener, Active versus Passive Listening, and Implications of Effective Listening. Fundamentals of Effective Writing: Words and Phrases, Sentences and Paragraphs

UNIT III FUNDAMENTALS OF EFFECTIVE WRITING   **9**

Art of Condensation, Reading Comprehension. Effective Presentation Strategies: Analyzing Audience, Organizing Contents, Preparing an outline, Visual aids, Types of Delivery.

UNIT IV TECHNICAL REPORTS   **9**

Importance, Preparatory Steps and Structure. Letters, Memos and E-mails: Structure, Principles, Types. Group Communication: Group Discussions, Meetings and Conferences.

UNIT V INTERVIEWS   **9**

Types, Preparation, Success and Failure Factors. Technical Proposals: Definition, Types, Structure and Style. Research Paper, Dissertation and Thesis: Definition, Characteristics Style and Presentation. Referencing Conventions: Preparing List of References and Bibliography. Instruction Manuals and Technical Description: Structure, Importance and style.

Total Hours: 45

<u>**Course Outcomes:**</u>

On successful completion of this course, the student will be able to
1. Read, understand and trace the fundamentals of effective listening and writing.
2. Implement effective listening.
3. Relate and apply presentation strategies.
4. Assess the group communication.
5. Demonstrate using technical description.

REFERENCES

1. Raman, Meenakshi and Sangeeta Sharma, Technical Communication: Principles and Practice, Oxford University Press, 2nd Edition, 2011.
2. Sharma Sangeeta and Binod Mishra, Communication Skills for Engineers and Scientist, Pearson Education, 2009.
3. Kumar, Sharma and Pushp Lata, Communication Skills, New Delhi: Oxford University Press, 2012.

BIG DATA ANALYTICS

Semester III   **Hours of Instruction/week: 4**

17MITC15   **No of credits: 3**

Objectives:

1. To explore the Big Data fundamentals and learn about different Analytical tools and process.
2. To understand the Data Streams and Real Time Analytics
3. To Describe the Hadoop Eco system and MapReduce programming
4. To identify the difference between Pig and Hive and learn the frameworks
5. To summarize the challenges of big data and how to deal with the same

UNIT IINTRODUCTION TO BIG DATA   **12**

Introduction to BigData Platform – Challenges of Conventional Systems - Intelligent data analysis – Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools - Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error.

UNIT IIMINING DATA STREAMS   **12**

Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP)
Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

UNIT III HADOOP   **12**

History of Hadoop- The Hadoop Distributed File System – Components of Hadoop- Analyzing the Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFS- Java interfaces to HDFS-Basics-Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution - Map Reduce Types and Formats- Map Reduce Features

UNIT IVHADOOP ENVIRONMENT   **12**

Setting up a Hadoop Cluster - Cluster specification - Cluster Setup and Installation - Hadoop Configuration-Security in Hadoop - Administering Hadoop – HDFS - Monitoring-Maintenance-Hadoop benchmarks- Hadoop in the cloud

UNIT VFRAMEWORKS   **12**

Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper - IBMInfoSphereBigInsights and Streams. Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications

Total Hours: 60

<u>**Course Outcomes:**</u>

On successful completion of this course,the student will able to,
1. Analyze the difference between structured, semi-structured and unstructured data.
2. Summarize the challenges of big data and how to deal with the same
3. Recognize the significance of NoSQL databases
4. Formulate about Hadoop Ecosystem and MapReduce programming
5. Distinguish between Pig and Hive

REFERENCES

1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
2. Tom White " Hadoop: The Definitive Guide" Third Edition, O'reilly Media, 2012.
3. Chris Eaton, Dirk DeRoos, Tom Deutsch, George Lapis, Paul Zikopoulos, "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data", McGrawHill Publishing, 2012
4. Anand Rajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", CambridgeUniversity Press, 2012.
5. Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", John Wiley & sons, 2012.
6. Glenn J. Myatt, "Making Sense of Data", John Wiley & Sons, 2007
7. Pete Warden, "Big Data Glossary", O'Reilly, 2011.
8. Jiawei Han, Micheline Kamber "Data Mining Concepts and Techniques", Second Edition, Elsevier, Reprinted 2008.
9. Da Ruan,Guoquing Chen, Etienne E.Kerre, Geert Wets, Intelligent Data Mining, Springer,2007
10. Paul Zikopoulos ,Dirk deRoos , Krishnan Parasuraman , Thomas Deutsch , James Giles , David Corrigan , Harness the Power of Big Data The IBM Big Data Platform, Tata McGraw Hill Publications, 2012.
11. Zikopoulos, Paul, Chris Eaton, Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data, Tata McGraw Hill Publications, 2011.

INFORMATION SECURITY

Semester III   **Hours of Instruction/week: 4**

17MITC16   **No of credits: 3**

Objectives

1. To obtain knowledge about attacks, encryption techniques and algorithms.
2. To understand mathematical concept, various key distribution techniques.
3. To perceive about authentication techniques and its protocols.
4. To acquire in-depth knowledge on various security applications like Electronic, IP and Websecurity.
5. To understand an extending ideas about Intrusion, Security standards, wireless security and secure routing.

UNIT I CONVENTIONAL AND MODERN ENCRYPTION   **12**

Services – Attacks – Steganography - Classical Encryption Techniques - Block ciphers and the data encryption standard – DES – AES - Differential and Linear Cryptanalysis – Modes of operation – Encryption Algorithms : Triple DES – Blowfish – CAST128

UNIT II PUBLIC KEY ENCRYPTION   **12**

Number Theory concepts – Fermat & Euler Theorem – Euclid Algorithm – RSA Algorithm – Elliptic Curve Cryptography – Diffie Hellman Key Exchange

UNIT III AUTHENTICATION AND SECURITY PRACTICE   **12**

Message Authentication and Hash function - Digital Signature and Authentication Protocols

UNIT IV NETWORK SECURITY   **12**

Authentication Application – Electronic Mail security – IP Security – Web Security

UNIT V SYSTEM SECURITY and WIRELESS SECURITY   **12**

Intruders and Intrusion – Malicious Software – Firewalls – Trusted systems – Security standards and standard settings organisation - Wirelss Security : Issues – Network Security Attach – Key Management – Secure routing

                                                            Total Hours: 60

<u>Course Outcomes:</u>

On successful completion of this course,the student will able to,
1. Explore about attacks and gain ideas of handling it.
2.   Establish a view about mathematical concepts and key distribution methods.
3.   Compare different security techniques and identify the benefits.
4.   Acquire opportunity to learn about various securities.
5.   Develop knowledge in detail and ensure ideas about security standards, intrusion, wireless security and secured routing.

REFERENCES

1. William Stallings, "Cryptography & Network Security", Pearson Education, New Delhi 2005.
2. C.Siva Ram Murthy and B.S. Manoj, "Ad Hoc Wireless Networks – Architecture and Protocols, Pearson Education, Second Edition.

DIGITAL IMAGE PROCESSING

Semester III   **Hours of Instruction/week: 4**

17MITC17   **No of credits: 3**

Objectives:

1. Explain basic principles and application of digital image processing.
2. Provide knowledge on properties and various image transformation techniques.
3. Give understanding about image enhancement and restoration techniques.
4. Differentiate various compression techniques and standards.
5. Apply different approaches to segmentation of digital image.

UNIT IDIGITAL IMAGE FUNDAMENTALS   **12**

Digital image, applications of digital image processing-elements of digital image processing-digital camera, line scan CCD sensor – display element perception – luminance – brightness, contrast- color models – RGB, CMY, HSI -Fourier transforms.

UNIT II   IMAGE TRANSFORM   **12**

Properties of Unitary transform – 2D DFT – DCT- Discrete wavelet transform- Hotelling Transform – SVD transform – Slant, Haar transforms.

UNIT III   IMAGE ENHANCEMENT AND RESTORATION   **12**

Contrast stretching – intensity level slicing – Histogram equalization – spatial averaging – smoothing – Median filtering – non linear filters – maximum , minimum, geometric mean – edge detection – degradation model –unconstrained and constrained filtering – removal of blur – Wiener filtering.

UNIT IV   IMAGE COMPRESSION   **12**

Huffman"s coding- truncated Huffman"s coding – binary codes, arithmetic coding, run length coding- transform coding – JPEG and MPEG coding.

UNIT V   IMAGE SEGMENTATION   **12**

Pixel based approach – Feature threshold – choice of feature – optimum threshold – threshold selecting method- region based approach – region growing – region splitting – region merging.

Total Hours: 60

<u>**Course Outcomes:**</u>

On successful completion of this course, the student will be able to

1. Understand the principles and application of digital image processing.
2. Gain knowledge on properties and various image transformation techniques.
3. Evaluate various image enhancement and restoration techniques.
4. Analyze various compression techniques and standards.
5. Use different segmentation approaches to digital image processing.

REFERENCES

1. S.Jayaraman, S.Esakkirajan and T.Veerakumar,"Digital Image Processing", Tata McGraw Hill Education Private Limited.
2. Gonzalez R.C and Woods R. E, "Digital image processing "Addison Wesley 2. Anil K Jain Fundamentals of Digital image processing, Prentice Hall.

3. S.Annadurai and R.Shanmugalakshmi,"Fundamentals of Digital Image Processing", Pearson Education.
4. Anil.K.Jain,"Fundamentals of Image Processing", Prentice Hall.
5. Maher.A.SidAhmad,"Image Processing-Theory,Algorithms and Architectures", McGraw Hill Education Private Limited.

DATA ANALYTICS -PRACTICAL IV

Semester III   **Hours of Instruction/week:6**

17MITC18   **No of credits: 4**

Objectives:

1. To install and setup Hadoop in different operating modes and use the Hadoop Eco system and MapReduce programming.
2. To implement different file management tasks in Hadoop system.
3. To apply mapReduce program for semi-structured or unstructured datasets to address real world problems.
4. To organise input data to handle it using HDFS.
5. To identify the difference between Pig and Hive and learn the frameworks and learning to work with NoSQL database.

List of Programs

1. Implement the following Data structures
   - a)Linked Lists
   - b) Stacks
   - c) Queues
   - d) Set
   - e) Map

2. Perform setting up and Installing Hadoop in its different operating modes:
   - a).Standalone,
   - b).Pseudo distributed,
   - c).Fully distributed.
3. Use web based tools to monitor your Hadoop setup.

4. Implement the following file management tasks in Hadoop:
   - a).Adding files and directories
   - b).Retrieving files
   - c).Deleting files

Hint: A typical Hadoop workflow creates data files (such as log files) elsewhere and copies them into HDFS using one of the above command line utilities.

5. Map Reduce application for word counting on Hadoop cluster.

6. Write a Map Reduce program that mines weather data.
   Weather sensors collecting data every hour at many locations across the globe gather a large volume of log data, which is a good candidate for analysis with MapReduce, since it is semi structured and record-oriented.

7. Implement Matrix Multiplication with Hadoop Map Reduce

8. Install and Run Pig then write Pig Latin scripts to sort, group, join, project, and filter your data.

9. Install and Run Hive then use Hive to create, alter, and drop databases, tables, views, functions, and indexes

10 . Unstructured data into NoSQL data and do all operations such as NoSQL query with API.

Total Hours : 90

<u>Course Outcomes:</u>

On successful completion of this course, the student will be able to
1. Differentiate between structured, semi-structured and unstructured data.
2. Summarize the challenges of big data and how to deal with the same.
3. Understand the significance of NoSQL databases.
4. Manipulate in Hadoop Ecosystem and MapReduce programming.
5. Prioritize Pig and Hive systems.

MOBILE APPLICATION DEVELOPMENT -PRACTICAL V

Semester III   **Hours of Instruction/week:6**

17MITC19   **No of credits: 4**

Objectives

1. To expose the students to the technology for developing mobile applications.
2. To understand the basics of Android platform.
3. To gain knowledge on working with the Android file system.
4. To be familiar to SQLite Database.
5. To provide skills to work with multimedia based applications under the Android operating system.

List of Programs

1. Create an Application which deals with the Android Content Providers.

2. Create Application using Android Layouts, Views and Events

3. Create an application which uses Files, Preferences and Notifications

4. Create Application to Create, Modify and Query an SQLite Database

5. Create an application for Querying web services and Parsing response

6. Create Application which uses the concept of Services and Background Threats

7. Creating Android Audio Video Application

8. Create an Application which uses Map Activity and points the locations onto the Map Locations

9. Create an Application with One-Time, Repeating Alarms, and Long-Running Background Task as Service.

10. Create an Application for Simple Mobile Game.

Total Hours : 90

Course outcomes

On successful completion of this course, the student will be able to

1. Design and create Android apps.
2. Write simple GUI applications.
3. Use built-in widgets and components.
4. Design application to work with the database.
5. Create an Application for Simple Mobile Game.

SOFTWARE PROJECT MANAGEMENT (SELF STUDY)

Semester III   **Hours of Instruction/week: 1**

17MITC20   **No of credits: 4**

Objectives:

1. To define basics of software project management.
2. To understand the software evaluation and costing.
3. To learn aboutsoftware estimation techniques.
4. To apply Risk Management.
5. To experiment software quality management.

UNIT I   SOFTWARE PROJECT MANAGEMENT CONCEPTS   3

Introduction to Software Project Management: An Overview of Project Planning: Select Project, Identifying Project scope and objectives, infrastructure, project products and Characteristics. Estimate efforts, Identify activity risks, and Allocate resources.

UNIT II   SOFTWARE EVALUATION AND COSTING   3

Project Evaluation: Strategic Assessment, Technical Assessment, cost-benefit analysis, Cash flow forecasting, cost-benefit evaluation techniques, Risk Evaluation. Selection of Appropriate Project approach: Choosing technologies, choice of process models, Structured methods.

UNIT III   SOFTWARE ESTIMATION TECHNIQUES   3

Software Effort Estimation: Problems with over and under estimations, Basis of software Estimation, Software estimation techniques, expert Judgment, Estimating by analogy. Activity Planning: Project schedules, projects and activities, sequencing and scheduling Activities, networks planning models, formulating a network model.

UNIT IV   RISK MANAGEMENT   3

Risk Management: Nature of Risk, Managing Risk, Risk Identification and Analysis, Reducing the Risk. Resource Allocation: Scheduling resources, Critical Paths, Cost scheduling, Monitoring and Control: Creating Framework, cost monitoring, prioritizing monitoring.

UNIT V   SOFTWARE QUALITY MANAGEMENT   3

TQM, Six Sigma, Software Quality: defining software quality, External Standards, Comparison of project management software's: dot Project, Launch pad, openProj. Case study:PRINCE2

Total Hours: 15

Course Outcomes:

On successful completion of this course, the student will be able to

1. Describe the basics of project planning.
2. Relate and apply project evaluation and approach.
3. Extend the software estimation to project planning.
4. Demonstrate how to manage risk and resource allocation.
5. Infer the software quality.

TEXT BOOK

1. Bob Hughes & Mike Cotterell, "Software Project Management", Tata McGraw- Hill Publications, Fifth Edition 2012.

REFERENCES

1. S. A. Kelkar," Software Project Management" PHI, New Delhi, Third Edition ,2013.
2. Richard H.Thayer "Software Engineering Project Management,": IEEE Computer Society
3. Futrell , "Quality Software Project Management", Pearson Education India, 2008
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5. http://www.ogc.gov.uk/methods_prince_2.asp

DEPARTMENT OF INFORMATION TECHNOLOGY

INTERDISCIPLINARY COURSE

CYBER FORENSICS

Semester II   **Hours of Instruction/week: 4**

17MITI01   **No of credits: 4**

Objectives:

1. To introduce the importance of computer forensics technology and to identify various forensic services.
2. To describe various data recovery process for evidence collection and how to conserve the authentication of the evidence.
3. To provide a comprehensive knowledge in the procedures for discovering, identifying, constructing and preserving the electronic evidence.
4. To build up in-depth knowledge on global Information warfare and tactics accomplish by various groups.
5. To develop understanding on cyber Surveillance and advanced Computer Forensic systems and future directions.

UNIT I TYPES OF COMPUTER FORENSICS   12

Computer Forensics Fundamentals – Types of Computer Forensics Technology – Types ofVendor and Computer Forensics Services.

UNIT II DATA RECOVERY   12

Data Recovery – Evidence Collection and Data Seizure – Duplication and Preservation of Digital Evidence – Computer Image Verification and Authentication.

UNIT III ELECTRONIC EVIDENCE   12

Discover of Electronic Evidence – Identification of Data – Reconstructing Past Events – Networks.

UNIT IV THREATS   12

Fighting against Macro Threats – Information Warfare Arsenal – Tactics of the Military – Tactics of Terrorist and Rogues – Tactics of Private Companies.

UNIT V SURVEILLANCE   12

Surveillance Tools – Victims and Refugees – Advanced computer forensics.

Total Hours: 60

Course Outcomes:
On successful completion of this course, the student will be able to

1. Describe the essential computer forensic technologies, services and vendors in the field of digital forensic science.
2. Demonstrate knowledge in numerous forensic tools and utilization of tools for data recovery and image verification procedures.
3. Identify the significance of a systematic procedure to investigate electronic data in order to discover digital evidence of unlawful activity.
4. Manage with threats related to security and *information warfare*
5. Procure hypothetical knowledge in many areas of computer forensic investigations.

TEXT BOOK:
1. John R. Vacca, "Computer Forensics", Firewall Media, 2004.

REFERENCES:
1. Chad Steel, "Windows Forensics", Wiley India, 2006.
2. Majid Yar, "Cybercrime and Society", Sage Publications, 2006.
3. Robert M Slade, "Software Forensics", Tata McGraw Hill, 2004.

DEPARTMENT OF INFORMATION TECHNOLOGY

MULTIDISCIPLINARY COURSE

ICT FOR LEARNING

Semester II   **Hours of Instruction/week: 2**

17MITM01   **No of credits: 2**

Objectives
1. To make the students understand about the basic concepts of ICT in detail.
2. To explore the online learning tools.
3. To explore mobile learning tools.
4. To teach the fundamentals of Internet.
5. To practice safe, ethical and legal ways of using ICT.

UNIT I   **6**
Introduction to ICT-Usage of ICT-Privacy in computer usage-Authentication-verification-ICT tools

UNIT II   **6**
Fundamentals of Internet-Internet Filtering- Search Engines-Searching Techniques,. E-Mail.

UNIT III   **6**
Online portals for learning – MOOC and other online learning resources.

UNIT IV   **6**
Mobile applications for learning-Benefits and challenges of mobile learning

UNIT V   **6**
Computer security-Threats-Security Measures- Impact of ICT on society—Computer Ethics-Cyber crimes and laws – government controls and laws on ICT.

                                                                                       Total Hours: 30

Course Outcomes:

On successful completion of this course, the student will be able to

1. Understand the key concepts and benefits of using ICT in detail.
2. Effectively use ICT tools, software applications and digital resources.
3. Integrate ICT in to learning activities.
4. Employ online and mobile learning tools.
5. Examinelegal and security issues.

REFERENCES:

http://download.nos.org/basiccomp/l17.pdf

http://www.itdesk.info/handbook_basic_ict_concepts.pdf

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