

M.Sc. INFORMATION TECHNOLOGY CURRICULUM

Total number of Credits: 90

Category	Code No	Course	Hours/Week				Maximum Marks		
			Lecture	Tutorial	Practical	Credits	CA	SEE	Total
SEMESTER I									
Core	21CMIT11	Programming in C++	4	0	0	4	40	60	100
Core	21CMIT12	Data Structures	4	0	0	4	40	60	100
Core	21CMIT13	Open Source Technologies	4	0	0	4	40	60	100
Core	21PMIT11	Programming in C++ Lab	0	0	4	2	40	60	100
Core	21PMIT12	Open Source Technologies Lab	0	0	4	2	40	60	100
DSE	21DMIT11	DSE 1	4	0	0	4	40	60	100
DSE	21DMIT12	DSE 2	3	0	0	3	40	60	100
SEC		Soft Skill1/Sector Skill Course	2	0	0	2	40	60	100
			21	0	8	25			
SEMESTER II									
Core	21CMITS21	Advanced DBMS	4	0	0	4	40	60	100
Core	21CMIT22	Programming in JAVA	4	0	0	4	40	60	100
Core	21CMIT23	Data Communication & Networks	4	0	0	4	40	60	100
Core	21PMIT21	Advanced DBMS Lab	0	0	4	2	40	60	100
Core	21PMIT22	Programming in JAVA Lab	0	0	4	2	40	60	100
DSE	21DMIT21	DSE 3	3	0	0	3	40	60	100
SI		Internship	0	0	4	2	40	60	100
SEC		Soft Skill2/ Sector Skill Course	2	0	0	2	40	60	100
			17	0	12	23			

SEMESTER III									
Core	21CMIT31	Operating System	4	0	0	4	40	60	100
Core	21CMIT32	Deep Learning	4	0	0	4	40	60	100
Core	21CMIT33	R Programming	4	0	0	4	40	60	100
Core	21PMIT31	R Programming Lab	0	0	4	2	40	60	100
Core	21PMIT31	Mini Project	0	0	4	2	40	60	100
DSE	21DMIT31	DSE 4	3	0	0	3	40	60	100
DSE	21DMIT32	DSE 5	3	0	0	3	40	60	100
SEC		Soft Skill 3/ Sector Skill Course	2	0	0	2	40	60	100
			20	0	8	24			
SEMESTER IV									
Core	21DMIT41	Internet of Things	4	0	0	4	40	60	100
GE	21GMIT41	Generic Elective-I	4	0	0	4	40	60	100
Core	21PMIT41	Project Work	0	0	20	10	40	60	100
			8	0	20	18			

DISCIPLINE SPECIFIC ELECTIVES (DSE)

DSE – 1	Software Engineering Artificial Intelligence Scripting Languages
DSE – 2	Data Mining & Data Warehousing Mobile Computing Parallel and Distributed Computing System
DSE -3	Natural Language Processing Compiler Design Neural Networks
DSE – 4	Block Chain Technology Design & Analysis of Algorithms Security Issues in Machine Learning
DSE – 5	Big Data Analytics Cloud Computing Computational Intelligence

GENERIC ELECTIVE COURSES

GE	ERP Systems
	Internet Basics
	Advanced Excel

SKILL ENHANCEMENT COURSE

SEC	Soft-Skill –I
	Soft-Skill –II
	Soft-Skill –III

CORE SYLLABUS

21CMIT11 PROGRAMMING USING C++ 4 0 0 4

COURSE OBJECTIVE

- This course introduces the basic concepts of programming in C++.
- To improve problem solving skills using OOPS concept.
- To make a good programmer, to write code, make the code work, and fix the number of bugs.

UNIT I INTRODUCTION 12

Introduction to OOP – features of OOP - Advantages of OOP – Structures – Unions – Classes – Private member function - Public member function- Friend Function - Inline Function – Static Variables – Static Function- Scope Resolution Operator – Passing objects to functions – function Retuning objects.

UNIT II ARRAYS & POINTERS 12

Arrays – Pointers – this pointer - References – Dynamic memory Allocation – Polymorphism- functions Overloading – Ambiguity in function overloading- Default argument – Pointer to Functions – Pointers to Array- Array of Pointers- Constructors – Default constructor- Parameterized Constructor- Copy Constructor- Dynamic Constructor- Constructor Overloading – Destructors.

UNIT III OVERLOADING & POLYMORPHISM 12

Operator Overloading – Member Operator Function – Friend Operator Function – Overloading some special operator like [], (), and comma operator – Inheritance – Types of Inheritance – Protected members – Runtime Polymorphism - Virtual base Class – Virtual functions – Pure Virtual functions.

UNIT IV EXCEPTION HANDLING 12

Class templates and generic classes – Functions templates and generic functions – Overloading a function templates – Exception Handling – Derived class Exception – over handling generic function – Exception handling Function – terminate(), unexpected(), Uncaught – exception()).

UNIT V STREAMS 12

Streams – Formations I/O with ios class functions and manipulators – creating own manipulators – overloading << and >> - file I/O – Name Spaces – Conversion functions – Standard Template Library (STL)

Total No of Hours: 60

COURSE OUTCOME:

At the end of this course the students will be able to,

- CO1: Articulate the principles of object-oriented problem solving and programming.
- CO2: Outline the essential features and elements of the C++ programming language.
- CO3: Analyze the role and understand the importance of building reusable code and I/O operations.
- CO4: Understand how to handle the error using exception handling.
- CO5: Understand dynamic memory management techniques using pointers, constructors, destructors, etc

Text Books:

1. BalaGuruSamy.E, “Programming with C++”, TMH, India, 2006.
2. Herbert Schildt, “C++ - The complete reference”, Third Edition – Tata McGraw Hill –, 4th Edition, 2002.

Reference Books:

1. Yashwant Kanetkar- “Let us C++” – 2nd Edition- McGraw Hill – 2000.
2. Maria Litvin and Gary Litvin “ C++ for you++”, Vikas Publ, 2002.
3. John R Hubbard: “Programming with C++”, TMH Publ. II Edition, 2004.

Website Link:

1. www.w3schools.com
2. www.tutorialspoint.com

Web Source:

1. https://www.tutorialspoint.com/cplusplus/cpp_tutorial.pdf.
2. <https://www.bcanotes.com/cpp-programs/>

21CMIT12

DATA STRUCTURE

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COURSE OBJECTIVE

- This subject deals with the methods of data structures.
- On successful completion of this subject the students should have :
 - Writing programming ability on data structures
 - Dealing with Stacks, Queues, List,
 - Algorithms etc.,

UNIT I INTRODUCTION

13

Definition of a Data Structure – Primitive and Composite data types, Asymptotic notations – Arrays – operations on arrays – ordered list.

UNIT II STACK

13

Stacks –Application of stack – Infix to postfix conversion, Recursion, queues – operation on Queue , Queue application ,circular queues.

UNIT III LINKED LIST

12

Singly linked list –Operation, Application –representation of a polynomial, polynomial addition, doubly linked list-Operation.

UNIT IV TREES AND GRAPHS

12

Trees and Graphs: Binary Trees –Operation, tree traversals – Graph Implementation –Definition, Types of graph, Traversal– Shortest Path Problems, Dijkstra’s algorithm.

UNIT V ALGORITHM

10

Algorithm-Definition-examples-Complexity-Divide and Conquer- Binary search -Maximum and Minimum-Merge sort.

Total Hours: 60

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Develops skills in implementations and applications of data structures.

CO2: Ability to describe stack, queue and linked list operation.

CO3: Ability to have knowledge of tree and graphs concepts.

CO4: Apply various algorithm development techniques and build their own algorithms.

CO5: Identify the Importance of various types of linked lists

Text Books:

1. E. Horowitz, S. Sahni and Mehta – “Fundamentals of Data Structures in C++” - 2ndEdition, Universities Press – 2008.
2. Horowitz, S.Shani, and S.Rajasekaran, “computer algorithms”, golgotia pub. Ltd., 2000.

Reference Books:

1. E Balagurusamy: Programming in ANSI C, Tata McGraw-Hill, 1998.
2. Ellis Horowitz & Sartaj Sahni: Fundamentals of Data Structure, Galgotia Book Source, 2000.
3. Data structure using C – Aaron M Tanenbaum, Yedidye langsam, Moshe J Augenstein, PHI Pub

Website Link:

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javatpoint.com

Web source Link:

1. <https://www.geeksforgeeks.org/data-structures/>

OBJECTIVE: To provide knowledge about Open Source Technologies and to help in understanding the programming aspects of Personal Home Page PHP & Python

UNIT I INTRODUCTION

13

Introduction to Open Sources – Need of Open Sources – Advantages of Open Sources– Application of Open Sources - Open Source Operating Systems: LINUX: Introduction – General Overview – Kernel Mode and User Mode- Development with Linux.

UNIT II PHP

12

Introduction – Basic features of PHP – Evolution of PHP — Introducing Variables – Holding Data – Constants – Introducing Operators. Control Structures – Using Conditional Statements – Using Loops in PHP .

UNIT III PHP –FUNCTIONS AND ARRAYS

13

Introduction to Functions – Using Functions. Introducing Arrays – Create Arrays – Looping through Arrays – Manipulating Arrays – Sorting Arrays

UNIT IV WORKING WITH DATA

12

Testing and Debugging – Debugging PHP script – Debugging and handling errors in PHP5 –Retrieving data using PHP – SQL statement for retrieving Data – Inserting records using PHP – Updating and Deleting Records in tables.

UNIT V PYTHON

10

Basic syntax, variable type, operators, Decision making, Loops, Strings, Lists, Function, Modules, Files I/O,Exceptions.

Total Hours : 60

COURSE OUTCOME:

At the end of this course the students will be able to,

- CO1: Ability to build and modify one or more Free and Open Source Software packages.
- CO2: Create database in Ms sql server
- CO3: Design dynamic and interactive web pages by embedding Java Script code in HTML.
- CO4: To understand open source scripting language for programming in web environment
i.e. PHP.
- CO5: List the various controls and components in PHP

TEXTBOOK:

1. Remy card , Eric Dumas & Frank Mevel,—The Linux Kernel BookI,Wiley Publications,2003. (Unit I) ..
2. Rasmus Lerdorf & Levin Tatroe, — Programming PHP I, O'Reilly, 2002(Unit II ,III & IV)
3. Wesley J.chun , — Core Python Programming I, Prentice Hall, 2001(Unit IV)

REFERENCES:

1. Steven Holzner, —PHP: The Complete Referencel, 2 nd Edition, Tata MCGraw Hill, Indian Reprint 2009.

Website Link:

1. www.javapoint.com
2. www.geeksforgeeks.org
3. www.w3schools.com
4. www.tutorialspoint.com

Web source:

1. https://www.tutorialspoint.com/basics_of_computers/basics_of_computers_open_source_software.htm.
2. <https://www.w3schools.com/python>.
3. <https://www.w3schools.com/php/>
4. <https://www.w3schools.com/mysql/>

COURSE OBJECTIVE

- To improve problem solving skills using OOPS concept.
- To make a good programmer, to write code, make the code work, and fix the number of bugs.

LIST OF EXPERIMENTS:

1. Write a C++ program to demonstrate Control Structures
2. Write a C++ program to calculate Simple interest using class and Object
3. Write a C++ program to sort given numbers in Ascending Order using Bubble sort
4. Write a C++ program to manipulate a given string
5. Write a C++ program to demonstrate function overloading
6. Write a C++ program to demonstrate Inline function
7. Write a C++ program to demonstrate Friend function
8. Write a C++ program to demonstrate Default Arguments
9. Write a C++ program to demonstrate Constructor
10. Write a C++ program to demonstrate Operator Overloading
11. Write a C++ program to demonstrate Single Inheritance
12. Write a C++ program to demonstrate Multi level Inheritance
13. Write a C++ program to demonstrate Multiple Inheritance
14. Write a C++ program to demonstrate virtual function
15. Write a C++ program to demonstrate pure virtual function

Total No of Hours : 30 Hrs

COURSE OUTCOMES:

On Completion of this course, the students can able to

CO1: Develop the Virtual Functions and File handling operations

CO2: Write C++ Programs using Classes & objects.

CO3: Build programs on Constructors, Destructors and Overloading concepts using programs.

CO4: Manipulate the role of inheritance in building reusable code and I/O operations.

CO5: State the OOP's concepts in writing simple C++ Programs.

TEXT BOOKS:

1. E.BalaGurusamy "Object Oriented Programming with C++", Tata MC Graw Hill Education.
2. YashwantKanetkar-"Let Us C++", 2ndedition,McGraw HillEducation,2000.

REFERENCE BOOKS:

1. Herbert Schildt "The Complete Reference C++", 4th edition,McGraw Hill Education,2017
2. D.Ravichandran-"Oriented Programming with C++", 2nd edition, TMH.

WEBSITES

- 1.www.w3schools.com
- 2.www.tutorialspoint.com
- 3.www.javapoint.com
4. www.geeksforgeeks.org

WEB SOURCES

1. https://www.tutorialspoint.com/cplusplus/cpp_tutorial.pdf
2. <https://www.cplusplus.com/files/tutorial.pdf>
3. <https://www.slideshare.net/aloknie/oop-cclassfinalppt>
4. <https://www.slideshare.net/adishesha12/basic-concept-of-oops>
5. <https://www.slideserve.com/joan-craft/object-oriented-programming-with-c>

OBJECTIVE: To provide practical experience in software development using open source tools like Python, PHP and MySQL.

EXERCISES

1. Program to Demonstrate String Functions using PHP.
2. Program to Demonstrate Session using PHP.
3. Program to Create a File and write the Data into it using PHP.
4. Application for Email Registration and Login using PHP and MySQL.
5. Program to check the given number is Prime or not using Python.
6. Program to perform the String Operation using Python.
7. Program to perform Functions in Lists using Python.
8. Program to copy content of one file to another file Using Exception Handling using Python.

Total Hours: 30

COURSE OUTCOME:

At the end of this course the students will be able to,

- CO1: Create applications using PHP
- CO2: Create web pages using HTML, DHTML and Cascading Styles sheets
- CO3: Analyze and apply the role of languages like HTML, DHTML
- CO4: Analyze and build web applications using PHP with Ms-sql server
- CO5: Explain dynamic web pages using PHP

Website Link:

1. <https://www.javatpoint.com/php-programs>

2. <https://www.javatpoint.com/python-programs>.
3. <https://www.datacamp.com/community/tutorials/mysql-python>

Course Objective

This course aims to give students in depth information about system implementation techniques, data storage, representing data elements, database system architecture, the system catalog, query optimization, centralized DB concepts, Normalization, distributed databases and client server architecture, advanced database concepts.

UNIT-1 COMPARISON BETWEEN DIFFERENT DATABASES 12

Significance of Databases, Database System Applications, Advantages and Disadvantages of different Database Management systems, Comparison between DBMS, RDBMS, Distributed and Centralized DB.

UNIT-II RDBMS 13

Relational Query Languages, The SQL Query Language, Querying Multiple Relations, Creating Relations in SQL, Destroying and Altering Relations, Adding and Deleting Tuples, Integrity Constraints (ICs), Primary and Candidate Keys in SQL, Foreign Keys, Referential Integrity in SQL, Enforcing Referential Integrity.

UNIT- III CATEGORIES OF SQL COMMANDS 12

Data Definition, Data Manipulation Statements: SELECT - The Basic Form Subqueries, Functions, GROUP BY Feature, Updating the Database, Data Definition Facilities, Views, Embedded SQL *, Declaring Variables and Exceptions, Embedding SQL Statements, Transaction Processing, Consistency and Isolation, Atomicity and Durability, Dynamic SQL.

UNIT-IV NORMALIZATION 13

Functional Dependency, Anomalies in a Database, The normalization process: Conversion to first normal form, Conversion to second normal form, Conversion to third normal form, The boyce-code normal form(BCNF), Fourth Normal form and fifth normal form, normalization and database design, Denormalization

UNIT-V**QUERY OPTIMIZATION****10**

Algorithm for Executing Query Operations: External sorting, Select operation, Join operation, PROJECT and set operation, Aggregate operations, Outer join, Heuristics in Query Optimization, Semantic Query Optimization, Converting Query Tree to Query Evaluation Plan, multi query optimization and application, Efficient and extensible algorithms for multi-query optimization, execution strategies for SQL sub queries, Query Processing for SQL Updates.

Total : 60 Hours**Course Outcome:**

At the End of this course, the Student will be able to:

CO-1: Evaluate hierarchy of DBMS.

CO-2: Analyze different types of SQL statement.

CO-3: Apply normalization in the database & understand the internal data structure.

CO-4: Understand the transaction system & could extract data efficiently.

CO-5: Understand the notion of transaction and its ACID properties

Text Books:

1. Date C. J, "An Introduction to Database Systems", Addison Wesley Longman, 8th Edition, 2003.
2. Catell, R.G.G., Barry, D.K., Berler, M., et al, "The Object Data Standard: ODMG 3.0", Morgan Kaufmann, 2000.
3. Silberschatz A., Korth H., and Sudarshan S, "Database System Concepts", McGraw- Hill, 6th Edition, 2010.

Reference Books:

1. Charles F. Goldfarb, Paul Prescod, “The XML Handbook, Prentice Hall”, 5th Edition, 2004.

2. Thomas M. Connolly, Carolyn Begg, “Database Systems: Practical approach to Design, Implementation and Management”, Pearson Education Limited, 6th edition, 2012.

Web Sources:

1. www.oracle-tutorial.com

2. www.studytonight.com

COURSE OBJECTIVE

- This course is to develop programming skills in Java.
- It will focus on more sophisticated features such as design of classes, interfaces, packages and APIs.
- To design and implementation of both graphical applets and standalone applications.

UNIT I INTRODUCTION**13**

Introduction to Java – Features of Java – Object Oriented Concepts – Lexical issues – Data Types – Variables – Arrays – Operators – Control Statements. Classes – Objects – Constructors – Overloading methods – Access control – Static and fixed methods – inner class – string Class – Inheritance – Overriding methods – using super – Abstract class- Dynamic Method Dispatch- using Final.

UNIT II PACKAGES**13**

Packages – Access Protection – Importing packages – Interfaces – extending an Interface- Exception Handling – Try catch, Nested Try, Multicatch Statements, Throw, Throws and finally – Exception Classes – user defined exception- Thread – states of a Thread- Thread methods-creation using Thread class- creation using Runnable Interface – Synchronization – Thread Priorities- Multithreading. - Inter thread communication- Deadlock .

UNIT III STREAMS**12**

I/O Streams – File Streams – Applets – String Class– Methods in String class-String Buffer class– Methods in String Buffer class – Java Util Package – Java Lang Package- Wrapper classes- Collection classes

UNIT IV NETWORK**12**

Network basics – sockets – IP Address- Proxy servers-ports- InetAddress- Factory methods-Socket classes- Datagrams-TCP/IP sockets-URL – URL Connection – Working with windows ,colors and Fonts-Event Handling- AWT Controls – Layout Manager-Menus.

UNIT V SERVLETS

10

Servlets – Environment and role – Architectural role for servlets – Servlet classes- GenericServlet-HttpServlet-doGet(),doHead(),dopost()-HTML support – Installing servlets – servlets API – servlet life cycle - HTML to servlet communication.

Total Hours: 60

COURSE OUTCOME

On Completion of this course, the students can able to

CO1: Design Applet programs using AWT classes and utilize Controls and Layout Managers

CO2: Evaluate java program to solve specified problems and use Java SDK

Environment to create, debug and run simple java programs

CO3: Develop the Java Classes make use of Constructors and Inheritance

CO4: Analyze the packages and classify the thread communication

CO5: Describe java features and explain the supporting OOPs concepts

TEXT BOOKS

1. Cay S.Horstmann, Gary Cornell-Core Java 2 Volume 1 – Fundamentals,5th PHI,2000.
2. Java The complete reference, 8th editon, Herbert Schildt, TMH

REFERENCE BOOKS

1. P.Naughton and H.Schildt –Java2 (The Complete References)-Seventh Edition,TMH 2004.
2. K.Arnold and J.Gosling- The Java Programming Language – Second Edition,Addison Wesley,2002.

WEB SITES

1. www.javapoint.com
2. www.geeksforgeeks.org

3. www.w3schools.com
4. www.tutorialspoint.com

WEB SOURCES

1. <https://www.iitk.ac.in/esc101/share/downloads/javanotes5.pdf>
2. https://www.tutorialspoint.com/java/java_tutorial.pdf
3. <https://www.slideshare.net/intelligotech/java-tutorial-ppt-7189933>

COURSE OUTCOMES:

On completion of this course, the students will be able to:

CO1: Understand basic computer network technologies and protocols.

CO2: Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.

CO3: Understand the rudiments of how computers communicate and their functions within a network

CO4: Identify the different types of network topologies.

CO5: Understand the basic aspects of packet-based design and implementation and familiar with modern communication systems.

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TEXT BOOK

1. Behrouz and Forouzan - Introduction to Data Communication and Networking - 2 nd Edition - TMH-2005.

REFERENCE BOOKS:

1. Jean Walrand 1998, Communication Networks (A first Course), Second Edition, WCB/McGraw Hill.

2. Behrouz and Forouzan, 2006, Data Communication and Networking, 3 rd Edition , TMH.

WEBSITES

1. www.w3schools.com

2. www.tutorialspoint.com

3. www.javapoint.com

4. www.geeksforgeeks.org

WEB SOURCES

1. <http://www.engppt.com/2009/12/networking-fourazan-ppt-slides.html>
2. https://www.vssut.ac.in/lecture_notes/lecture1428550521.pdf
3. <http://www.indoreindira.com/UG/images/BCA/BCA%20IV%20%20Notes/BCA%20IV%20PDF/BCA%20IV%20sem%20Data%20&%20Network%20Communication.pdf>
4. https://mrcet.com/downloads/digital_notes/ECE/III%20Year/DATA%20COMMUNICATIONS.pdf

COURSE OBJECTIVE

- This course gives training in design and implementation of data bases for the selected problems.
- To familiarise the participant with the nuances of database environment onwards an information
- oriented data-processing oriented framework
- To give a good formal foundation on the relational model of data

1. Learning basic DDL, DML, DCL and TCL commands
2. Working with dual table.
3. Use of Joins and Subqueries.
4. Views, sequences and indexes.
5. Managing users, privileges and roles.
6. PL/SQL-Data types, control structures.
7. Creating procedures with PL/SQL.
8. Error handling in PL/SQL.
9. Cursor Management in PL/SQL.
10. Writing Programs on Packages & triggers.
11. Embedding PL/SQL in high level language.
12. Implementation of Triggers & Assertions for Bank Database.

Total: 30 Hours

Course Outcomes:

At the end of this course, the student will be able to:

CO-1: Create an application to check user defined exception using PL/SQL.

CO-2: Evaluate the functionalities of trigger and cursor.

CO-3: Analyze different types of built-in function in PL/SQL.

CO-4: Apply DDL, DML and DCL statement using SQL.

CO-5: Apply various types of joins in tables.

WEB SOURCES:

1. www.guru99.com/dbms-tutorial.html

2. www.oracletutorial.com

COURSE OBJECTIVE

- This course gives practical training in java programming
- It will focus on more sophisticated features such as design of classes, interfaces, packages and APIs.
- Provide the foundation of good programming skills by discussing keys issues to the design of object-oriented software.

APPLICATIONS

1. Finding area and perimeter of a circle. Use buffered reader class.
2. Sub string removal from a string. Use string buffer class.
3. Determining the order of numbers generate randomly using random class.
4. Implementing of point class for image manipulation.
5. Usage of calendar class and manipulation
6. String manipulation using char array.
7. Database creation for storing e-mail addresses and manipulation.
8. Usage of vectors classes.
9. Implementing threads based application & exception handling.
10. Application using synchronization such as thread based, class based and synchronized statements.

APPLETS

1. Working with frames and various controls.
2. Working with dialogs and menus.
3. Working with panels and layout.
4. Incorporating graphics.
5. Working with colors and fonts.

Total Hours: 30

COURSE OUTCOME

On Completion of this course, the students can able to

CO1: Build Applet programs using AWT classes and utilize Controls and Layout Managers

CO2: Write a computer program to solve specified problems and use Java SDK

Environment to create, debug and run simple java programs

CO3: Develop the Java Classes make use of Constructors and Inheritance

CO4: Develop the packages and classify the thread communication

CO5: Develop simple java application using java features and OOPs concepts.

WEB SOURCES

1. <https://www.iitk.ac.in/esc101/share/downloads/javanotes5.pdf>
2. https://www.tutorialspoint.com/java/java_tutorial.pdf
3. <https://www.slideshare.net/intelligotech/java-tutorial-ppt-7189933>

UNIT V CASE STUDY

10

Linux System- Basic Concepts; System Administration

Total Hours: 60

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Compare and analyze the scheduling algorithms.

CO2: Examine resource management techniques.

CO3: Apply the methods for Handling Dead locks.

CO4: Understand and identify the functions of operating system.

CO5: Define and state the operating system concepts.

TEXT BOOKS:

1. Abraham Silberschatz, Peter B. Galvin, Greg Gagne, “Operating System Concepts” 9th Edition, John Wiley, 2013
2. Deitel H.M. “An Introduction to Operating System”, Addison Wesley Publishing Co., 2003

REFERENCE BOOKS

1. William Stallings, “Operating Systems – Internals and Design Principles”, 7th Edition, Prentice Hall, 2011.
2. Andrew S. Tanenbaum, “Modern Operating Systems”, Second Edition, Addison Wesley, 2001.
3. Charles Crowley, “Operating Systems: A Design-Oriented Approach”, Tata McGraw Hill Education”, 1996.

WEBSITES

1. <https://www.studytonight.com/operating-system>
2. <https://www.geeksforgeeks.org/operating-systems>
3. https://www.tutorialspoint.com/operating_system/index.html
4. <https://www.javatpoint.com/os-tutorial>
5. <https://ubuntu.com/tutorials/command-line-for-beginners>
6. <https://www.guru99.com/unix-linux-tutorial.html>

WEB SOURCES

1. <https://examupdates.in/operating-system-pdf>
2. <https://www.cl.cam.ac.uk/teaching/1011/OpSystems/os1a-slides.pdf>
3. <https://www.unf.edu/public/cop4610/ree/Notes/PPT/PPT8E/CH%2002%20-OS8e.pdf>
4. https://www.tutorialspoint.com/operating_system/operating_system_tutorial.pdf
5. <https://www.guru99.com/linux-tutorial-pdf.html>
6. <https://www.tutorialspoint.com/unix/unix-pdf-version.htm>

COURSE OBJECTIVES

To understand the major technology trends driving Deep Learning and apply fully connected deep neural networks. This course is used to analyse the key parameters and hyper parameters in a neural network's architecture.

UNIT I PROBABILITY AND INFORMATION THEORY**13**

Random Variables- Probability Distributions- Marginal Probability- Conditional Probability- Expectation- Variance and Covariance- Bayes' Rule-Information Theory - Numerical Computation- Overflow and Underflow- Gradient-Based Optimization- Constrained Optimization- Linear Least Squares.

UNIT II MACHINE LEARNING BASICS**13**

Machine Learning Basics and under fitting, Hyper parameters and Validation Sets Estimators-Bayesian Statistics- Supervised and Unsupervised Learning-Stochastic Gradient Descent- Challenges Motivating Deep Learning. Deep Feed forward Networks: Learning XOR- Gradient-Based Learning- Hidden Units- Architecture Design- Back- Propagation and other Differentiation Algorithms.

UNIT III REGULARIZATION FOR DEEP LEARNING**12**

Regularization for Deep Learning: Parameter Norm Penalties- Norm Penalties as Constrained Optimization- Regularization and Under-Constrained Problems- Dataset Augmentation- Noise Robustness- Semi-Supervised Learning- Multi-Task Learning- Optimization for Training Deep Models: Pure Optimization- Challenges in Neural Network Optimization- Basic Algorithms- Algorithms with Adaptive Learning Rates- Optimization Strategies and Meta-Algorithms.

UNIT IV CONVOLUTIONAL NETWORKS**12**

Convolutional Networks: The Convolution Operation, Pooling- Convolution- Basic Convolution Functions -Structured Outputs, Data Types -Efficient Convolution

Algorithms- Random or Unsupervised Features -Basis for Convolutional Networks.

UNIT V SEQUENCE MODELLING

10

Sequence Modeling: Recurrent and Recursive Nets- Unfolding Computational Graphs- Recurrent Neural Networks- Bidirectional RNNs-Deep Recurrent Networks - Recursive Neural Networks- Echo State Networks- LSTM –Gated RNNs- Optimization for Long- Term Dependencies.

Total : 60 hours

COURSE OUTCOMES:

At the End of this course, the Student will be able to:

CO-1: Analyze mathematical foundation of neural network.

CO-2: Apply Efficient Convolution Algorithms.

CO-3: Understand the Concept of Convolutional Networks.

CO-4: Understand about Information theory.

CO-5: Understand Supervised and Unsupervised Learning.

TEXT BOOKS:

1. Ian Goodfellow, Yoshua Bengio, Aaron Courville, “Deep Learning”, MIT Press,2016.

2. Josh Patterson and Adam Gibson, “Deep learning: A practitioner’s approach”, O’Reilly Media, First Edition, 2017.

REFERENCE BOOKS:

1. Nikhil Buduma, O’Reilly, Fundamentals of Deep Learning, Designing next-generation machine intelligence algorithms, Shroff Publishers, 2019.

2. Douwe Osinga, O’Reilly,Deep learning Cook Book, Practical recipes to get started

Quickly, Shroff Publishers, 2019.

WEB SOURCES:

1. <https://keras.io/datasets/>
2. <http://deeplearning.net/tutorial/deeplearning.pdf>
3. <https://arxiv.org/pdf/1404.7828v4.pdf>

21CMIT33

R PROGRAMMING

4 0 0 4

OBJECTIVES

- To understand the basic concepts of R , Controls statements , functions and arrays
- To analyze various data structures and their functions
- To gain the knowledge of R Functions, Packages and Files

UNIT – I INTRODUCTION 12

Introduction to R: Overview of R programming, Evolution of R, Applications of R program

UNIT – II OPERATORS DATA TYPES 12

Basic Concepts of R: Reserved Words, Variables & Constants Operators, Operator Precedence, Data Types , Input and Output.

UNIT – III CONTROL STRUCTUER 12

Data structures in R: Vectors, Matrix, List in R programming Data Frame, Factor . Control flow: If...else, If else() Function, Programming for loop While Loop, Break & next, Repeat Loop

UNIT – IV FUNCTIONS 12

Functions: R Functions, Function Return Value, Environment & Scope, R Recursive Function, R Infix Operator, R Switch Function. Strings: String construction rules, String Manipulation functions

UNIT – V PACKAGES 12

R packages: Study of different packages in R - R Data Reshaping: Joining Columns and Rows in a Data Frame Merging Data Frames, Melting and Casting - Working with files: Read and writing into different types of files

Total Hours: 60

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Develop joining of columns and rows in a data frame and merging data frames.

CO2: Examine and analyze the importance of R Functions, Packages and Files

CO3: Use R Functions, Packages and Files

CO4: Describe the fundamental concepts and applications of R Language

CO5: Define the basic concepts of R language

TEXT BOOKS:

1. The Art of R Programming-a tour of statistical software design by Norman Matloff
2. R Cookbook: Proven Recipes for Data Analysis, Statistics, and Graphics (O'Reilly Cookbooks) by Paul Teetor
3. R in Action Book by Rob Kabacoff, John Mount , Jim Porzak

REFERENCE BOOKS:

1. Hadley Wickham, Garrett Golemund, “ R for data science : Import, Tidy, Transform, Visualize, And Model Data”.
2. Richard Cotton “Learning R: A Step-by-Step Function Guide to Data Analysis”

WEBSITES:

1. <https://www.tutorialspoint.com/r/index.htm>
2. <https://www.guru99.com/r-programming-introduction-basics.html>
3. <https://www.datacamp.com/tracks/r-programming>

WEB SOURCES:

1. https://www.tutorialspoint.com/r/r_tutorial.pdf
2. https://cran.r-project.org/doc/contrib/Paradis-rdebuts_en.pdf
3. <https://www.stats.ox.ac.uk/~evans/Rprog/LectureNotes.pdf>
4. <https://www.guru99.com/r-programming-tutorial-pdf.html>

OBJECTIVE: Handling the data using R tool.

EXERCISES

1. Assignments on Basic Concepts of R
2. Assignments on Data structures in R
3. Assignments on Control flow
4. Assignments on Functions
5. Assignments on R packages, R Data Reshaping
6. Assignments on Working with files, R object and Class
7. Assignments on Data visualization in R and Data Management
8. Assignments on Statistical modelling and Databases in R

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Get a solid foundation in R programming concepts

CO2: Collect, analyze and interpret quantitative data

CO3: Create and edit visualizations with R

CO4: Access online resources for R and import new function packages into the R workspace

CO5: Import, review, manipulate and summarize data-sets in R

TEXT BOOKS:

1. The Art of R Programming-a tour of statistical software design by Norman Matloff
2. R Cookbook: Proven Recipes for Data Analysis, Statistics, and Graphics (O'Reilly Cookbooks) by Paul Teetor
3. R in Action Book by Rob Kabacoff, John Mount , Jim Porzak

REFERENCE BOOKS:

3. Hadley Wickham, Garrett Golemund, “ R for data science : Import, Tidy, Transform, Visualize, And Model Data”.
4. Richard Cotton “Learning R: A Step-by-Step Function Guide to Data Analysis”

WEBSITES:

1. <https://www.tutorialspoint.com/r/index.htm>
2. <https://www.guru99.com/r-programming-introduction-basics.html>
3. <https://www.datacamp.com/tracks/r-programming>

WEB SOURCES:

5. https://www.tutorialspoint.com/r/r_tutorial.pdf
6. https://cran.r-project.org/doc/contrib/Paradis-rdebuts_en.pdf
7. <https://www.stats.ox.ac.uk/~evans/Rprog/LectureNotes.pdf>
8. <https://www.guru99.com/r-programming-tutorial-pdf.html>

**DISCIPLINE SPECIFIC
ELECTIVE**

Quality Assurance – Walkthroughs and Inspections – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification: Enhancing Maintainability during Development – Managerial aspects of Software Maintenance – Source Code Metrics – Other Maintenance Tools and Techniques.

Total No of Hours : 60

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Describe key activities in software development and the role of modelling

CO2: Describe the basics of an object-oriented approach to software development

CO3: Explain key concepts in software development such as risk and quality

CO4: Identify, formulate and solve complex engineering problems by applying principles of software Engineering

CO5: To function effectively on a team whose members together provide leadership, create a collaborative and Inclusive environment, establish goals, plan tasks, and meet objectives

TEXT BOOK

1. R. S. Pressman, 2005, Software Engineering a Practitioner's approach, 6th Edition, Tata McGraw-Hill, New Delhi.

REFERENCE BOOKS

1. Sommerville, 2001, Software Engineering, 6th Edition, Addison Wesley, Boston.
2. Rajib Mal, 2005, -Fundamental of Software engineering, 2ND Edition, PHI, New Delhi.
3. N. E. Fenton, S. L. Pfleenger, 2004, Software Metrics, Thomson Asia, Singapore.

WEBSITES

7. www.w3schools.com

8. www.tutorialspoint.com
9. www.geeksforgeeks.org

WEB SOURCES

7. <https://lecturenotes.in/notes/1594-note-for-software-engineering-se-by-sushri-rout>
8. <https://nptel.ac.in/courses/106/105/106105087/>
9. <https://www.tutorialsduniya.com/notes/software-engineering-notes/>

UNIT IV NATURAL LANGUAGE PROCESSING**12**

Overview of Linguistics – grammars and Languages – Basic parsing techniques – semantic Analysis and representation structures – Natural language generation – natural language systems – Distributed Reasoning systems – Intelligent agents.

UNIT V EXPERT SYSTEMS**12**

Architecture – Non production systems Architectures – Knowledge acquisition and validation – Knowledge system building tools – Types of Learning – General Learning model – Learning by induction – Generalization and specialization – Inductive bias – Explanation based Learning.

Total No of Hours: 60**TEXT BOOKS**

1. Dan W. Patterson, “Introduction to Artificial Intelligence and Expert Systems”, Prentice Hall of India, Delhi, 2001.
2. Elaine Rich and Kevin Knight, “Artificial Intelligence” Tata McGraw Hill Pub. Co., Delhi, 2001.

REFERENCE BOOK

1. George F Luger, “Artificial Intelligence, structures and strategies for complex problem solving”, Pearson Education Delhi, 2001

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.geeksforgeeks.org

WEB SOURCES

1. <https://lecturenotes.in/subject/128/artificial-intelligence-ai>
2. https://www.vssut.ac.in/lecture_notes/lecture1428643004.pdf
3. https://epub.uni-regensburg.de/13629/1/ubr06078_ocr.pdf

universe of Scripting Languages. PERL- Names and Values, Variables, Scalar Expressions, Control Structures, arrays, list, hashes, strings, pattern and regular expressions, subroutines.

UNIT V CGI

12

CGI and Scripting languages: Introduction to CGI, Alternative Technologies, The Hypertext Transport Protocol, URLs, HTTP, Browser Requests, Server Responses, Proxies, Content Negotiation, The Common Gateway Interface, The CGI Environment, Environment Variables, CGI Output, Forms and CGI, Sending Data to the Server.

Total No of Hours:

60

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Apply basic principles of Scripting Algorithms.

CO2: Design web pages with the help of html

CO3: Demonstrate foundations and history of CGI

CO4: Demonstrate PERL, VBScript, Java Script.

CO5: Design interactive web page for the application.

TEXT BOOKS

1. The Self-Taught Programmer: The Definitive Guide to Programming Professionally by Cory Althoff
2. JavaScript for Kids: A Playful Introduction to Programming by Nick Morga

REFERENCE BOOK

1. Clean Code: A Handbook of Agile Software Craftsmanship by Robert C. Martin

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.geeksforgeeks.org

WEB SOURCES

1. <https://www.jbiet.edu.in/coursefiles/cse/HO/cse4/SL1.pdf>
2. https://www.iare.ac.in/sites/default/files/lecture_notes/IARE_SL_Lecture_Notes.pdf
3. <http://www.cs.stir.ac.uk/courses/CSC9Y4/lectures/scripting1a.pdf>

DSE-II

21DMIT12 DATA MINING & DATA WAREHOUSING 3 0 0 3

COURSE OBJECTIVE:

- Learn about data mining functionalities, applications and issues.
- Demonstrate the data mining classification and clustering analysis.
- To understand the data ware housing components and benefits.

UNIT I INTRODUCTION 9

Data mining – Functionalities – Knowledge Discovery Process- Applications of Data mining– Issues in Data mining -Classification of Data mining- Tasks Primitives- Data Preprocessing- Cleaning, Reduction, Transformation.

UNIT 2 CLASSIFICATION AND PREDICTION 9

Classification: Introduction to Classification-Issues Regarding Classification and Prediction- Classification by Decision Tree Induction- Rule based Classification-Support Vector Machine-Other Classification Methods-Prediction: Introduction- Regression Analysis.

UNIT 3 CLUSTERING ANALYSIS, ASSOCIATION MINING, TEXT MINING 9

Introduction- Applications of Cluster Analysis- Requirements of Clustering in Data Mining- Categorization of Major Clustering Methods- Partitioning Methods-Hierarchical Methods- Association Rule Mining-Text Mining-Web Mining.

UNIT 4 DATA WAREHOUSING 9

Data warehousing Components- Benefits of data Warehousing-Operational and informational Data-Data Warehouse Characteristics- Data Warehouse Architecture and its components- Benefits of data warehousing- Mapping the data warehouse architecture to Multiprocessor architecture.

UNIT 5ON-LINE ANALYTICAL PROCESSING (OLAP) and Data Mining Tool 9

OLAP-Introduction-Need for OLAP- Categories of OLAP Tools- OLAP Tools and the Internet- List of tools for Data Mining.

Total No of Hours 45

COURSE OUTCOME:

At the end of this course the students will be able to,

- CO1: Analyze different classification & clustering techniques
- CO2: Can able to understand steps involved in data mining.
- CO3: Understand the basic functionalities & issues of data mining
- CO4: Understand the basic components & benefits of Data Warehousing.
- CO5: Understand the concept of OLAP tools

TEXT BOOKS

1. Jiawei Han and Micheline Kamber, “Data Mining Concepts and Techniques”, Third Edition, Elsevier, 2012.
2. Alex Berson and Stephen J. Smith, —Data Warehousing, Data Mining & OLAP, Tata McGraw – Hill Edition, 35th Reprint 2016

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.geeksforgeeks.org

WEB SOURCES

1. <https://lecturenotes.in/subject/32/data-mining-and-data-warehousing-dmdw/note>
2. <https://www.smartzworld.com/notes/data-warehousing-and-data-mining-pdf-notes-dwdm/>

DSE-III

21DMIT12 **MOBILE COMPUTING** **3** **0** **0** **3**

COURSE OBJECTIVE

- To learn the basics of Wireless voice and data communications technologies.
- To build working knowledge on various telephone and satellite networks.
- To study the working principles of wireless LAN and its standards.
- To build knowledge on various Mobile Computing algorithms.
- To build skills in working with Wireless application Protocols to develop mobile content applications.

UNIT I INTRODUCTION **9**

Introduction, 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, CDMA, GPRS.

UNIT II WIRELESS NETWORKING **9**

Wireless Networking, 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 III DATA MANAGEMENT ISSUES **9**

Data management issues, data replication for mobile computers, adaptive clustering for mobile wireless networks, File system, Disconnected operations.

UNIT IV MOBILE AGENTS COMPUTING **9**

Mobile Agents computing, security and fault tolerance, transaction processing in mobile computing environment.

UNIT V AD HOC NETWORKS **9**

Ad Hoc networks, localization, MAC issues, Routing protocols, global state routing (GSR), Destination

sequenced distance vector routing (DSDV), Dynamic source routing (DSR), Ad Hoc on demand distance vector routing (AODV), Temporary ordered routing algorithm (TORA), QoS in Ad Hoc Networks, applications.

Total No of hours 45

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Analyze security, energy efficiency, mobility, scalability, and their unique characteristics in wireless Networks.

CO2: Demonstrate basic skills for cellular networks design.

CO2: Explain the concepts of Mobile Agents computing, security and fault tolerance

CO4: Get thorough knowledge of Ad Hoc Networks, Routing Protocols

CO5: Understand fundamentals of wireless communications.

TEXT BOOK:

1. J. Schiller, "Mobile Communications", Addison Wesley, 2002

REFERENCE BOOKS:

1. Mehrotra ,” GSM System Engineering” .,2003
2. M. V. D. Heijden, M. Taylor, “Understanding WAP”, Artech House, 2004.
3. Charles Perkins, “Mobile IP”, Addison Wesley, 2002.
4. Charles Perkins, Ad hoc Networks, Addison Wesley,2003.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.geeksforgeeks.org

WEB SOURCES

1. <https://lecturenotes.in/notes/10134-notes-for-mobile-computing-mc-by-annapurna-mishra>
2. <https://www.smartzworld.com/notes/mobile-computing-pdf-notes-mc-notes-pdf/>
3. <https://examupdates.in/mobile-computing-pdf/>

DSE-II

21DMIT12 PARALLEL AND DISTRIBUTED COMPUTING SYSTEM

3 0 0 3

Course Objective:

- To learn parallel and distributed algorithm development techniques for shared memory and message passing models,
- To study the main classes of parallel algorithms
- To study the complexity and correctness models for parallel algorithms.

UNIT I INTRODUCTION 9

Basic Techniques - Parallel Computers for Increase Computation Speed - Parallel & Cluster Computing

UNIT II PARALLEL PROGRAMS 9

Message Passing Technique - Evaluating Parallel Programs and Debugging - Portioning And Divide And Conquer Strategies Examples

UNIT III PIPELINING TECHNIQUES 9

Pipelining - Techniques Computing Platform - Pipeline Programs Examples.

UNIT IV SHARED MEMORY 9

Synchronous Computations - Load Balancing - Distributed Termination Examples - Programming With Shared Memory - Shared Memory Multiprocessor Constructs For Specifying Parallel List - Sharing Data Parallel Programming Languages And Constructs - OpenMP.

UNIT V DISTRIBUTED SHARED MEMORY SYSTEMS 9

Distributed Shared Memory Systems And Programming Achieving Constant Memory Distributed Shared Memory Programming Primitive - Algorithms – Sorting And Numerical Algorithms.

Total No of Hours 45

COURSE OUTCOME:

At the End of this course, the Student will be able to:

CO-1: Evaluate concepts of Parallel computing systems.

CO-2: Analyze about Cluster Computing systems.

CO-3:Apply Message Passing Technique.

CO-4: Apply Parallel programs and debugging.

CO-5: Understand Pipelining Techniques and examples.

TEXT BOOKS:

1. Barry Wilkinson, Michael Allen, "Parallel Programming", Pearson Education, 2nd Edition.
2. Jaja, "Introduction to Parallel algorithms", Pearson,1992.

REFERENCE BOOK:

1. Calvin Lin, Larry Snyder, "Principles of Parallel Programming", Addison-Wesley, 2008.

WEB SOURCES:

1. www.coursere.org
2. www.nptel.ac.in

DSE - III

21DMIT21 NATURAL LANGUAGE PROCESSING 3 0 0 3

COURSE OBJECTIVE

- The Course provides the models, methods, and algorithms of statistical Natural Language Processing (NLP) for common NLP tasks, such as speech recognition, machine translation, spam filtering, text classification and spell checking.

UNIT I OVERVIEW AND LANGUAGE MODELING 9

Overview - Origins and challenges of NLP-Language and Grammar-Processing Indian Languages - NLP Applications-Information Retrieval - Language Modeling: Various Grammar - based Language Models - Statistical Language Model.

UNIT II WORD LEVEL AND SYNTACTIC ANALYSIS 9

Word Level Analysis - Regular Expressions - Finite-State Automata - Morphological Parsing - Spelling Error Detection and correction - Words and Word classes - Part-of Speech Tagging. Syntactic Analysis – Context - free Grammar - Constituency - Parsing - Probabilistic Parsing.

UNIT III SEMANTIC ANALYSIS AND DISCOURSE PROCESSING 9

Semantic Analysis - Meaning Representation - Lexical Semantics – Ambiguity - Word Sense Disambiguation - Discourse Processing – cohesion - Reference Resolution - Discourse Coherence and Structure.

UNIT IV NATURAL LANGUAGE GENERATION 9

Natural Language Generation - Architecture of NLG Systems - Generation Tasks and Representations - Application of NLG. Machine Translation - Problems in Machine Translation - Characteristics of Indian Languages - Machine Translation Approaches - Translation involving Indian Languages.

UNIT V INFORMATION RETRIEVAL AND LEXICAL RESOURCES 9

Information Retrieval - Design features of Information Retrieval Systems – Classical - Non-classical - Alternative Models of Information Retrieval – valuation Lexical Resources: World Net - Frame Net - Stemmers - POS Tagger - Research Corpora.

Total No of Hours 45

COURSE OUTCOME:

At the end of this course the students will be able to,

- CO1: Build models using Hidden Markov models and probabilistic context-free grammars, Clustering and unsupervised methods, log-linear and discriminative models, and the EM Algorithm.
- CO2: Explain discourse, generation, dialogue and summarization within NLP.
- CO3: Get clear idea of machine learning techniques used in NLP
- CO4: Understand approaches to syntax and semantics in NLP.
- CO5: Understand current methods for statistical approaches to machine translation.

TEXT BOOKS:

1. Tanveer Siddiqui, U.S. Tiwary, “Natural Language Processing and Information Retrieval”, Oxford University Press, 2008.

REFERENCE BOOKS:

1. Daniel Jurafsky and James H Martin, “Speech and Language Processing: An introduction to Natural Language Processing, Computational Linguistics and Speech Recognition”, 2nd Edition, Prentice Hall, 2008.
- James Allen, “Natural Language Understanding”, 2nd edition, Benjamin / Cummings publishing company

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.geeksforgeeks.org

WEB SOURCES

1. <https://lecturenotes.in/subject/371/natural-language-processing-nlp>
2. <https://www.cl.cam.ac.uk/teaching/2002/NatLangProc/nlp1-4.pdf>

UNIT 5 INTRODUCTION OF CODE OPTIMIZATION

9

The principle sources of optimization – loop optimization – the DAG representation of basic blocks – value numbers and algebraic laws – Global data flow analysis. Code generation: Object programs – problems in code generation – a machine model – a simple code generator – register allocation and assignment – code generation from DAG's – peephole optimization.

Total No of Hours 45

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Apply for various optimization techniques for dataflow analysis

CO2: Construct the intermediate code representations and generation

CO3: Convert source code for a novel language into machine code for a novel computer

CO4: Get clear knowledge of Context free grammars, derivations and parse trees and basic parsing techniques

CO5: Understand the major phases of compilation and to have thorough knowledge of Lexical and syntax analysis

TEXT BOOK

1. Alfred V.Aho, Jeffrey D.Ullman "Principles of Compiler Design" by , Narosa Pub House.2007.

REFERENCE BOOK

1. Allen I. Holub "Compiler Design in C", Prentice Hall of India, 2003.
2. C. N. Fischer and R. J. LeBlanc, "Crafting a compiler with C", Benjamin Cummings, 2003.
3. J.P. Bennet, "Introduction to Compiler Techniques", Second Edition, Tata McGraw-Hill, 2003.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.geeksforgeeks.org

WEB SOURCES

1. <https://lecturenotes.in/subject/67/compiler-design>
2. https://www.vssut.ac.in/lecture_notes/lecture1422914957.pdf
3. <https://www.freebookcentre.net/ComputerScience-Books-Download/Compiler-Design-Lecture-Notes.html>

UNIT III COMMITTEE MACHINES AND NEURO DYNAMICS SYSTEMS 9

Ensemble Averaging - Boosting – Associative Gaussian Mixture Model – Hierarchical Mixture of Experts Model(HME) – Model Selection using a Standard Decision Tree – A Priori and Postpriori Probabilities – Maximum Likelihood Estimation – Learning Strategies for the HME Model – EMAlgorithm – Applications of EM Algorithm to HME Model - Dynamical Systems – Attractors and Stability – Non-linear Dynamical Systems- Lyapunov Stability – Neurodynamical Systems – The Cohen-GrossbergTheorem.

UNIT IV ATTRACTORNEURALNETWORKS 9

Associative Learning – Attractor Neural Network Associative Memory – Linear Associative Memory – Hopfield Network – Content Addressable Memory – Strange Attractors and Chaos- Error Performance of Hopfield Networks - Applications of Hopfield Networks – Simulated Annealing – Boltzmann Machine – Bidirectional Associative Memory – BAM Stability Analysis – Error Correction in BAMs - Memory Annihilation of Structured Maps in BAMS – Continuous BAMs – Adaptive BAMs –Applications

UNIT V SELF ORGANISING MAPS AND PULSEDNEURONMODELS9

Self-Organizing Map – Maximal Eigenvector Filtering – Sanger’s Rule – Generalized Learning Law – Competitive Learning - Vector Quantization – Mexican Hat Networks - Self-organizing Feature Maps – Applications - Spiking Neuron Model – Integrate-and-Fire Neurons – Conductance Based Models – Computing with SpikingNeurons.

Total No of Hours 45

COURSE OUTCOMES:

At the End of this course, the Student will be able to:

- CO-1:** Evaluate the Architecture of different neural networks.
- CO-2:** Analyze wide variety of learning algorithms.
- CO-3:**Apply supervised learning.
- CO-4:** Understand about unsupervised learning.

CO-5: Understanding limitations of various learning algorithms.

TEXT BOOKS:

1. NunesDaSilvaI,ArtificialNeuralNetworksAPracticalCourse”,SPRINGER,ISBN-9783319431611,January, 2017

REFERENCE BOOKS:

1. Satish Kumar, “Neural Networks: A Classroom Approach”, Tata McGraw-Hill Publishing Company Limited, New Delhi,2004.
2. Simon Haykin, “Neural Networks: A Comprehensive Foundation”, 2ed., Addison Wesley Longman (Singapore) Private Limited, Delhi,2001.

WEB SOURCES:

1. www.edureka.com
2. www.coursera.org

UNIT-IV**CRYPTOCURRENCYREGULATION****12**

Stakeholders, Roots of Bit coin, Legal Aspects-Crypto currency Exchange, Black Market and Global Economy. Applications: Internet of Things, Medical Record Management System, Domain Name Service and future of Block chain.

UNITV**CASE STUDYONBLOCKCHAIN****9**

Case study on Naive Block chain construction, Memory Hard algorithm – Hash cash implementation, Direct Acyclic Graph, Play with Go-ethereum, Smart Contract Construction, Toy application using Block chain, Mining puzzles

Total No of Hours 45**COURSE OUTCOMES:**

At the End of this course, the Student will be able to:

CO-1: Evaluate a method for solving a problem case study with different perspective

CO-2: Analyze limitations and proofs are another essential part of block chain technologies, which are learned for betterment of creating block chain.

CO-3: Apply latest crypto currency aspects leads students to understand some of basic concepts of Black Market and Global Economy

CO-4: Understand block chain technologies basics

CO-5: Describing the history behind the block chain and learning about Vulnerability, Attacks and Side chain gives an additional support for creating a secured block chain.

TEXT BOOK:

1. Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder, Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction, Princeton University Press (July 19,2016).

REFERENCE BOOKS:

1. Draft version of “S. Shukla, M. Dhawan, S. Sharma, S. Venkatesan, ‘Blockchain Technology: Crypto currency and Applications’, Oxford University Press,2019.
2. Josh Thompson, ‘Block chain: The Block chain for Beginnings, Guild to Block chainTechnology and Block chain Programming’, Create Space Independent Publishing Platform,2017.

WEB SOURCES:

1. <https://www.blockchainexpert.uk/book/blockchain-book.pdf>
2. [https://users.cs.fiu.edu/~prabakar/cen5079/Common/textbooks/Mastering_Blockchain_2nd Edition. pdf](https://users.cs.fiu.edu/~prabakar/cen5079/Common/textbooks/Mastering_Blockchain_2nd_Edition.pdf)
3. https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/study-blockchain-impact-moving-beyond-hype_0.pdf

DSE - IV

21DMIT31 DESIGN & ANALYSIS OF ALGORITHMS 3 0 0 3

COURSE OBJECTIVE

- To provide a solid foundation in algorithm design and analysis.
- To help the student learn the outcomes, include Basic knowledge of graph and matching algorithms.
- To analyze asymptotic runtime complexity of algorithms including formulating recurrence relations.
- To understand basic knowledge of computational complexity, approximation and randomized algorithms.

UNIT I INTRODUCTION 9

Introduction-Definition of algorithms-Pseudo code conventions-recursive algorithms-time and space complexity-big "Oh" notation-practical complexities- Randomized algorithms-Repeated element-primality testing- Divide and conquer : General method-Finding maximum and minimum-Merge sort.

UNIT II GREEDY METHODS 9

Divide and conquer contd.–Quick sort –selection sort- – Strassen's matrix multiplication – Greedy method:General method –Knapsack problem—tree vertex splitting—Job sequencing with dead lines—optimal storage on tapes.

UNIT III DYNAMIC PROGRAMMING 9

Dynamic programming: multi stage graph-all pairs shortest paths-single source shortest paths-string editing-0/1 knapsack problem-search techniques for graphs-DFS,BFS-connected components-Biconnected components.General method-

UNIT IV BACK TRACKING 9

Backtracking: General method – 8-Queens problem – sum of subsets-graph coloringHamiltonian cycles–Branch and bound: General method– Knapsack problem – Traveling salesman problem.

UNIT V LOWER BOUND THEORY 9

Lower Bound theory: comparison trees-Oracle and adversary arguments- Lower Bound through reduction- basic concepts of NP hard and NP-complete problems.

Total No of Hours 45

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Compare and Contrast various algorithm development techniques and design their own Algorithms

CO2: Compare greedy technique and backtracking techniques

CO3: Explain Fast Fourier Transform and Theory of NP-completeness

CO4: Identify the importance of Divide and conquer technique

CO5: Utilize the idea of greedy method to solve the greedy algorithms

Text Book:

1. Thomas H. Cormen, Charles E. Leiserson and Ronald L. Rivest, "Introduction to Algorithms", Printice Hall of India, 2002.

Reference Books:

1. RCT Lee, SS Tseng, RC Chang and YT Tsai, "Introduction to the Design and Analysis of Algorithms", Mc Graw Hill, 2005.
2. E. Horowitz & S Sahni, "Fundamentals of Computer Algorithms", 2006.
3. Aho, Hopcraft, Ullman, "The Design and Analysis of Computer Algorithms" Pearson Education, 2008.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.geeksforgeeks.org

WEB SOURCES

1. <https://lecturenotes.in/notes/17784-note-for-design-and-analysis-of-algorithm-daa-by-shekharesh-barik>
2. <http://cs.uef.fi/pages/franti/asa/notes.html>

DSE – IV

21DMIT31 SECURITY ISSUES IN MACHINE LEARNING 3 0 0 3

COURSE OBJECTIVE

- To provide a solid foundation in Security issues and analysis.
- To help the student learn the outcomes, include Basic knowledge of issues in machine learning and matching security algorithms.

UNIT I INTRODUCTION TO MACHINE LEARNING 9

Overview of Machine learning concepts – Over fitting and train/test splits, Types of Machine learning – Supervised, Unsupervised, Reinforced learning, Introduction to Bayes Theorem, Linear Regression- model assumptions, regularization (lasso, ridge, elastic net)

UNIT II CLASSIFICATION AND REGRESSION ALGORITHMS 9

Classification and Regression algorithms- Naïve Bayes, K-Nearest Neighbors, logistic regression, support vector machines (SVM), decision trees, and random forest, Classification Errors, Analysis of Time Series- Linear Systems Analysis, Nonlinear Dynamics, Rule Induction, Neural Networks Learning And Generalization, Overview of Deep Learning.

UNIT III SECURITY IN MACHINE LEARNING 9

Security Vulnerabilities in Machine Learning Algorithms, Evasion Attacks (Adversarial Inputs), Data Poisoning Attacks, Model Stealing Techniques, Possible Solutions to Ensure Machine Learning Security

UNIT IV ADVANCED LEARNING 9

Sampling-Basic Sampling methods, Monte Carlo, Gibbs Sampling – Computational Learning Theory – Mistake Bound Analysis – Reinforcement learning – Markov Decision processes, Deterministic and Non- deterministic Rewards and Actions, Temporal Difference Learning Exploration.

UNIT V CASE STUDY

9

Possible case studies: Machine learning for intrusion detection, Machine learning for side channel analysis, Privacy preserving machine learning, Adversarial machine learning.

TotalNo of Hours: 45

COURSE OUTCOMES:

At the End of this course, the Student will be able to:

CO-1: Evaluate concepts of machine learning.

CO-2:Analyze appreciate supervised and unsupervised learning and their applications

CO-3: Analyze security issues in machine learning.

CO-4: Understand the analysis of time series and overview of deep learning.

CO-5: Understand the security issues in machine learning.

TEXT BOOKS:

1. Christopher Bishop, "Pattern Recognition and Machine Learning" Springer,2007.
 2. KevinP.Murphy,"MachineLearning:AProbabilisticPerspective",MITPress,2012.
 3. EthemAlpaydin,"IntroductiontoMachineLearning",MITPress,ThirdEdition,2014.
- Tom Mitchell, "Machine Learning", McGraw-Hill,1997.

REFERENCE BOOKS:

1. Trevor Hastie, Robert Tibshirani, Jerome Friedman, "The Elements of Statistical Learning", Springer, Second Edition,2011.
2. Stephen Marsland, "Machine Learning - An Algorithmic Perspective", Chapman and Hall/CRC Press, Second Edition,2014.

WEB SOURCES:

1. www.analyticsvidhya.com/blog/2018/07/using-power-deep-learning-cyber-security/
2. www.simplilearn.com/how-ai-and-machine-learning-impact-cyber-security-article

DSE - V

21DMIT32

BIG DATA ANALYTICS

3

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3

COURSE OBJECTIVE:

- To explore, design, and implement basic concepts of big data & analytics methodologies for analyzing structured and unstructured data with emphasis on the relationship between the Data Scientist and its application to the business needs.

UNIT I INTRODUCTION TO BIG DATA 9

Introduction to Big Data Platform – Challenges of Conventional Systems - Nature of Data- Evolution Of Analytic Scalability - Intelligent data analysis- Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools

UNIT II MINING DATA STREAMS 9

Introduction to Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream –Real Time Analytics Platform (RTAP) Applications

UNIT III ADVANCED ANALYTICS 9

Analyzing, Visualization and Exploring the Data, Statistics for Model Building and Evaluation, Advanced Analytics - K-means clustering, Association rules-Speedup, Linear Regression, Logistic Regression, Naïve Bayes, Decision Trees, Time Series Analysis, Text Analysis.

UNIT IV HADOOP 9

History of Hadoop- The Hadoop Distributed File System – Components of Hadoop - Analyzing the Data with Hadoop- Scaling Out- Hadoop Streaming

UNIT V FRAMEWORKS 9

Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

COURSE OUTCOME:

At the End of this course, the Student will be able to:

CO-1: Evaluate Big Data real time analytics platform applications.

CO-2: Analyze big data platform and learn intelligent data analysis and compare old and modern data analytic tool.

CO-3: Apply advanced analytics techniques to gain knowledge of latest techniques.

CO-4: Understand the data streams concepts and stream computing.

CO-5: Understand the fundamental concepts of big data platform and know about the basic concepts of nature and evolution of big data.

TEXT BOOK:

1. Prajapati, Big Data Analytics with R and Hadoop, 2014

REFERENCE BOOK:

1. Stephan Kudyba, Big Data, Mining, and Analytics: Components of Strategic Decision Making, Auerbach Publications, March 12, 2014.
2. Michael Minelli (Author), Michele Chambers (Author), AmbigaDhiraj (Author), BigData, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses, Wiley Publications, 2013

WEB SOURCES:

1. www.intellipaat.com/blog/big-data-tutorial-for-beginners/
2. www.simplilearn.com/tutorials/data-analytics-tutorial

UNIT V SECURITY IN THE CLOUD

9

Security Overview –Cloud Security Challenges –Software-as-a-Service Security – Security Governance –Risk Management –Security Monitoring –Security Architecture Design –Data Security –Application Security –Virtual Machine Security.

Total No of hours 45

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Analyze various cloud programming models and apply them to solve problems on the cloud.

CO2: Build cloud architecture.

CO3: Explain the core concepts of the cloud computing paradigm.

CO4: Get clear knowledge of various cloud models and their services, characteristics, advantages and Challenges.

CO5: Interpret the security issues in cloud.

TEXT BOOK:

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.

REFERENCE BOOKS:

1. John W.Rittinghouse and James F.Ransome, “Cloud Computing: Implementation, Management, and Security”, CRC Press,2010.
2. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach”,TMH, 2009.
3. George Reese, “Cloud Application Architectures: Building Applications and Infrastructure in the Cloud”O'Reilly, 2009.
4. James E. Smith, Ravi Nair, “Virtual Machines: Versatile Platforms for Systems and Processes”, Elsevier/Morgan Kaufmann, 2005.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.geeksforgeeks.org

WEB SOURCES

1. <https://www.smartzworld.com/notes/cloud-computing-pdf-notes-cc/>
2. <https://lecturenotes.in/subject/366/cloud-computing-cc/note>

Supervised Learning – Learning Decision Trees – Regression and Classification with Linear Models – Artificial Neural Networks – Nonparametric Models – Support Vector Machines – Statistical Learning – Learning with Complete Data – Learning with Hidden Variables- The EM Algorithm – Reinforcement Learning

UNIT V INTELLIGENCE AND APPLICATIONS

9

Natural language processing-Morphological Analysis-Syntax analysis-Semantic Analysis-All applications – Language Models – Information Retrieval – Information Extraction – Machine Translation – Machine Learning – Symbol-Based – Machine Learning: Connectionist – Machine Learning.

Total No of Hours: 45

COURSE OUTCOMES:

At the End of this course, the Student will be able to:

CO-1: Evaluate Fuzzy Logic applications

CO-2: Analyze Problem-solving through various searching techniques.

CO-3: Apply Computational Intelligence techniques for information retrieval

CO-4: Apply the Intelligent techniques for problem solving

CO-5: Understand fundamental concepts in Computational intelligence.

TEXT BOOKS:

1. Kumar S., “Neural Networks - A Classroom Approach”, Tata McGraw Hill, 2004.
2. Konar A., “Computational Intelligence: Principles, Techniques and Applications”, Springer Verlag, 2005.
3. Stuart Russell, Peter Norvig, Artificial Intelligence: A Modern Approach, Third Edition, Pearson Education / Prentice Hall of India, 2010.

REFERENCE BOOKS:

1. Elaine Rich and Kevin Knight, Artificial Intelligence, Third Edition, Tata McGraw-Hill, 2010.

2. Patrick H. Winston. "Artificial Intelligence", Third edition, Pearson Edition, 2006.
3. Dan W.Patterson, Introduction to Artificial Intelligence and Expert Systems, PHI, 2006.
4. Nils J. Nilsson, Artificial Intelligence: A new Synthesis, Harcourt Asia Pvt. Ltd., 2000.

WEB SOURCES:

1. <http://www.softcomputing.net/tutorial.html>

GENERIC ELECTIVE

21GMIT41

ERP SYSTEMS

4 0 0 4

COURSE OBJECTIVE

- To know the basics of ERP
- To understand the key implementation issues of ERP
- To know the business modules of ERP
- To be aware of some popular products in the area of ERP
- To appreciate the current and future trends in ERP

UNIT I ERP Introduction

12

ERP Introduction, Benefits, Origin, Evolution and Structure: Conceptual Model of ERP, The Evolution of ERP, The Structure of ERP.

UNIT II Business Process Reengineering

12

Business Process Reengineering, Data ware Housing, Data Mining, Online Analytic Processing(OLAP), Product Life Cycle Management(PLM),LAP, Supply chain Management.

UNIT III ERP Marketplace and Marketplace Dynamics

12

ERP Marketplace and Marketplace Dynamics: Market Overview, Marketplace Dynamics, The Changing ERP Market. ERP- Functional Modules: Introduction, Functional Modules of ERP Software, Integration of ERP, Supply chain and Customer Relationship Applications.

Total hours 30

COURSE OUTCOME:

At the end of this course the students will be able to,

CO1: Describe basic concepts of ERP systems for manufacturing or service companies.

CO2: Analyze the strategic options for ERP identification and adoption.

CO3: Develop skills necessary for building and managing relationships with customers, and stakeholders.

CO4: Design the ERP implementation strategies.

CO5: Create reengineered business processes for successful ERP implementation.

TEXT BOOK:

1. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008

REFERENCE BOOKS:

1. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.
2. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2006.
3. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, Prentice Hall of India, 2006.
4. Summer, ERP, Pearson Education, 2008.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com

Various Methods and Options of Pivot Table, Using the Pivot Table Wizard, Changing the Pivot Table Layout, Subtotal and Grand total Options, Formatting, and Grouping items Inserting calculated fields, Pivot Table Options, Display and hide data in fields Select, Move & Clear Pivot data, Creating and Modifying a PivotChart

TOTAL HOURS: 60

TEXT BOOK

1. Jordan Goldmeyer, “Advanced Excel Essentials” , APress, 2015 edition.

REFERENCE BOOK

1. John Walkenbach, “Microsoft Excel 2013 Bible”, Wiley Publications, 2013

WEB SOURCES:

1. <https://www.javatpoint.com/excel-tutorial>
2. https://www.tutorialspoint.com/advanced_excel/index.htm
3. <https://www.guru99.com/excel-tutorials.html>

COURSE OBJECTIVE

- To make the student understands the overall view of internet.
- To inculcate the students about the various facilities available in internet.
- To gain practical knowledge about internet.

UNIT I INTRODUCTION**12**

Internet and its history, defining and describing the Internet, Brief history, discussing the future of the Internet, Internet Resources. Describe the important features of the Web and Web browser software, Evaluate e-mail software and Web-based e-mail services

UNIT II EMAIL**12**

Email , Parts of email ,Email software , Web based email , Email address , List servers , Newsgroups ,Newsgroups names , Newsgroups readers ,Chat rooms , Conferencing

UNIT III INTERNET RESOURCES**12**

Internet Resources, Games, File transfer protocol, Telnet, World Wide Web, Behavior on the Internet , Accessing the Internet , Types of access , Online services , Internet services providers , How and where to look for the service Browsing the Web , Browsing the Web.

UNIT IV FTP**12**

Use FTP and other services to transfer and store data, Demonstrate the use of real-time chat and briefly describe the history of the wireless Internet. Use mailing lists, newsgroups, and newsfeeds, Create HTML documents and enhance them with browser extensions

UNIT V APPLICATIONS**12**

Applications of Internet- education, business, government, Communication , Job searches, Health and medicine, Travel, Entertainment, Shopping, Stock market updates, Research.

Total No of Hours:60

COURSE OUTCOME

At the end of the course students can able to,

CO1: Develop & design mail to his/her friends

CO2: Analyze the search engine (ie) browsers.

CO3: Use the applications of internet

CO4: Understand the basic concepts and features of Web.

CO5: Understand the security threats and electronic commerce.

TEXT BOOK

1. Rohit Khurana , “COMPUTER FUNDAMENTALS and INTERNET BASICS”, Aph Publishing Corporation,2010.

REFERENCE BOOK

Margaret Levine Young, “Internet Millenium Edition “,Osborne Publications,2000.

1.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com

WEBSOURCES

1. https://www.oswaalbooks.com/download/freeresources/class10/175Quick%20Revision%20Notes%20_10th%20Computer%20Application.pdf
2. <https://fcit.usf.edu/internet/chap1/chap1.htm>
3. <https://www.slideshare.net/osuchin/internet-basics-13440260>
4. <https://www.slideshare.net/argusacademy/internet-40994977>

COURSE OBJECTIVE:

To make the students to be familiar in Matlab tool containing so many toolbox such as data mining , image processing , signal processing and so on.

UNIT –I Introduction to MATLAB	Brief Introduction
	Installation of MATLAB
	History
	Use of MATLAB
	Key features
MATLAB software	Introduction to MATLAB Software
	MATLAB window
	Command window
	Workspace
	Command history
	Setting directory
	Working with the MATLAB user interface
	Basic commands
	Assigning variables
	Operations with variables
Data files and Data types	Character and string
	Arrays and vectors
	Column vectors
	Row vectors
UNIT – II	BODMAS Rules

Basic Mathematics	Arithmetic operations
	Operators and special characters
	Mathematical and logical operators
	Solving arithmetic equations
Operations on matrix	Crating rows and columns Matrix
	Matrix operations
	Finding transpose, determinant and inverse
	Solving matrix
UNIT – III M-Files	Writing Script file
	Executing script files
	The MATLAB Editor
	Saving m files
Plots	Plotting vector and matrix data
	Plot labelling, curve labelling and editing
GUI Design	Introduction Of Graphical User Interface
	GUI Function Property
	GUI Component Design
	GUI Container
	Writing the code of GUI Callback
	Dialog Box
	Menu Designing
	Applications
UNIT IV	Automating commands with scripts

MATLAB Programming	Writing programs with logic and flow control
	Writing functions
	Control statement Programming
	Conditional Statement Programming
	Examples
Loops and Conditional Statements	Control Flow Conditional Control — if, else, switch
	Loop Control — for, while, continue, break
	Program Termination — return
UNIT – V Image Processing with MATLAB	Importing and Visualizing Images
	Importing and displaying images
	Converting between image types
	Exporting images
	Interactive Exploration of Images
	Obtaining pixel intensity values
	Extracting a region of interest
	Computing pixel statistics
	Measuring object sizes
	Creating a custom interactive tool
	Preprocessing Images
	Adjusting image contrast
	Reducing noise in an image
	Using sliding neighborhood operations
	Using block processing operations

Total No of Hours:60

COURSE OUTCOME:

On Completion of this course, Students can able to

CO1: Develop simple .M files in Matlab

CO2: Analyze various toolboxes available in Matlab.

CO3: Apply mathematical Functions, arrays .matrices in specified applications..

CO4: Interpret plots and export this for use in reports and presentations.

CO5: Execute and manipulate images using image processing toolbox. .

TEXT BOOKS

- 1.Introduction to Programming in MATLAB – Sam H.Davis
2. Introduction to MATLAB – Ela Pekalska

WEBSITES

- 1.www.tutorialspoint.com

WEBSOURCES

- 1.<https://www.tutorialspoint.com/matlab/index.htm>
2. <https://www.slideshare.net/ashishmeet/introduction-to-matlab-18425069>

SKILL ENHANCEMENT COURSES

SOFTSKILLS – I

2 0 0 2

Course Objective:

- To enable participants Business Communication Skills
- To enhance participants E-mail writing skills
- To impart Leadership and Team Bonding skills

Credit Hours

- | | |
|---|-----------|
| 1. READING COMPREHENSION AND VOCABULARY | 06 |
| Filling the blanks – Cloze Exercise – Vocabulary building – Reading and answering Questions. | |
| 2. LISTENING AND ANSWERING QUESTIONS. | 06 |
| Listening and writing – Listening and sequencing sentences – Filling in the blanks – Listening and answering questions. | |
| 3. GROUP DISCUSSIONS | 06 |
| Why GD part of a selection process – Structure of a GD – strategies in GD – Team Work – Body Language | |
| 4. CONVERSATION. | 06 |
| Face to face Conversation and Telephone conversation. | |
| 5. SELF- INTRODUCTION AND ROLE PLAY | 06 |

Total 30 Hours

Course Outcome

At the end of this course the students will be able to,

- CO 1 Prioritize power of understanding and aids assimilation of vocables. Vocabulary to charge communication with educated words
- CO 2 Develop comprehensive knowledge through listening leading to answering questions
- CO 3 Build observation power and infuse self-confidence through group discussions
- CO 4 Identify methodology for befitting constructional ability
- CO 5 Experiments with inward looking and visualization of the ‘otherness’ of situations

Books Recommended

- Barun K. Mitra. Personality Development and Soft Skills. Oxford University Press. New Delhi.2011.

- S.P. Sharma. Personality Development. PustaqMahal. New Delhi. 2010. Meenakshi Raman and Sangeetha Sharma. Technical Communication. Oxford University Press. New Delhi. 2009.
- Tiko, Champa & Jaya Sasikumar. Writing with a Purpose. OUP. New Delhi. 1979

Web Source:

- <https://www.skillsyouneed.com/ips/communication-skills.html>
- <https://blog.smarp.com/top-5-communication-skills-and-how-to-improve-them>
- <https://blog.hubspot.com/service/phone-etiquette>

SOFT SKILLS – II

2 0 0 2

Course Objective:

- To enable students to develop their communication skills effectively
- To enhance students Reading, Writing, Listening and Speaking skills
- To develop their self-confidence through communication

Credit Hours

1. PRESENTATION SKILLS	06
Elements of an effective presentation – structure of presentation – voice modulation – Audience analysis – Body language	
2. SOFT SKILLS	06
Time Management – Articulateness – Assertiveness – Stress management	
3. RESUME / REPORT PREPARATION / LETTER WRITING	06
Structuring the resume / Report – Business letters – E-Mail Communication	
4. INTERVIEW SKILLS	06
Kinds of Interviews – Required by Skills – Corporate Culture – Mock Interviews	
5. 30 FREQUENTLY ASKED QUESTIONS	06
Total 30 Hours	

Course Outcome

At the end of this course the students will be able to,

- CO1 Illustrate the essential of presentation skills, thoughts, structure, voice modulation, audience analysis and body language
- CO2 Utilize the psychological skills pertaining to time management, articulation, assertion and stress management
- CO3 Construct methodology for preparation of resume, reports, business letters and email communication
- CO4 Appraise learners with varied skills needed for expose to interviews
- CO5 Categorize the nature of questions asked usually in interviews

Books Recommended

- BarunK.Mitra. Personality Development and soft skills. Oxford University Press. New Delhi. 2011.
- S P Sharma. Personality Development. PustaqMahal. New Delhi. 2010.
- Meenakshi Raman and Sangeetha Sharma. Technical Communication. Oxford University Press. New Delhi. 2009.

Web Sources:

- <https://www.skillsyouneed.com/ips/communication-skills.html>
- <https://www.businessnewsdaily.com/5836-top-interviewing-skills.html>
- <https://gdpi.hitbullseye.com/Group-Discussion.php>

SOFT SKILLS III

2 0 0 2

Course Objective:

- To enable students to develop their soft skills and Body Language
- To enhance students Reading, Writing, Listening and Speaking skills
- To develop their self-confidence to excel at Interviews

Credit Hours

UNIT-I

06

Powerful Presentation

UNIT-II

06

Reinforcement

UNIT-III

06

Using visual aids

UNIT-IV

06

Types and Methods of Presentations

UNIT-V

06

Obstacles to Presentation

Total 30 Hours

Course Outcome:

- CO1 To develop participants social and professional skills
- CO2 To help participants manage time effectively
- CO3 To build a strong resume to suit corporate requirements
- CO4 To face interviews confidently
- CO5 To enhance their aptitude abilities

Books Recommended:

- Roz Townsend: Presentation Skills for the Upwardly Mobile, Emerald, Chennai.
- Prasad, H. M. How to Prepare for Group Discussion and Interview. NewDelhi: Tata McGraw-Hill Publishing Company Limited, 2001.

- Pease, Allan. Body Language. Delhi: Sudha Publications, 1998.

Web Sources:

- <https://www.skillsyouneed.com/ips/communication-skills.html>
- <https://venngage.com/blog/presentation-skills/>
- <https://gdpi.hitbullseye.com/Group-Discussion.php>