

**Scheme of Teaching and Examination for
5 th Semester of 3 Years Diploma in Computer Science & Engineering**

Duration of Semester : **14 Weeks**

Student Contact Hours : **36 Hrs**

Total Marks : **800**

Effective from : 2017 -18 Session

Sl. No.	Name of Subject	Subject Code	Subject	Teaching Scheme			Examination Scheme				
				L	T	P	Hours of Exam	Full Marks of Subject	Final Exam / committee marks	Internal Assessment	Pass Marks Final / Ext. Exam
1.	Microprocessors & Microcontrollers	CSE 503	Theory	3		-	3	100	80	20	26
2.	Java Programming	CSE 504	Theory	3	-	-	3	100	80	20	26
3.	Computer Graphics	CSE505	Theory	3	-	-	3	100	80	20	26
4.	Elective I	CSE 506/507/508	Theory	3	-	-	3	100	80	20	26
5.	Elective II	CSE 509/510/511	Theory	3	-	-	3	100	80	20	26
6.	Java Programming Lab	CSE512	Practical	-	-	2	4	50	40	10	-
7.	Computer Graphics Lab	CSE513	Practical	-	-	2	4	50	40	10	-
8.	Elective I lab	CSE 514/515/516	Sessional	-	-	2	-	50	30	20	-
9.	Elective II Labs	CSE 517/518/519	Sessional	-	-	2	-	50	30	20	-
10.	In Plant Training	502	sessional	-	-	-	-	50	30	20	-
11.	DLS	501	Sessional	-	-	4		50	30	20	-
Total Hours of Teaching per week :				15		14					

Elective I (Mobile Computing- CSE 506/ System Software & Administration-CSE 507/ Advance Web Technology-CSE 508)

Elective II (Artificial Intelligence CSE509/Data Mining CSE 510/e- Commerce CSE 511)

Total Marks: Theory : Practical : Sessional :

L : Lecture, T : Tutorial P : Practical

Note: 1. Period of Class hours should be of 1 hrs duration as per AICTE norms.

2. Remaining Hrs every week has been marked for students for Library and Student Centered Activities.

3. Drawing / Graphics / Practical / Sessional examinations will be held at parent institution.

4. Board will depute examiner for Practical examination.

5. Regarding sessional examination the parent institution will form a three member committee and this committee will examine the sessional records and hold viva of the examinee for 60 % marks allotted to the subject. Marks for remaining 40 % will be provided by the Faculty concerned on the basis of evaluation of each job / work throughout the semester.

6. Inplant Training of 04 weeks duration to be undertaken after 4th semester Exam and before start of 5th semester classes.

Subject	: Microprocessor & Microcontroller
Subject Code	: CSE503
Total Hours	: 42
Full Marks	: $80 + 20 = 100$

OBJECTIVES:

The student should be made to:

Study the Architecture of 8085 and 8086 microprocessor.

- Learn the design aspects of I/O and Memory Interfacing circuits.
- Study about communication and bus interfacing.

Study the Architecture of 8051 microcontroller.

UNIT I	THE 8085 MICROPROCESSOR	4 Hrs
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Introduction to 8085 – Microprocessor architecture , pin out diagram, – Addressing modes - Instruction set, Interrupts and interrupt service routines.

UNIT II	THE 8086 MICROPROCESSOR	8 Hrs
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Introduction to 8086 – Microprocessor architecture – Addressing modes - Instruction set and assembler directives – concept of pipelining, Assembly language programming – Modular Programming - Linking and Relocation - Stacks - Procedures – Macros – Interrupts and interrupt service routines – Byte and String Manipulation.

UNIT III	8086 SYSTEM BUS STRUCTURE	6 Hrs
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8086 signals – Basic configurations – System bus timing –System design using 8086 – IO programming – Introduction to Multiprogramming – System Bus Structure - Multiprocessor configurations – Coprocessor, Closely coupled and loosely Coupled configurations.

UNIT IV	I/O INTERFACING	6 Hrs
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Memory Interfacing and I/O interfacing - Parallel communication interface – Serial communication interface – D/A and A/D Interface - Timer – Keyboard /display controller – Interrupt controller – DMA controller – Programming and applications Case studies: Traffic Light control, LED display , LCD display, Keyboard display interface and Alarm Controller.

UNIT V	MICROCONTROLLER	6 Hrs
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Architecture of 8051 – Special Function Registers(SFRs) - I/O Pins Ports and Circuits - Instruction set - Addressing modes - Assembly language programming.

UNIT VI	INTERFACING MICROCONTROLLER	9 Hrs
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Programming 8051 Timers - Serial Port Programming - Interrupts Programming – LCD & Keyboard Interfacing - ADC, DAC & Sensor Interfacing - External Memory Interface- Stepper Motor and Waveform generation.

TEXT BOOKS:

1. Microprocessor Architecture, Programming and Applications with 8085 by Ramesh K Goankar, Galgotia Pub
2. Digital Computer System by Malvino (2nd Ed) TMH
3. Yu-Cheng Liu, Glenn A.Gibson, "Microcomputer Systems: The 8086 / 8088 Family - Architecture, Programming and Design", Second Edition, Prentice Hall of India, 2007.
4. Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, "The 8051 Microcontroller and Embedded Systems: Using Assembly and C", Second Edition, Pearson education, 2011.

REFERENCE: 1. Doughlas V.Hall, "Micropcessors and Interfacing, Programming and Hardware", TMH,2012

Subject	: Java Programming
Subject Code	: CSE504
Total Hours	: 42
Full Marks	: $80 + 20 = 100$

1. Introduction to Java:- 12 hrs

Fundamentals of Object Oriented Programming , Object and Classes, Data abstraction and encapsulation, Inheritance, Polymorphism, Dynamic Binding. Java Features:- Compiled and Interpreted, Platform independent and portable, Object oriented Distributed, Multithreaded and interactive, High performance. Constant, Variables and Data Types, Constant, Data Types, Scope of variable, Symbolic Constant, Type casting, Standard default values. Operator and Expression:- Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operator Increment and Decrement Operator, Conditional Operator, Bit wise Operator, Special Operator. Decision making and Branching:- Decision making with if statement, Simple if statement, The if else statement, The else if ladder, The switch statement, The? : Operator. Decision making and Looping:- The While statement, The do statement, The for statement, Jumps in Loops, Labeled Loops.

2. Classes, Object and Methods:- 10 hrs

Defining a class, Creating object, Accessing class members, Constructor, Methods Overloading, Static Member. Inheritance Extending a Class (Defining a subclass Constructor, Multilevel inheritance, Hierarchical inheritance, Overriding Methods, Final variable and Methods, Final Classes, Abstract method and Classes . Visibility Control:- Public access, friend access, Protected access, Private access, Private Protected access. Array, Strings and Vectors:- Arrays, One Dimensional array, Creating an array, Two Dimensional array, Strings, Vectors, Wrapper Classes. Interfaces and Packages:- Interface: Multiple Inheritance Defining interfaces, Extending interfaces, Implementing interfaces, Accessing Interface variable. Packages: Putting Classes Together System Package, Using system Package, Naming Convention, Creating Package, Accessing a package, Using a package, adding a class to a package .

3. Multithreaded Programming and Exception handling:- 12 hrs

Multi Threading: Creating Thread, Extending a thread class, Stopping and Blocking a thread, Life cycle of thread, Using thread method, Thread exceptions, Thread priority, Synchronization, Managing Errors and Exceptions Types of errors, Exception. Java Applets and Graphics Programming:- Applet Programming Local and remote applets, How applet differ from application, Preparing to write applets, Building applet code, Applet life cycle, Creating an Executable Applet, Designing a Web page, Applet tag, Adding Applet to HTML file, Running the Applet

4. Servlets 8 hrs

Introduction, Web application and architecture, Http protocol and Http method, Web server and web container, servlet interface.

BOOKS RECOMMENDED:-

1. Programming in JAVA by E. Balagurusamy by TMH publications.
2. JAVA 2 Complete BPB publications.
3. Programming in JAVA 2 by QUE (Prentice Hall) publications.
4. MCSE networking guide by BPB publications.
5. Java Complete Reference TMH

Subject	: Java Programming Lab
Subject Code	: CSE512

List of Practical's

To write a Java application program which clarify the following points.

How to compile and run, How to set path and class path, Single and Multi-line comments, and, Command line arguments. Data Types, Variables Operators & Arrays

To write a Java program which defines and initialized different data types byte, short, int, long, float & double. Problems related to Character and Boolean data type.

Problems related to one and two dimensional array. Problems related to Arithmetic, bit wise and relational operators.

Control Statements & Looping Structure Problems related to: IF-ELSE, IF-ELSE-IF, SWITCH statements.

Problems related to the following looping statements — WHILE, DO-WHILE & FOR.

Problems related to nested looping and jump statements (BREAK, CONTINUE & RETURN)
Classes, Objects & Methods

To write a Java program to clarify the following points: (a) how to declare a class, (b) how to create an object, (c) how methods are defining in a class, (d) access variables and methods.

To construct a Java program which defines: (a) how arguments values are passed to a method, (b) use of new operator, constructor and finalize) method, (c) passing objects to a method, (d) declaration of static keyword.

To practice problems related to: (a) Method overloading, (b) Multiple constructor, (c) Calling constructor from a constructor.

Exception Handling

To write a Java program which is constructed using TRY, CATCH and FINALLY blocks Inheritance & Extending Classes (Interface)

To write Java programs which clarify the following: (a) super class, (b) subclass/derive class, (c) understanding abstract and final class, (d) polymorphism.

To practice problems related to: (a) Multiple Inheritance, (b) Interface, (c) Extending Interfaces. Thread & Multi-Thread

Subject	: Computer Graphics
Subject Code	: CSE505
Total Hours	: 42
Full Marks	: $80 + 20 = 100$

Module I Introduction to computer graphics & graphics systems 6 Hrs
 Overview of computer graphics, representing pictures, preparing, presenting & interacting with pictures for presentations; Visualization & image processing; RGB color model, direct coding, lookup table; storage tube graphics display, Raster scan display, 3D viewing devices, Plotters, printers, digitizers, Light pens etc.; Active & Passive graphics devices; Computer graphics software.

Scan conversion: 6 Hrs

Points & lines, Line drawing algorithms; DDA algorithm, Bresenham's line algorithm, Circle generation algorithm; Ellipse generating algorithm; scan line polygon, fill algorithm, boundary fill algorithm, flood fill algorithm.

Module II

2D transformation & viewing 9 Hrs

Basic transformations: translation , rotation, scaling ; Matrix representations & homogeneous coordinates, transformations between coordinate systems; reflection shear; Transformation of points, lines , parallel lines, intersecting lines. Viewing pipeline, Window to viewport co-ordinate transformation , clipping operations , point clipping , line clipping, clipping circles , polygons & ellipse.

3D transformation & viewing 7 Hrs

3D transformations: translation, rotation, scaling & other transformations. Rotation about an arbitrary axis in space, reflection through an arbitrary plane; general parallel projection transformation; clipping, viewport clipping, 3D viewing.

Module III

Curves 5 Hrs

Curve representation, surfaces , designs , Bezier curves , B-spline curves, end conditions for periodic B-spline curves, rational B-spline curves.

Hidden surfaces 5 Hrs

Depth comparison, Z-buffer algorithm, Back face detection, BSP tree method, the Painter's algorithm, scan-line algorithm; Hidden line elimination, wire frame methods , fractal - geometry.

Color & shading models 4 Hrs

Light & color model; interpolative shading model; Texture;

Subject : Computer Graphics Lab
Subject Code : CSE513

List of Experiments :

1. Write a program for 2D line drawing as Raster Graphics Display.
2. Write a program for display basic 2D geometric primitives.
3. Write a program to display a filled square.
4. Write a program to display a series of concentric circles of varying radius.
5. Write a program for line drawing as Raster Graphics Display.
6. Write a program for circle drawing as Raster Graphics Display.
7. Write a program to draw a line using Bresenham line drawing algorithm
8. Write a program to draw a circle using Midpoint algorithm. Modify the same for drawing an arc and sector.
9. Write a program to rotate a point about origin.
10. Write a program to rotate a triangle about origin.
11. Write a program to scale the triangle using 2D transformation.
12. Write a program to translate a triangle using 2D transformation.
13. Write a program to reflect a triangle 2D transformation.
14. Write a program for polygon filling as Raster Graphics Display
15. Write a program for line clipping.
16. Write a program for polygon clipping.
17. Write a program for displaying 3D objects as 2D display using perspective transformation.
18. Write a program for rotation of a 3D object about arbitrary axis.
19. Write a program in OpenGL for building mouse cursors.
20. Write a program in OpenGL for freehand drawing using mouse.

Text Books:

1. Hearn, Baker – “ Computer Graphics (C version 2nd Ed.)” – Pearson education
2. Z. Xiang, R. Plastock – “ Schaum’s outlines Computer Graphics (2nd Ed.)” – TMH
3. D. F. Rogers, J. A. Adams – “ Mathematical Elements for Computer Graphics (2nd Ed.)” – TMH
4. Mukherjee, Fundamentals of Computer graphics & Multimedia, PHI
5. Sanhker, Multimedia –A Practical Approach, Jaico
6. Buford J. K. – “Multimedia Systems” – Pearson Education
7. Andleigh & Thakrar, Multimedia, PHI
8. Mukherjee Arup, Introduction to Computer Graphics, Vikas
9. Hill,Computer Graphics using open GL, Pearson Education

Reference Books:

1. Foley, Vandam, Feiner, Hughes – “Computer Graphics principles (2nd Ed.) – Pearson Education.
2. W. M. Newman, R. F. Sproull – “Principles of Interactive computer Graphics” – TMH.

Subject : Mobile Computing (Elective-II)
Subject Code : CSE506
Total Hours : 42
Full Marks : $80 + 20 = 100$

Unit-I

Introduction 10 hrs

Issues in mobile computing, overview of wireless telephony: cellular concept, GSM: air-interface, channel structure, location management: HLR-VLR, hierarchical, handoffs, channel allocation in cellular systems

Unit II

Mobile Network & Transport Layer 12 hrs

Mobile IP Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunnelling and encapsulation, Dynamic Host Configuration Protocol (DHCP), Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

Unit III

Wireless Networking 10 hrs

Wireless LAN Overview: MAC issues, IEEE 802.11, Blue Tooth, Wireless multiple access protocols, TCP over wireless, Wireless applications, data broadcasting, Mobile IP, WAP: Architecture, protocol stack, application environment, applications.

Unit IV

Mobile Ad hoc Networks 10 hrs

Mobile Agents computing, security and fault tolerance, transaction processing in mobile computing environment, Mobile Ad hoc Networks (MANETs): Overview, Properties of a MANET, spectrum of MANET applications, routing and various routing algorithms, security in MANETs.

Subject : Mobile Computing Lab (Elective-II)
Subject Code : CSE514

List of Experiments

1. Baseband communication
2. Adaptive Linear equalizer
3. CDMA multi path
4. CDMA Multiuser
5. Global System for Mobile Communication
6. GSM Wireless digital communication on digital SDR platform
7. GSM spread spectrum DSSS Modulation and demodulation
8. Free space propagation using path loss model
9. Link budget equation for sat communication
10. Carrier to noise ratio of wireless signal
11. Outdoor propagation Okumura model
12. Outdoor propagation Hata model
13. Selective retransmission
14. Tunneling and encapsulation,
15. Data broadcasting MANETs

Reference Books:

1. J. Schiller, Mobile Communications, Addison-Wesley, second edition, 2004.
2. Raj Pandya, Mobile & Personal Communication Systems and Service, PHI.
3. Asoke k Talukder , Roopa R Yavagal, Mobile Computing , Technology, Application & Service Creation. Tata Mc Graw Hill
4. Stojmenovic and Cacute, —Handbook of Wireless Networks and Mobile Computing, Wiley,

Subject	: System Software and Administration (Elective-II)
Subject Code	: CSE507
Total Hours	: 42
Full Marks	: $80 + 20 = 100$

Module I

System Software 15 Hrs

Assemblers: General design procedures, Design of two pass assemblers, Cross Assemblers, Macro Processors – Features of a macro facility,(macro instruction arguments, conditional macro expansion, macro calls within macros), Implementation of a restricted facility : A two pass algorithm; Macro Assemblers. Loader schemes: Compile and go loaders, absolute loaders, relocating loader, Linking, Reallocation- static & dynamic linking, Direct linking loaders, Binders, Overlays, dynamic binders; Working principle of Editors, Debuggers.

Module II System Administration

Introduction: 3 Hrs

Duties of the Administrator, Administration tools, Overview of permissions. Processes: Process status, Killing processes, process priority. Starting up and Shut down: Peripherals, Kernel loading, Console, The scheduler, init and the in it tab file, Run-levels, Run level scripts.

Managing User Accounts: 2 Hrs

Principles, password file, Password security, Shadow file, Groups and the group file, Shells, restricted shells, user management commands, homes and permissions, default files, profiles, locking accounts, setting passwords, Switching user, Switching group, Removing users.

Managing Unix File Systems: 2 Hrs

Partitions, Swap space, Device files, Raw and Block files, Formatting disks, Making file systems, Superblock, I-nodes, File system checker, Mounting file systems, Logical Volumes, Network File systems, Boot disks

Configuring the TCP/IP Networking : 4 Hrs

Kernel Configuration; Mounting the /proc File system, Installing the Binaries, Setting the Hostname, Assigning IP Addresses, Creating Subnets, Writing hosts and networks Files, Interface Configuration for IP, if config, net stat command, Checking the ARP Tables; Name service and resolver configuration.

Module III

TCP/IP Firewall : 6 Hrs

Methods of Attack, What Is a Firewall? What Is IP Filtering? Setting Up Linux for Firewalling Testing a Firewall Configuration; A Sample Firewall Configuration: IP Accounting, Configuring the Kernel for IP Accounting, Configuring IP Accounting, Using IP Accounting Results.

IP Masquerade and Network Address Translation: 4 Hrs

Side Effects and Fringe Benefits, Configuring the Kernel for IP Masquerade, Configuring IP Masquerade. Module IV The Network Information System, Getting Acquainted with NIS, NIS Versus NIS+, The Client Side of NIS, Running an NIS Server, NIS Server Security.

Network file system: 3 Hrs

Preparing NFS, Mounting an NFS Volume, The NFS Daemons, The exports File.

System Backup & Recovery: 3 Hrs

Log files for system and applications; Backup schedules and methods (manual and automated).

Text Books:

1. L.L. Beck – “System Software “ (3rd Ed.)- Pearson Education
2. Michel Ticher – “PC System Programming”, Abacus.
3. Kirch – “ Linux network Administrator’s guide (2nd Ed.)” – O’Rielly
4. Maxwell – “Unix system administration” - TMH
5. Limoncelli –“The Practice of System & Network Administration”-Pearson
6. Wells, LINUX Installation & Administration, Vikas

Reference Books:

1. W. R. Stevens – “Unix network programming, vol. 1(2nd Ed.)” – Pearson Education/PHI
2. W. R. Stevens – “TCP/IP illustrated, vol. 1” – PHI/Pearson Education
3. Comer – “Internetworking with TCP/IP, vol. 1(4th Ed.)” – Pearson Education/PHI
4. E. Nemeth, G. Snyder, S. Seebass, T. R. Hein – “ Unix system administration handbook” – Pearson Education

Subject : System Software and Administration Lab (Elective-II)

Subject Code : CSE515

Minimum 10 Practical's based on following themes are to be performed by students

Packet monitoring software (tcp dump, snort, ethereal)

Trace route, Ping, Finger, N map

Server configuration (FTP, SMTP, DNS)

NFS Configuration

Firewall Configuration using ip tables/ ip chains (Linux only)

Experiments using Turbo C Assembler Note: All the above experiments may be performed in both Unix /Linux & Windows Object

Subject : Advance Web Technology (Elective-I)
Subject Code : CSE508
Total Hours : 42
Full Marks : $80 + 20 = 100$

Module1: 10 Hrs

Introduction – Service Oriented Enterprise – Service Oriented Architecture (SOA) – SOA and Web Services – Multi-Channel Access – Business Process management – Extended Web Services Specifications – Overview of SOA – Concepts – Key Service Characteristics – Technical Benefits – Business Benefits

Module2: 14 Hrs

SOA and Web Services – Web Services Platform – Service Contracts – Service Level Data Model – Service Discovery – Service-Level Security – Service-Level Interaction patterns – Atomic Services and Composite Services – Proxies and Skeletons – Communication – Integration Overview – XML and Web Services - .NET and J2EE Interoperability – Service-Enabling Legacy Systems – Enterprise Service Bus Pattern

Module3: 8 Hrs

Multi-Channel Access – Business Benefits – SOA for Multi Channel Access – Tiers – Business Process Management – Concepts – BPM, SOA and Web Services – WSBPEL – Web Services Composition

Module4: 6 Hrs

Java Web Services – JAX APIs – JAXP – JAX-RPC – JAXM – JAXR – JAXB

Module5: 4 Hrs

Metadata Management – Web Services Security – Advanced Messaging – Transaction Management

Subject : Advance Web Technology
Subject Code : CSE516

List of Experiments

1. Exercise different terminology about XML.
2. Write Simple XML parser using Java (SAX) or .net (DOM).
3. Study terminology about Semantic Web.
4. Design arithmetic web service with following four basic operation.
5. Write web service in JAVA or .net.
6. Write following client in following language. Java Desktop Client
 Java Web Client
 .net Desktop Client
 .net Web Client
 Php web client
7. Develop WSDL files and based on WSDL generator generate proxy class and make of use it in any client program.
8. What is REST web service? Write REST web service in java/.net
9. Design a web service for data security using DES encryption and description algorithm. It should have specification for:
 - Platform of execution
 - Interface
 - Message Structure
 - Performance
 - Identity Services and Complex ProcessesImplement it using REST web service.
9. Write a small SOA project.

Text Books:

1. Eric Newcomer, Greg Lomow, "Understanding SOA with Web Services", Pearson Education, 2005.
2. James McGovern, Sameer Tyagi, Michael E Stevens, Sunil Mathew, "Java Web Services Architecture", Elsevier, 2003.

Reference Books:

1. Thomas Erl, "Service Oriented Architecture", Pearson Education, 2005.
2. Frank Cohen, "FastSOA", Elsevier, 2007.

Subject	: Artificial Intelligence (Elective-II)
Subject Code	: CSE509
Total Hours	: 42
Full Marks	: $80 + 20 = 100$

Introduction 2 Hrs

Overview of Artificial intelligence- Problems of AI, AI technique, Tic - Tac - Toe problem.

Intelligent Agents 2 Hrs

Agents & environment, nature of environment, structure of agents, goal based agents, utility based agents, learning agents.

Problem Solving 2 Hrs

Problems, Problem Space & search: Defining the problem as state space search, production system, problem characteristics, issues in the design of search programs.

Search techniques 5 Hrs

Computer Science & Engineering Syllabus Solving problems by searching :problem solving agents, searching for solutions; uniform search strategies: breadth first search, depth first search, depth limited search, bidirectional search, comparing uniform search strategies.

Heuristic search strategies 5 Hrs

Greedy best-first search, A* search, memory bounded heuristic search: local search algorithms & optimization problems: Hill climbing search, simulated annealing search, local beam search, genetic algorithms; constraint satisfaction problems, local search for constraint satisfaction problems.

Adversarial search [3]

Games, optimal decisions & strategies in games, the minimax search procedure, alpha-beta pruning, additional refinements, iterative deepening.

Knowledge & reasoning 3 Hrs

Knowledge representation issues, representation & mapping, approaches to knowledge representation, issues in knowledge representation.

Using predicate logic 2 Hrs

Representing simple fact in logic, representing instant & ISA relationship, computable functions & predicates, resolution, natural deduction.

Representing knowledge using rules 3 Hrs

Procedural verses declarative knowledge, logic programming, forward verses backward reasoning, matching, control knowledge.

Probabilistic reasoning 3 Hrs

Representing knowledge in an uncertain domain, the semantics of Bayesian networks, Dempster-Shafer theory, Fuzzy sets & fuzzy logics.

Planning 2 Hrs

Overview, components of a planning system, Goal stack planning, Hierarchical planning, other planning techniques.

Natural Language processing 2 Hrs

Introduction, Syntactic processing, semantic analysis, discourse & pragmatic processing.

Learning 2 Hrs

Forms of learning, inductive learning, learning decision trees, explanation based learning, learning using relevance information, neural net learning & genetic learning.

Expert Systems 2 Hrs

Representing and using domain knowledge, expert system shells, knowledge acquisition.

Basic knowledge of programming language like Prolog & Lisp. 4 Hrs

Subject : Artificial Intelligence Lab (Elective-II)

Subject Code : CSE517

List of Experiments:

1. Implementation of DFS for water jug problem using LISP /PROLOG
2. Implementation of BFS for tic-tac-toe problem using LISP /PROLOG/Java
3. Implementation of TSP using heuristic approach using Java/LISP/Prolog
4. Implementation of Simulated Annealing Algorithm using LISP /PROLOG
5. Implementation of Hill-climbing to solve 8- Puzzle Problem
6. Implementation of Towers of Hanoi Problem using LISP /PROLOG
7. Implementation of A* Algorithm using LISP /PROLOG
8. Implementation of Hill Climbing Algorithm using LISP /PROLOG
9. Implementation Expert System with forward chaining using JESS/ CLIPS
10. Implementation Expert System with backward chaining using RVD/PROLOG

Mini project on developing any Simple Expert Systems

1. A case-study on Financial planning Expert System,
2. Sale Expert system,
3. DENDRAL
4. MYCIN
5. Any Expert system of Student Choice

Books:

1. Artificial Intelligence, Ritch & Knight, TMH
2. Artificial Intelligence A Modern Approach, Stuart Russel Peter Norvig Pearson
3. Introduction to Artificial Intelligence & Expert Systems, Patterson, PHI
4. Poole, Computational Intelligence, OUP
5. Logic & Prolog Programming, Saroj Kaushik, New Age International
6. Expert Systems, Giarranto, VIKAS
7. Artificial Intelligence, Russel, Pearson

Subject	: Data Mining (Elective-II)
Subject Code	: CSE510
Total Hours	: 42
Full Marks	: $80 + 20 = 100$

Module1: Introduction: Basic concepts of data mining, including motivation and definition; different types of data repositories; data mining functionalities; concept of interesting patterns; data mining tasks; current trends, major issues and ethics in data mining 6 Hrs

Module2: Data: Types of data and data quality; Data Preprocessing: data cleaning, data integration and transformation, data reduction, discretization and concept hierarchy generation; Exploring Data: summary statistics, visualization, multidimensional data analysis 6 Hrs

Module3: Association and Correlation Analysis: Basic concepts: frequent patterns, association rules - support and confidence; Frequent item set generation - Apriority algorithm, FP-Growth algorithm; Rule generation, Applications of Association rules; Correlation analysis. 6 Hrs

Module4: Clustering Algorithms and Cluster Analysis: Concept of clustering, measures of similarity, Clustering algorithms: Partitioning methods - k-means and k-medoids, CLARANS, Hierarchical methods - agglomerative and divisive clustering, BIRCH, Density based methods - Subspace clustering, DBSCAN; Graph-based clustering - MST clustering; Cluster evaluation; Outlier detection and analysis. 10 Hrs

Module5: Classification: Binary Classification - Basic concepts, Bayes theorem and Naive Bayes classifier, Association based classification, Rule based classifiers, Nearest neighbour classifiers, Decision Trees, Random Forest; Perceptrons; Multi-category classification; Model over fitting, Evaluation of classifier performance - cross validation, ROC curves. 8 Hrs

Module6: Applications: Text mining, Web data analysis, Recommender systems. Prerequisites: Familiarity with basic Linear Algebra and Probability will be assumed. 6 Hrs

Text Books:

1. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Introduction to Data Mining. Pearson (2005), India. ISBN 978-8131714720
2. Jiawei Han and Micheline Kamber, Data Mining: Concepts and Techniques, Morgan Kaufmann, 3rd edition (July 2011). 744 pages. ISBN 978-0123814791
3. Ian H. Witten and Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques, Morgan Kaufmann, 3rd edition (January 2011). 664 pages. ISBN 978-0123748560.

Reference Books:

1. T. Hastie, R. Tibshirani and J. H. Friedman, The Elements of Statistical Learning, Data Mining, Inference, and Prediction. Springer, 2nd Edition, 2009. 768 pages. ISBN 978-0387848570
2. C. M. Bishop, Pattern Recognition and Machine Learning. Springer, 1st edition, 2006. 738 pages. ISBN 9780387310732

Subject	: Data Mining Lab (Elective-II)
Subject Code	: CSE518

Minimum 10 experiments to be done by students.

This laboratory course is a part of the course on "Data Mining". This course will give students an opportunity to learn the specifics of some open source data mining software and carry out experiments on real-world data sets. The students may be asked to do independent project work as a part of this laboratory course. In particular, the students are expected to

1. Learn to install open source data mining software such as Weka, XL Miner etc.
2. Do experiments with respect to
 - a. Data pre-processing, attribute oriented analysis and visualization
 - b. Mining association rules
 - c. Classifier design: Naive Bayes Classifier, Rule based classifiers, Decision Trees and Perceptions (both for binary and multiclass Classification), Random Forests
 - d. Evaluation of classifiers
 - e. Clustering algorithms: k-means and k-medoids, hierarchical, CLARANS, BIRCH and DBSCAN
 - f. Cluster evaluation
3. Extend the data mining algorithms implemented in open source data mining software
4. Propose, implement and test new data mining algorithms
5. Apply the new algorithms to some sample data sets such as KDD CUP data sets and compare them with some existing algorithms

Subject : E - Commerce (Elective-II)
Subject Code : CSE511
Total Hours : 42
Full Marks : $80 + 20 = 100$

1. Electronic Commerce : Overview, Definitions, Advantages & Disadvantages of E – Commerce, Threats of E – Commerce, Managerial Prospective, Rules & Regulations For Controlling E – Commerce, Cyber Laws. 5 Hrs
2. Technologies : Relationship Between E – Commerce & Networking, Different Types of Networking For E – Commerce, Internet, Intranet & Extranet, EDI Systems Wireless Application Protocol : Definition, Hand Held Devices, Mobility & Commerce, Mobile Computing, Wireless Web, Web Security, Infrastructure Requirement For E – Commerce . 8 Hrs
3. Business Models of e – commerce : Model Based On Transaction Type, Model Based On Transaction Party - B2B, B2C, C2B, C2C, E – Governance. 4 Hrs
4. E – strategy : Overview, Strategic Methods for developing E – commerce. 2 Hrs
5. Four C's : (Convergence, Collaborative Computing, Content Management & Call Centre Convergence : Technological Advances in Convergence – Types, Convergence and its implications, Convergence & Electronic Commerce. Collaborative Computing : Collaborative product development, contract as per CAD, Simultaneous Collaboration, Security. 4 Hrs
6. Content Management : Definition of content, Authoring Tools & Content Management, Content – partnership, repositories, convergence, providers, Web Traffic & Traffic Management ; Content Marketing. Call Center : Definition, Need, Tasks Handled, Mode of Operation, Equipment , Strength & Weaknesses of Call Center, Customer Premises Equipment (CPE). 8 Hrs
7. Supply Chain Management : E – logistics, Supply Chain Portal, Supply Chain Planning Tools (SCP Tools), Supply Chain Execution (SCE), SCE - Framework, Internet's effect on Supply Chain Power. 4 Hrs
8. E – Payment Mechanism : Payment through card system, E – Cheque, E – Cash, E – Payment Threats & Protections. 2 Hrs
9. E – Marketing : Home –shopping, E-Marketing, Tele-marketing 1 Hrs
10. Electronic Data Interchange (EDI) : Meaning, Benefits, Concepts, Application, EDI Model, Protocols (UN EDI FACT / GTDI, ANSI X – 12), Data Encryption (DES / RSA). 2 Hrs
11. Risk of E – Commerce : Overview, Security for E – Commerce, Security Standards, Firewall, Cryptography, Key Management, Password Systems, Digital certificates, Digital signatures. 2 Hrs

Subject : E - Commerce Lab (Elective-II)
Subject Code : CSE519

List of Experiments:

1. A Survey-based Marketing Campaign for Ecommerce
2. Practical use of crypto currencies in e-commerce and global payments
3. Different e commerce solutions.
4. Practical e Commerce Tools You Can Use Today to Boost any Business
5. Study of Logistics and Fulfilment for e-business.
6. Case study of content marketing
7. Design Site Architecture in advance e commerce SEO.
8. Study of CASE study for :
 - E business for tourisms
 - State e tenders
 - E library
 - E education
9. Design social media for your own college.
10. Virtual personnel shoppers in e commerce.

Reference Books :

1. E-Commerce,M.M. Oka, EPH
2. Kalakotia, Whinston : Frontiers of Electronic Commerce , Pearson Education.
3. Bhaskar Bharat : Electronic Commerce - Technologies & Applications.TMH
4. Loshin Pete, Murphy P.A. : Electronic Commerce , Jaico Publishing Housing.
5. Murthy : E – Commerce , Himalaya Publishing.
6. E – Commerce : Strategy Technologies & Applications, Tata McGraw Hill.
7. Global E-Commerce, J. Christopher & T.H.K. Clerk, University Press
8. Beginning E-Commerce, Reynolds, SPD
9. Krishnamurthy, E-Commerce Mgmt, Vikas

Subject Title : Development of Life Skills (Common Paper)

Subject Code : 501

Full Marks : 50

Rationale:

In today's competitive world, the nature of individual and organizations is changing at very rapid speed. In this situation the responsibility of diploma holder is not unique. After completing his course work he has to face the world and seek meaningful employment also. Merely having knowledge is not sufficient these days. He has to show his communicative skill also. As such the individual skills with capability to show his strength and communicate his willingness new skills for further advancement with to impart his ability and acquiring has to be displayed and learned.

This subject will develop the student as an effective individual to grab the available situation and be member of the unseen team in which he may be put in . It will develop the abilities and skills to perform at highest degree of quality as an individual as well as a member of core group or team. Such skills will enhance his capabilities in the field of searching, assimilating information, managing the given task, handling people effectively, solving challenging problems.

Objectives: The students will be able to:

1. Develop acumen to face interview.
2. Lead in the group discussion and set goals and targets for others
3. Develop team spirit i.e. concept of working in teams
2. Apply problem solving skills for a given situation
3. Use effective presentation techniques
4. Apply techniques of effective time management
5. Apply task management techniques for given projects
6. Enhance leadership traits
7. Resolve conflict by appropriate method
8. Survive self in today's competitive world
9. Follow moral and ethics
11. Convince people to avoid frustration

CONTENTS:

SOCIAL SKILLS

1. Social understanding for group discussion, imaginative thinking and develop free ideas .
2. SWOT Analysis – Concept, and know himself in details. Learn how to make use of SWOT.
3. **Inter personal Relation:-** How to effectively counter arguments of others without hurting their feeling Sources of conflict and conflict resolution, Ways to enhance interpersonal dependence and relations.

4. Problem Solving

I) STEPS IN PROBLEM SOLVING,

- 1) Identify and clarify the problem,
- 2) Information gathering related to problem,
- 3) Evaluate the evidence,
- 4) Consider alternative solutions and their implications,
- 5) Choose and implement the best alternative,
- 6) Review

II) Problem solving technique.(any one technique may be considered)

- 1) Trial and error
- 2) Brain storming
- 3) Lateral thinking

5. Presentation Skills

Body language --

Dress like the audience, Posture, Gestures, Eye contact and facial expression. STAGE FRIGHT,

Voice and language – Volume, Pitch, Inflection, Speed, Pause, Pronunciation, Articulation, Language, Practice of speech. Use of presentation aids, Summarizing the facts

6. Group discussion –

Introduction to group discussion, Ways to carry out group discussion, Parameters— Contact, body language, analytical and logical thinking, decision making

7. INTERVIEW TECHNIQUE

Necessity, Techniques to influence interviews and giving directions, Tips for handling common questions.

8. Working in Teams

Understand and work within the dynamics of a groups.

Tips to work effectively in teams,

Establish good rapport, interest with others and work effectively with them to meet common objectives,

Tips to provide and accept feedback in a constructive and considerate way , Leadership in teams, Handling frustrations in group.

9. Task Management

Introduction, Task identification, Task planning ,organizing and execution, Closing the task

BOOKS:

Sr. No	Title of the book	Author	Publisher
1	Adams Time management	Marshall Cooks	Viva Books
2	Basic Managerial Skills for All	E.H. Mc Grath , S.J.	Pretice Hall of India
3	Body Language	Allen Pease	Sudha Publications Pvt.
4	Creativity and problem solving	Lowe and Phil	Kogan Page (I) P Ltd
5	Decision making & Problem Solving	by Adair, J	Orient Longman
6	Develop Your Assertiveness	Bishop , Sue	Kogan Page India
7	Make Every Minute Count	Marion E Haynes	Kogan page India
8	Organizational Behavior	Steven L McShane and Mary Ann Glinow	Tata McGraw Hill
9	Organizational Behavior	Stephen P. Robbins	Pretice Hall of India, Pvt Ltd
10	Presentation Skills	Michael Hatton (Canada – India Project)	ISTE New Delhi
11	Stress Management Through Yoga and Meditation	--	Sterling Publisher Pvt Ltd
12	Target setting and Goal Achievement	Richard Hale ,Peter Whilom	Kogan page India
13	Time management	Chakravarty, Ajanta	Rupa and Company
14	Working in Teams	Harding ham .A	Orient Longman

INTERNET ASSISTANCE

1. <http://www.mindtools.com>
2. <http://www.stress.org>
3. <http://www.ethics.com>
4. <http://www.coopcomm.org/workbook.htm>
5. <http://www.mapfornonprofits.org/>
6. <http://www.learningmeditation.com> <http://bbc.co.uk/learning/courses/>
7. <http://eqi.org/>
8. <http://www.abacon.com/commstudies/interpersonal/indisclosure.html>
9. <http://www.mapnp.org/library/ethics/ethxgde.htm>
10. http://www.mapnp.org/library/grp_cnfl/grp_cnfl.htm
11. <http://members.aol.com/nonverbal2/diction1.htm>
12. http://www.thomasarmstron.com/multiple_intelligences.htm
13. <http://snow.utoronto.ca/Learn2/modules.html>
14. <http://www.quickmba.com/strategy/swot/>