B.TECH – COMPUTER SCIENCE & ENGINEERING (DATA SCIENCE)

Course Structure R-20

SEMESTER V

S.No.	Class	Course Code	Name of the Subject	L	T	P	C
1	HS	CHSM2	Fundamentals of Management	3	0	0	3
2	PC	C85PC1	Web Technologies	3	0	0	3
3	PC	C85PC2	Machine learning	3	0	0	3
4	PC	C85PC3	Compiler Design	3	0	0	3
5	PE	C85PE4	Professional Elective-I A. Distributed Databases B. Information Theory & Coding C. Software Process & Project Management	3	0	0	3
6	PC	C85PC5	Software Engineering	3	0	0	3
7	PC	C85PC6	Web Technology Lab	0	0	2	1
8	PC	C85PC7	Machine learning Lab	0	0	2	1
9	PW	C85PW8	ProjectI	0	0	2	1
10	MC	MC005	MOOCS/Online Course				Satisfactory
Total Credits							**21**

ProjectI: Student should develop back end database tables for any chosen database application. It can be extension of project work carried out in VI semester with back end connections. The table developed should be more than a six-table database. Students can form a minimum of two and maximum of 4 in a group. The allocated teachers should guide in framing the problem, teach the back end technologies like Oracle during the lab hours allotted to them. The departmental academic committee based on the rubrics framed will do the evaluation of the project.

Mandatory Course: MOOCs/Online Course
The student should register for any one of the MOOCs course offered by NPTEL, COURSERA, UDEMY, student should submit the completion certificate to clear this course.

FUNDAMENTALS OF MANAGEMENT (CHSM2)

B.Tech. V Semester **L/T/P/C**
3/0/0/3

COURSE OBJECTIVES:

1. To make the students to understand the management concepts
2. To analyze the managerial skills.
3. To know the applications of management concepts in practical aspects of business.
4. To interpret, understand and develop the management principles in organizations.
5. To learn the basic concepts of organization its principles and functions.

OUT COMES

1. To infer the basic knowledge of management functions , levels and evolution of Management.
2. To ensure the students in decision making problem solving for the issues in corporate in the organization.
3. To acquire the knowledge of entire organization design and structure.
4. To perceive the strategically decision in selection, requirement training and development.
5. To enact and impose the qualities of a leader, mentor and coach.

UNIT - I

Introduction to Management: Definition, Nature and Scope, Functions, Managerial Roles, Levels of Management, Managerial Skills, Challenges of Management; Evolution of Management- Classical Approach- Scientific and Administrative Management; The Behavioral approach.

UNIT – II

Planning and Decision Making: General Framework for Planning - Planning Process, Types of Plans. Decision making and Problem solving - Programmed and Non Programmed Decisions, Steps in Problem Solving and Decision Making.

UNIT - III

Organization and HRM: Principles of Organization: Organizational Design & Organizational Structures; Departmentalization, Delegation; Empowerment, Centralization, Decentralization, Recentralization;
Human Resource Management & Business Strategy: Talent Management, Talent Management Models and Strategic Human Resource Planning; Recruitment and Selection; Training and Development; Performance Appraisal.

UNIT - IV

Leading and Motivation: Leadership, Power and Authority, Leadership Styles; Behavioral Leadership, Situational Leadership, Leadership Skills, Leader as Mentor and Coach, Leadership during adversity and Crisis.
Motivation - Types of Motivation; Motivational Theories - Needs Hierarchy Theory, Two Factor Theory, Theory X and Theory Y.

UNIT - V

Controlling: Control, Types and Strategies for Control, Steps in Control Process, Budgetary and Non-Budgetary Controls. Characteristics of Effective Controls

TEXT BOOKS:

1. Management Fundamentals, Robert N Lussier, 5e, Cengage Learning, 2013.
2. Fundamentals of Management, Stephen P. Robbins, Pearson Education, 2009.

REFERENCES:

1. Essentials of Management, Koontz Kleihrich, Tata Mc - Graw Hill.
2. Management Essentials, Andrew DuBrin, 9e, Cengage Learning, 2012.
3. Harold Koontz and Heinz Weihrich, 2010, Essentials of Management, TMH

CSE (DATA SCIENCE)

Web Technologies - C85PC1

B.Tech. V Semester **L/T/P/C**
3/0/0/3

COURSE OBJECTIVE:

1. To introduce PHP language for server-side scripting
2. To introduce XML and processing of XML Data with Java
3. To introduce Server-side programming with Java Servlets and JSP To introduce Client-side scripting with Javascript and AJAX

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Gain knowledge on implementing server side scripting using PHP, know how to store and process data using XML.
2. Understand how to handle http requests based on the knowledge of servelets
3. Learn to implement server side programming with servelets, JSP
4. Learn to implement client side scripting, validation of forms, JS, AJAX programming.

UNIT – I:

Introduction to PHP: Declaring variables, data types, arrays, strings, operators, expressions, control structures, functions, Reading data from web form controls like text boxes, radio buttons, lists etc., Handling File Uploads, Connecting to database (MySQL as reference), executing simple queries, handling results, Handling sessions and cookies File Handling in PHP: File operations like opening, closing, reading, writing, appending, deleting etc. on text and binary files, listing directories.

UNIT – II:

XML: Introduction to XML, Defining XML tags, their attributes and values, Document Type Definition, XML Schemas, Document Object Model, XHTML Parsing XML Data – DOM and SAX Parsers in java.

UNIT – III:

Introduction to Servlets: Common Gateway Interface (CGI), Lifecycle of a Servlet, deploying a servlet, The Servlet API, Reading Servlet parameters, Reading Initialization Parameters, Handling HTTP Request & Responses, Using Cookies and Sessions, connecting to a database using JDBC.

UNIT – IV:

Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

UNIT – V:

Client-side Scripting: Introduction to Javascript: Javascript language – declaring variables, the scope of variables, functions, event handlers (click, on submit etc.), Document Object Model, Form validation, Simple AJAX application.

TEXTBOOK

1. Web Technologies, Uttam K Roy, Oxford UniversityPress.
2. The Complete Reference PHP – Steven Holzner, TataMcGraw-Hill.

REFERENCE BOOKS

1. Web Programming, building internet applications, Chris Bates 2nd edition, Wiley Dreamtech.
2. Java Server Pages –Hans Bergsten, SPD O'Reilly Java Script, D. Flanagan, O'Reilly,SPD.
3. Beginning Web Programming-Jon Duckett WROX.
4. Programming World Wide Web, R. W. Sebesta, Fourth Edition, Pearson.
5. Internet and World Wide Web – How to program, Dietel and Nieto, Pearson.

CSE (DATA SCIENCE)

MACHINE LEARNING – C85PC2

B.Tech. V Semester **L/T/P/C**
3/0/0/3

COURSE OBJECTIVES:

To be able to formulate machine learning problems corresponding to different applications and range of machine learning algorithms along with their strengths and weaknesses

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Understand the basic concepts such as decision trees and neural networks.
2. Develop the ability to formulate machine learning techniques to respective problems.
3. Apply machine learning algorithms to solve problems of moderate complexity.

UNIT-I:

Introduction - Well-posed learning problems, designing a learning system, Perspectives and issues in machine learning

Concept Learning And The General To Specific Ordering – Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm, Remarks on version spaces and candidate elimination, Inductive bias

UNIT-II:

Decision Tree Learning – Introduction, Decision tree representation, appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search indecision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning

Artificial Neural Networks – Introduction, Neural network representation, appropriate problems for neural network learning, Perceptron, Multilayer networks and the back propagation algorithm, Remarks on the back propagation algorithm, An illustrative example face recognition Advanced topics in artificial neural networks

Evaluation Hypotheses – Motivation, Estimation hypothesis accuracy, Basics of sampling theory, A general approach for deriving confidence intervals, Difference in error of two hypotheses, Comparing learning algorithms

UNIT-III:

Bayesian Learning – Overview of Bayes theorem principle, Bayes theorem and concept learning, Maximum likelihood and least squared error hypotheses, Maximum likelihood hypotheses for predicting probabilities, Minimum description length principle, Bayes optimal classifier, Gibs algorithm, Naïve Bayes classifier.

Computational Learning Theory – Introduction, Probability learning an approximately correct hypothesis, Sample complexity for Finite Hypothesis Space.

Instance-Based Learning - Introduction, k -Nearest Neighbor Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning.

UNIT-IV:

Learning Sets of Rules – Introduction, Sequential Covering Algorithms, Learning Rule Sets: Summary, Learning First Order Rules, Learning Sets of First Order Rules: FOIL.

Analytical Learning - Introduction, Learning with Perfect Domain Theories: Prolog-EBG Remarks on Explanation- Based Learning, Explanation-Based Learning-Discovery new features.

UNIT V:

Combining Inductive and Analytical Learning – Motivation, Inductive-Analytical approaches to Learning.

Reinforcement Learning and Q Learning.

TEXT BOOKS:

1. Machine Learning – Tom M. Mitchell, -MGH
2. Machine Learning: An Algorithmic Perspective, Stephen Marsland, Taylor & Francis(CRC)

REFERENCE BOOKS:

1. Machine Learning Methods in the Environmental Sciences, Neural Networks, WilliamW Hsieh, Cambridge Univ Press.
2. Richard o.Duda, Peter E. Hart and David G. Stork, pattern classification, John Wiley& Sons Inc.,2001
3. Chris Bishop, Neural Networks for Pattern Recognition, Oxford University Press,1995

CSE (DATA SCIENCE)

COMPILER DESIGN – C85PC3

B.Tech. V Semester **L/T/P/C**
3/0/0/3

COURSE OBJECTIVES:

1. To understand the various phases in the design of a compiler.
2. To understand the design of top-down and bottom-up parsers.
3. To understand syntax-directed translation schemes.
4. To introduce lex and yacc tools.
5. To learn to develop algorithms to generate code for a target machine.

COURSE OUTCOME:

After completion of this course, the student will be able to

1. Ability to design, develop, and implement a compiler for any language. Able to use lex and YACC tools for developing a scanner and a parser. Able to design and implement LL and LR parsers.
2. Able to design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity.
3. Ability to design algorithms to generate machine code

UNIT – I:

Introduction - Language Processors, The structure of a compiler. Lexical Analysis: The Role of the Lexical Analyzer, Input Buffering, Recognition of Tokens, The Lexical- Analyzer Generator Lex, Finite Automata, From Regular Expressions to Automata, Design of a Lexical-Analyzer Generator, Optimization of DFA-Based Pattern Matchers.

UNIT – II:

Syntax Analysis: Introduction, Context-Free Grammars, Writing a Grammar, Top-Down Parsing, Bottom-Up Parsing, Introduction to LR Parsing: Simple LR, /More Powerful LR Parsers, Using Ambiguous Grammars, Parser Generators.

UNIT – III:

Syntax – Directed Translation: Syntax – Directed Definitions, Evaluation Orders for SDD's, Applications of Syntax-Directed Translation, Syntax-Directed Translation Schemes, and Implementing L – Attributed SDD's. Intermediate-Code Generation: Variants of Syntax Trees, Three – Address Code, Types and Declarations, Type Checking, Control Flow, Back patching, Switch – Statements, Intermediate Code for Procedures.

UNIT-IV:

Run-Time Environments: Storage organization, Stack Allocation of Space, Access to Nonlocal Data on the Stack, Heap Management, Introduction to Garbage Collection, Introduction to Trace – Based Collection.

Code Generation: Issues in the Design of a Code Generator, The Target Language, Addresses in the Target Code, Basic Blocks and Flow Graphs, Optimization of Basic Blocks, A Simple Code Generator, Peephole Optimization, Register Allocation and Assignment, Dynamic Programming Code-Generation.

UNIT – V:

Machine-Independent Optimizations: The Principle Sources of Optimization, Introduction to Data – Flow Analysis, Foundations of Data-Flow Analysis, Constant Propagation, Partial Redundancy Elimination, Loops in Flow Graphs.

TEXTBOOKS:

1. Compilers: Principles, Techniques and Tools, Second Edition, Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffry D. Ullman, Pearson.

REFERENCE BOOKS:

1. Compiler Construction-Principles and Practice, Kenneth C Louden, Cengage Learning.
2. Modern compiler implementation in C, Andrew W Appel, Revised edition, Cambridge University Press.
3. The Theory and Practice of Compiler writing, J. P. Tremblay and P. G. Sorenson, TMH Writing compilers and interpreters, R. Mak, 3rd edition, Wiley student edition. Lex & yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly.

CSE (DATA SCIENCE)

DISTRIBUTED DATABASES – C85PE4A

B.Tech. V Semester **L/T/P/C**
3/0/0/3

COURSE OBJECTIVES:

Be able to apply methods and techniques for distributed query processing and optimization and understand the broad concepts of distributed transaction process.

COURSE OUTCOMES:

After completion of this course, the student will be able to
1. Understand theoretical and practical aspects of distributed database systems.
2. Study and identify various issues related to the development of distributed database system.
3. Understand the design aspects of object-oriented database system and related development.

UNIT-1:

Introduction; Distributed Data Processing, Distributed Database System, Promises of DDBSs, Problem areas. **Distributed DBMS Architecture:** Architectural Models for Distributed DBMS, DDMBS Architecture.
Distributed Database : Design Strategies, Distribution Design issues, Fragmentation, Allocation.

UNIT-2:

Query processing and decomposition: Query processing objectives, characterization of query processors, layers of query processing, query decomposition, localization of distributed data.
Distributed query Optimization: Query optimization, centralized query optimization, distributed query optimization algorithms.

UNIT-3:

Transaction Management: Definition, properties of transaction, types of transactions, Distributed concurrency control: Serializability, concurrency control mechanisms & algorithms, time - stamped & optimistic concurrency control Algorithms, deadlock Management.

UNIT-4:

Distributed DBMS Reliability: Reliability concepts and measures, Fault-tolerance in Distributed systems, failures in Distributed DBMS, Local & distributed reliability protocols, site failures and network partitioning.
Parallel Database Systems: Parallel database system architectures, parallel data placement, parallel query processing, load balancing, database clusters.

UNIT-5:

Distributed object Database Management Systems: Fundamental object concepts and models, object distributed design, architectural issues, object management, distributed object storage, object query Processing.

Object Oriented Data Model: Inheritance, Object Identity, Persistent Programming Languages, Persistence of Objects, Comparison OODBMS and ORDBMS.

TEXT BOOKS:

1. M. Tamer OZSU and Patuck Valduriez: Principles of Distributed Database Systems, Pearson Edn. Asia, 2001.
2. Stefano Ceri and Giuseppe Pelagatti: Distributed Databases, McGraw Hill.

REFERENCE BOOKS:

1. Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom: ‒Database Systems: The Complete Book‖, Second Edition, Pearson International Edition

CSE (DATA SCIENCE)

INFORMATION THEORY AND CODING – C85PE4B

B.Tech. V Semester **L/T/P/C**
3/0/0/3

COURSE OBJECTIVES:

Explain entropy, mutual information and characteristics of various types of noisy communication channels, discuss various source coding schemes and channel coding techniques for error-free transmission of message over a noisy communication channel.

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Understand the concept of information and entropy
2. Learn the properties of codes and understand shannon's theorem for coding
3. Calculate channel capacity and learn to apply mechanism for sharing mutual information.
4. Learn the finite geometric codes and apply convolutional codes

UNIT I:

Information and Sources: The Definition of Information, The Zero-memory Information Source, Properties of Entropy, Extensions of a Zero-memory Source, The Markov Information Source.

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UNIT II:

Properties of Codes: Uniquely Decodable Codes, Instantaneous Codes, Construction of an Instantaneous code, Kraft Inequality – Statement.

Coding Information Sources: The Average Length of a Code, Method of Encoding for Special Sources, Shannon's Theorem for Markov Sources, Coding without Extensions, Finding Binary Compact Codes—Huffman Code.

UNIT III:

Channels and Mutual Information: Information Channels, Probability Relations in a Channel, A Priori and A Posteriori Entropies, A Generalization of Shannon's Theorem, Mutual Information, Properties of Mutual Information, Noiseless Channels and Deterministic Channels, Cascaded Channels, Reduced Channels and Sufficient Reductions, Additivity of Mutual Information, Mutual Information of Several Alphabets, Channel Capacity, Conditional Mutual Information.

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UNITIV:

Finite Geometry Codes: Euclidean geometry, Majority Logic Decodable Cyclic codes based on Euclidean geometry, Projective geometry and projective geometry codes, Modifications of Majority-Logic Decoding, Single-Burst-Error-Correcting odes, Interleaved codes, Phased-Burst-Error-Correcting-Codes.

UNIT V:

Application Of Convolutional Codes: Applications of viterbi Decoding, Sequential Decoding, Majority-Logic-Decoding, Burst-Error-Correction, Convolutional Codes in ARQ Systems

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TEXT BOOKS:

1. N. Abramson, Information and Coding, McGraw Hill, 1963.
2. Shu Lin and D.J. Costello Jr., Error Control Coding, Prentice Hall, 1983.

REFERENCE BOOKS:

1. Principles of Communication Systems-Herbert Taub, Donald L schilling, Goutham Saha, 3rd Edition, McGraw Hill, 2008.
2. Digital and analog communication systems-Sam Shanmugam, John Wiley, 2005.
3. Digital communication—Simon Haykin, John Wiley, 2005.
4. Communication Systems-B.P.Lathi, BS Publications 2006

CSE (DATA SCIENCE)

SOFTWARE PROCESS AND PROJECT MANAGEMENT – C85PE4C

B.Tech. V Semester **L/T/P/C**
3/0/0/3

COURSE OBJECTIVE:

The Objective of the Course is to Focus of Principles, Techniques, Methods & Tools for Model-Based Management of Software Projects. Assurance of Product Quality and Process Adherence (Quality Assurance), as Well as Experience Based Creation & Improvement of Models.

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Describe and determine the purpose and importance of project management from the perspectives of planning, tracking and completion of project.
2. Compare and differentiate organization structures and project structures.
3. Implement a project to manage project to manage project schedule, expenses and resources with the application of suitable protect management tools.

UNIT I:

Conventional Software Management: The waterfall model, RAD model, Iterative model, Spiral model, Prototype model and COCOMO model, conventional software management performance **Evolution of Software Economics**: Software economics, pragmatic software cost estimation.

UNIT-II:

Improving Software Economics: Reducing software product size, improving software process, improving team effectiveness. Improving automation, Achieving required quality, peer inspections. The old way and the new the principles of conventional software engineering. Principles of modern software management, transitioning to an iterative process.

UNIT-III:

Life Cycle Phases: Engineering and production stages, inception, elaboration, construction, transition phases. Artifacts of the process: the artifact sets. Management artifacts, engineering artifacts, programmatic artifacts. Model based software architectures: A Management perspective and technical perspective.

UNIT-IV:

Work Flows Of The Process: Software process workflow, Iteration workflows. Checkpoints of the process: Major Mile stones, Minor Milestones, periodic status assessments. Iterative process planning: Work breakdown structures, planning guidelines, cost and scheduled estimating, interaction, planning process, pragmatic planning. Evolution of Project Organization, Project Organizations and responsibilities: Line-of-Business organization.

UNIT-V:

Project Control and Process Instrumentation: The seven care metrics, management indicators, and quality indicators. Life cycle expectations, pragmatic software Metrics, Metrics Automation Tailoring the Process: Process discriminates, example.
Future Software Project Management: Modem project profiles next generation software economics modem process transitions.
Case Study: The Command Center Processing and Display System. Replacement (CCPDS-R)

TEXT BOOKS:
1. Software Project Management. Walker Royce, Pearson Education.

REFERENCE BOOKS:
1. Applied Software Project Management, Andrew Stebian, & Jennifer Greene, O'Reilly 2006.
2. Software Engineering Project Management. Richard H. Thayer & Edward Yourdon, Second edition, Wiley India, 2004.
3. Software Project Management in Practice Pankaj Jalote Pearson education, 2002.

CSE (DATA SCIENCE)

SOFTWARE ENGINEERING – C85PC5

B.Tech. V Semester **L/T/P/C**
3/0/0/3

COURSE OBJECTIVE:

To apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Understanding of the basic knowledge, analysis and design of complex systems.
2. Identify the minimum requirements for the development of application (Prototype).
3. Understand the objective of designing required process models and architectural styles.
4. Apply the process of validation and verification for a developed application.
5. Understand the process of deploying the quality and risk management for a developed application (Prototype).

UNIT – I:

Introduction to Software Engineering: The Evolving Role of software, Changing Nature of Software, legacy software myths.

Generic View of Process: Software engineering - A Layered technology, a process framework, Capability Maturity Model Integration (CMMI), process patterns, process assessment, personal and team process models.

Process Models

The Waterfall Model, Incremental Process Model, Evolutionary Process models, specialized process models, unified process.

UNIT – II:

Software Requirements: Functional and Non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document. Requirements Engineering Process Feasibility studies, Requirements elicitation and analysis, requirements validation, requirements management. System Models-Context Models, Behavioral Models, Data Models, Object Models, structured methods.

UNIT – III:

Design Engineering: Design Process and Design quality, Design concepts, the design model, pattern based software Design, Creating an Architectural Design, Software architecture, Data Design, Architectural styles and patterns. Architectural Design, Assessing Alternative Architectural Designs and Mapping Data Flow into Software Architecture. Modeling Component-Level Design, Design class-based components, conducting component-level design, object constraint language, design conventional components.

UNIT – IV:

Testing Strategies: A strategic approach to software testing, testing strategies for conventional software, Black-Box and White-Box testing. Validation testing, system testing, the art of debugging.

Product Metrics: Software Quality, Frame work for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance. Metrics for Process and Products Software Measurement, Metrics for Software Quality.

UNIT – V:

Risk Management: Reactive versus Proactive, Risk strategies, software risks, Risk identification, Risk projection, Risk refinement. RMMM, RMMM plan.

TEXT BOOKS:

1. Software engineering A Practitioner's approach, Roger S Pressman, Sixth Edition McGrawHill International Edition.
2. Software Engineering: Ian Sommer ville, Seventh Edition, Pearson Education.

REFERENCE BOOKS:

1. Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India 2010.
2. Software Engineering: A Primer, Waman S. Jawadekar, Tata McGraw Hill, 2008.
3. Software Engineering Foundations, Yingxu Wang, Auerbach Publications 2008.

CSE (DATA SCIENCE)

WEB TECHNOLOGIES LAB – C85PC6

B.Tech. V Semester **L/T/P/C**
0/0/2/1

COURSE OBJECTIVES:

To enable the student to program web applications using the following technologies HTML, JavaScript, AJAX, PHP, Tomcat Server, Servlets, JSP.

COURSE OUTCOMES:

1. Use LAMP Stack for web applications
2. Use Tomcat Server for Servlets and JSPs
3. Write simple applications with Technologies like HTML, Javascript, AJAX, PHP, Servlets, and JSPs, Parse XML files using Java (DOM and SAX parsers)
4. Connect to Database and get results.

LIST OF EXPERIMENTS:

1. Write an HTML page including JavaScript that takes a given set of integer numbers and shows them after sorting in descending order.
2. Write an HTML page including any required JavaScript that takes a number from one text field in the range of 0 to 999 and shows it in another text field in words. If the number is out of range, it should show ‒out of range‖ and if it is not a number, it should show ‒not a number‖ message in the result box.
3. Write an HTML page that has one input, which can take multi-line text and a submit button. Once the user clicks the submit button, it should show the number of characters, words and lines in the text entered using an alert message. Words are separated with white space and lines are separated with new line character.
4. Write an HTML page that contains a selection box with a list of 5 countries. When the user selects a country, its capital should be printed next to the list. Add CSS to customize the properties of the font of the capital (color, bold and fontsize).
5. Create an XML document that contains 10 users information. Write a Java program, which takes User Id as input and returns the user details by taking the user information from the XML document using (a) DOM Parser and (b) SAX parser Implement the following web applications using (a) PHP, (b) Servlets and (c)JSP:
6. A user validation web application, where the user submits the login name and password to the server. The name and password are checked against the data already available in Database and if

the data matches, a successful login page is returned. Otherwise a failure message is shown to the user.

7. Modify the above program to use an xml file instead of database.
8. ModifytheaboveprogramtouseAJAXtoshowtheresultonthesamepagebelowthesubmit button.
9. A simple calculator web application that takes two numbers and an operator (+, -, /, * and %) from an HTML page and returns the result page with the operation performed on the operands.
10. Modify the above program such that it stores each query in a database and checks the database first for the result. If the query is already available in the DB, it returns the value that was previously computed (from DB) or it computes the result and returns it after storing the new query and result in DB.
11. A web application takes a name as input and on submit it shows a hello page where is taken from the request. It shows the start time at the right top corner of the page and provides a logout button. On clicking this button, it should show a logout page with Thank You message with the duration of usage (hint: Use session to store name and time).
12. A web application that takes name and age from an HTML page. If the age is less than
13. it should send a page with ‐Hello , you are not authorized to visit this site‖ message, where should be replaced with the entered name. Otherwise it should send ‐Welcome to this site‖ message.
14. A web application for implementation: The user is first served a login page which takes user's name and password. After submitting the details the server checks these values against the data from a database and takes the following decisions. If name and password matches, serves a welcome page with user's full name. If name matches and password doesn't match, then serves ‐password mismatch‖ page If name is not found in the database, serves a registration page, where user's full name is asked and on submitting the full name, it stores, the login name, password and full name in the database (hint: use session for storing the submitted login name and password)
15. A web application that lists all cookies stored in the browser on clicking ‐List Cookies‖ button. Add cookies if necessary.

CSE (DATA SCIENCE)

MACHINE LEARNING LAB – C85PC7

B.Tech. V Semester **L/T/P/C**
0/0/2/1

COURSE OBJECTIVE:

To Disseminate the Practical Demonstration on the Concepts of Machine learning and Internet of Things.

COURSE OUTCOMES:

1. Make use of Data sets in implementing the machine learning algorithms
2. Implement the machine learning concepts and algorithms in any suitable language of choice.

Note to students for implementation.

1. The programs can be implemented in either JAVA orPython.
2. For Problems 1 to 6 and 10, programs are to be developed without using the built-in classes or APIs ofJava/Python.

Note: Data sets can be taken from standard repositories (https://archive.ics.uci.edu/ml/datasets.html) or constructed by the students

1. Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesisbasedonagivensetoftrainingdatasamples.Readthetrainingdatafroma .CSV file.
2. Foragivensetoftrainingdataexamplesstoredina.CSVfile,implementanddemonstrate theCandidate-Eliminationalgorithmtooutputadescriptionofthesetofallhypotheses consistent with the training examples.
3. Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
4. Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.
5. Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test datasets.
6. Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your dataset.

7. Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.
8. ApplyEMalgorithmtoclusterasetofdatastoredina.CSVfile.Usethesamedataset for clustering using *k*-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.
9. Write a program to implement *k*-Nearest Neighbour algorithm to classify the iris data set.Printbothcorrectandwrongpredictions.Java/PythonMLlibraryclassescanbeused for this problem.
10. Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs

B.TECH – COMPUTER SCIENCE & ENGINEERING (DATA SCIENCE)

Course Structure R-20

SEMESTER VI

S.No.	Class	Course Code	Name of the Subject	L	T	P	C
1	HS	CHSM3	Business Intelligence (Marketing and Finance)	3	0	0	3
2	PC	C86PC1	Natural Language Processing	3	1	0	4
3	PE	C86PE2	Professional Elective-II A. Advanced Databases B. Mobile Computing C. Wireless Networks	3	0	0	3
4	PE	C86PE3	Professional Elective-III A. Cloud Computing B. Network Security C. Fundamentals of Multimedia	3	0	0	3
5	OE	C86OE4	Open Elective I	3	0	0	3
6	PC	C86PC5	Natural Language Processing Lab	0	0	2	1
7	HS	CHSE3	Advanced English Communication Skills Lab	0	0	4	2
8	PW	C86PW6	Project II	0	0	2	1
9	MC	MC006	1. Personality Development/Skill Development/ 2. Technical Events 3. Internships	0	0	0	Satisfactory
Total Credits							**20**

ProjectII : This project is extension of project work carried out in V semester with back end connections. Front end should be developed with .NET or Python or Java framework. The departmental academic committee based on the rubrics framed will do the evaluation of the project.

Mandatory Course: The satisfactory report should be submitted either for 1 or 2 or 3 given below.

1.Personality Development/Skill Development: Student should participate in personality development/communication skills programme, student should submit the completion certificate for clearing this course.

2.Technical Events: The student should participate in any technical event organized by any College/Organization/Industry and submit the participation certificate for clearing this course.

3. Internships: The Student should submit the completion certificate from the respective organization. Where he/she performs their internship.

CSE (DATA SCIENCE)

NATURAL LANGUAGE PROCESSING - C86PC1

B.Tech. VI Semester **L/T/P/C**
3 /1/ 0/ 4

COURSE OBJECTIVE:

Introduce to some of the problems and solutions of NLP and their relation to linguistics and statistics.

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Show sensitivity to linguistic phenomena and an ability to model them with formal grammars.
2. Understand and carry out proper experimental methodology for training and evaluating empirical NLP systems.
3. Able to design, implement, and analyze NLP algorithms
4. Able to design different language modeling Techniques.

UNIT – I:

Finding the Structure of Words: Words and Their Components, Issues and Challenges, Morphological Models Finding the Structure of Documents: Introduction, Methods, Complexity of the Approaches, Performances of the Approaches

UNIT – II:

Syntax Analysis: Parsing Natural Language, Tree banks: A Data-Driven Approach to Syntax, Representation of Syntactic Structure, Parsing Algorithms, Models for Ambiguity Resolution in Parsing, Multilingual Issues.

UNIT – III:

Semantic Parsing: Introduction, Semantic Interpretation, System Paradigms, Word Sense Systems, Software.

UNIT – IV:

Predicate Argument Structure: Resources, System, Softwares, Meaning Representation: Resources, System, Software.

UNIT – V:

Language Modeling: Introduction, N-Gram Models, Language Model Evaluation, Parameter Estimation, Language Model Adaptation, Types of Language Models, Language-Specific Modeling Problems, Multilingual and Cross lingual Language Modeling.

TEXT BOOKS:

1. Multilingual natural Language Processing Applications: From Theory to Practice – Daniel M. Bikel and Imed Zitouni, Pearson Publication.

REFERENCE BOOKS:

1. Speech and Natural Language Processing – Daniel Jurafsky & James H Martin, Pearson Publications.

CSE (DATA SCIENCE)

ADVANCED DATABASES – C86PE2A

B.Tech. VI Semester **L/T/P/C**
3 /0/ 0/ 3

COURSE OBJECTIVE:

- To provide a strong foundation in advanced database concepts from an industry perspective.
- To covers advanced data modeling concepts like OOD Modeling
- To learn query processing and transaction management concepts for object-relational database and distributed database.

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Understand the concepts of parallel databases, Object databases, and XML databases
2. Know the significance and concepts of Information retrieval; apply them in implementing transaction management features.
3. Learn the concepts of advance transaction processing, advance application development, spatial and temporal data Mobility.
4. Learn to address the prelims of security issues over advance database concepts.

UNIT – I:

Database system Architecture: computer-system architecture, and describes the influence of the underlying computer system on the database system.

Parallel databases: explores a variety of parallelization techniques, including I/O parallelism, inter query and intra query parallelism, and interoperation and intra operation parallelism. Query optimization, Design of parallel Systems, Parallelism on Multi Core Processors.

UNIT – II:

Object Based Databases: Complex data types, Structured types and Inheritance in SQL, Table Inheritance, Array and Multiset types in SQL, Object-Identity and Reference types in SQL, Implementing O-R features, Persistent Programming Languages, Object-Oriented versus Object-Relational.

XML Databases: Structure of XML data, XML document schema, Querying and Transformation, API to XML, Storage of XML data, XML applications

UNIT – III:

Information Retrieval: Relevance ranking using Terms, Relevance using Hyperlinks, Synonyms, Homonyms and Ontologies, Indexing of Documents, Measuring Retrieval Effectiveness, Crawling and Indexing the web, Beyond ranking of pages, Directories and Categories

UNIT – IV:

Advance application Development: Performance Tuning, Performance Benchmarks, Other Issues in Application Development, Standardization. Spatial and Temporal data Mobility: Motivation, Time in Databases, Spatial and Geographical Data Geographic Data, Multimedia Databases, Mobility and Personal databases.

Advance Transaction Processing: Transaction-Processing Monitors, Transactional Workflows, E-commerce, Main-memory databases, Real-Time Transaction Systems, Long-Duration Transactions.

UNIT – V:

Introduction to database security issues, Discretionary access control based on granting and revoking privileges; Mandatory access control and role based access control for multilevel security. SQL Injection, Introduction to statistical Database Security, Introduction to flow control, Encryption and Public Key Infrastructures, Privacy issues and preservation, challenges to maintaining database security.

TEXT BOOKS:

1. Database Systems concepts 6th edition silberschatz - korth-surdarshan Tata Mc Graw Hill Publications (Indian Edition)
2. Fundamentals of Database systems seventh edition Pearson Publications by Ramez Elmasri, Shamakanth.B. Navathe.

REFERENCE:

1. 1. Distributed Databases Stefeno Ceri & Guiseppe Pelagatti TataMCgrewHill Edition

CSE (DATA SCIENCE)

MOBILE COMPUTING – C86PE2B

B.Tech. VI Semester **L/T/P/C**
3 /0/ 0/ 3

COURSE OBJECTIVE:

Computer systems perspective on the converging areas of wireless networking, embedded systems, and software, and to introduce selected topics of current research interest in the field.

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. To understand the typical mobile networking infrastructure through a popular GSM protocol
2. To understand the issues and solutions of various layers of mobile networks, namely MAC layer, Network Layer & Transport Layer
3. To understand the database issues in mobile environments & data delivery models.
4. To understand the ad hoc networks and related concepts.

UNIT - I

Mobile Communications: An Overview: Mobile Communication, Mobile Computing, Mobile Computing Architecture, Mobile Devices, Mobile System Networks, Data Dissemination, Mobility Management, Security.

Mobile Devices and Systems: Cellular Networks and Frequency Reuse, Mobile Smart phones, Smart Mobiles, and Systems, Handheld pocket Computers, Handheld Devices, Smart Systems, Limitations of Mobile Devices.

UNIT – II

GSM and Other 2G Architectures: GSM – Services, System Architecture, Radio Interfaces, Protocols, Localization, Calling, Handover, Security, New Data Services, GPRS, CSHSD, DECT.

Medium Access Control (MAC): Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA,.

UNIT – III

Mobile IP Network Layer: IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunneling and Encapsulation, Route Optimization, DHCP, VoIP, TCP over 2.5G/3G Mobile Networks

Mobile Transport Layer: Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks.

UNIT – IV

Databases and Mobile Computing: Database Hoarding Techniques, Data Caching, Client-Server Computing for Mobile Computing and Adaptation, Adaptation Software for Mobile Computing, Power-aware Mobile Computing, Context-aware Mobile Computing

Data Dissemination and Systems for Broadcasting: Classification of Data Delivery Mechanisms, Data Dissemination, Digital Audio Broadcasting (DAB), Digital Video Broadcasting.

UNIT - V

Mobile Adhoc Networks (MANETs): Introduction to Mobile Ad-hoc Network, MANET, Routing and Routing Algorithms.

Mobile Wireless Short-Range Networks and Mobile: Wireless LAN, 802.11 Architecture, and Protocol Layers, Wireless Application Protocol (WAP), Wireless Application Protocol-WAP 2.0

Mobile Application Development Platforms: Windows Mobile and CE, Windows Phone 7, Android, Symbian.

TEXT BOOKS:

1. Mobile Computing by Raj Kamal second edition Oxford Higher Education.

REFERENCE BOOKS:

1. Jochen Schiller, ‑Mobile Communications‖, Addison-Wesley, Second Edition, 2004.
2. Stojmenovic and Cacute, ‑Handbook of Wireless Networks and Mobile Computing‖, Wiley, 2002, ISBN 0471419028.
3. Reza Behravanfar, ‑Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML‖, ISBN: 0521817331, Cambridge University Press, Oct 2004.
4. Jochen Schiller, ‑Mobile Communications‖, Addison-Wesley, Second Edition, 2009.
5. Ad hoc Wireless Networks, Architectures and Protocols,C.Siva Ram Murthy and B.S.Manoj

CSE (DATA SCIENCE)

WIRELESS NETWORKS – C86PE2C

B.Tech. VI Semester **L/T/P/C**
3 /0/ 0/ 3

COURSE OBJECTIVES:

1. To learn about the issues and challenges in the design of wireless ad hoc networks.
2. To understand the working of MAC and Routing Protocols for ad hoc and sensor
3. networks
4. To learn about the Transport Layer protocols and their QoS for ad hoc and sensor networks.
5. To understand various security issues in ad hoc and sensor networks and the corresponding solutions.

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. List and explain the various issues and applications of Ad hoc wireless networks.
2. Classify and Explain the working of MAC protocols for Ad-hoc wireless networks
3. Discuss the issues in designing routing protocols and working of Table-Driven Routing protocols.
4. Compare and contrast the working of various On-Demand Routing protocols.
5. Analyze the challenges in designing Transport layer Protocols for Ad-hoc networks, Compare and contrast the working of Transport protocols.
6. Identify the issues in designing Security Protocols for Ad-hoc networks focusing on theworking performance of various security protocols

UNIT - I:

Introduction: Fundamentals Of Wireless Communication Technology, The Electromagnetic Spectrum, Radio Propagation Mechanisms, Characteristics Of The Wireless Channel, Modulation Techniques, Multiple Access Techniques, Error Control,

Wireless LANs and PANs:

Fundamentals of WLANS, IEEE802.11 Standard, Hiper LAN Standard, Bluetooth, Home RF.

UNIT - II:

MAC Protocols for Ad hoc wireless Networks: Introduction, Issues in designing a MAC protocol

for Ad hoc wireless Networks, Design goals of a MAC protocol for Ad-hoc wireless Networks, Classification of MAC Protocols, Contention based protocols with reservation mechanisms Contention-Based MAC protocols With Scheduling Mechanisms, MAC protocols That Use Directional Antennas, Other MAC protocols.

UNIT - III:

Routing protocols for Ad-hoc Wireless Networks: Introduction, Issues in Designing a Routing Protocol for Ad-hoc Wireless Networks, Classification of Routing Protocols. Table driven routing Protocols: DSDV, WRP, On-Demand Routing Protocols. Hybrid Routing Protocols, Routing Protocols with Efficient Flooding Mechanisms, Hierarchical Routing Protocols, Power-Aware Routing Protocols.

UNIT - IV:

Transport Layer Protocols for Ad-hoc wireless Networks: Introduction, Issues in Designing a Transport Layer Protocol for Ad-hoc wireless Networks, Design Goals of a Transport Layer Protocol for Adhoc wireless Networks, Classification of Transport Layer Solutions, TCP over Ad-hoc wireless Networks.

Security in wireless Ad hoc wireless Networks: Network security Requirements, Issues & Challenges in Security Provisioning, Network security Attacks, Key Management, Secure routing in Ad hoc wireless Networks.

UNIT - V:

Quality of Service In Ad Hoc Wireless Networks:

Issues And Challenges in Providing Qos in Ad Hoc Wireless Networks, Classifications Of Qos Solutions, Mac layer Solutions, Network Layer Solutions, Qos Frameworks For Ad Hoc Wireless Networks

TEXT BOOK:

1. Ad hoc Wireless Networks– C. Siva Ram Murthy & B.S. Manoj, 2nd Edition, Pearson Education, 2005.

REFERENCE BOOKS:

1. Ad hoc Wireless Networks – OzanK. Tonguz and Gianguigi Ferrari, JohnWiley,2006.
2. Ad hoc Wireless Networking – Xiuzhen Cheng, Xiao Hung, Ding-Zhu Du,Kluwer Academic Publishers,2004.
3. Adhoc Mobile Wireless Networks - C.K. Toh, Protocols and Systems, Prentice-Hall PTR,200.

CSE (DATA SCIENCE)

CLOUD COMPUTING – C86PE3A

B.Tech. VI Semester **L/T/P/C**
3 /0/ 0/ 3

COURSE OBJECTIVE:

In-depth knowledge of Cloud Computing concepts, technologies, architecture and applications by introducing the state-of-the-art in Cloud Computing fundamental issues, technologies, applications.

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Learn the basic concepts of cloud computing and process of migrating into a cloud.
2. Understand the paradigm for the cloud era using integration as a service, and know the phenomenon of enterprise cloud computing paradigm.
3. To understand the concepts of, infrastructure as a service (IAAS), Platform and software as a service.
4. Gain knowledge how to manage, monitor, and apply a cloud, using governance.

UNIT- I

Introduction to Cloud Computing: Cloud Computing in a Nutshell, Roots of Cloud Computing, Layers and Types of Clouds, Desired Features of a Cloud, Cloud Infrastructure Management, Infrastructure as a Service Providers, Platform as a Service Providers, Challenges and Risks
Migrating into a Cloud: Introduction, Broad Approaches to Migrating into the Cloud, The Seven-Step Model of Migration into a Cloud

UNIT- II

Enriching the 'Integration as a Service' Paradigm for the Cloud Era: The Onset of Knowledge Era, The Evolution of SaaS, The Challenges of SaaS Paradigm, Approaching the SaaS Integration Enigma, New Integration Scenarios, The Integration Methodologies, SaaS Integration Products and Platforms, SaaS Integration Services, Businesses-to-Business Integration (B2Bi) Services, A Framework of Sensor—Cloud Integration, SaaS Integration Appliances
The Enterprise Cloud Computing Paradigm: Issues for Enterprise Applications on the Cloud, Transition Challenges, Enterprise Cloud Technology and Market Evolution, Business Drivers Toward a Marketplace for Enterprise Cloud Computing, The Cloud Supply Chain

UNIT- III

Infrastructure as a Service (IAAS) & Platform and Software as a Service (PAAS / SAAS): Virtual machines provisioning and Migration services, On the Management of Virtual machines for Cloud Infrastructures, Enhancing Cloud Computing Environments using a cluster as a Service, Secure Distributed Data Storage in Cloud Computing .Aneka, Comet Cloud, T-Sytems', Workflow Engine for Clouds, Understanding Scientific Applications for Cloud Environments.

UNIT- IV

Monitoring, Management and Applications: An Architecture for Federated Cloud Computing, SLA Management in Cloud Computing, Performance Prediction for HPC on Clouds, Best Practices in Architecting Cloud Applications in the AWS cloud, Building Content Delivery networks using Clouds, Resource Cloud Mashups.

UNIT- V

Governance and Case Studies: Organizational Readiness and Change management in the Cloud age, Data Security in the Cloud, Legal Issues in Cloud computing, Achieving Production Readiness for Cloud Services.

TEXT BOOKS:

1. Cloud Computing: Principles and Paradigms by Rajkumar Buyya, James Broberg and Andrzej M. Goscinski, W iley, 2011.

REFERENCE BOOKS:

1. A Practical Approach, Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, Tata McGraw Hill, 2011.
2. Enterprise Cloud Computing, Gautam Shroff, Cambridge University Press, 2010.
3. Cloud Computing: Implementation, Management and Security, JohnW. Ritting house, James F.Ransome, CRC Press, rp2012.
4. Cloud Application Architectures: Building Applications and Infrastructure in the Cloud, George Reese, O'Reilly, SPD, rp2011.
5. Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, Tim Mather, Subra Kumaraswamy, Shahed Latif, O'Reilly, SPD, rp2011.

CSE (DATA SCIENCE)

NETWORK SECURITY – C86PE3B

B.Tech. VI Semester **L/T/P/C**
3 /0/ 0/ 3

COURSE OBJECTIVE:

To Provide a Practical Survey of Network Security Applications and Standards. The emphasis is on applications that are widely used on the Internet and for corporate networks, and on standards (especially Internet standards) that have been widely deployed.

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Understand and learn the security mechanisms of transport layer security
2. Understand and learn the security mechanisms of wireless network security
3. Understand different types of intruders, malicious softwares, viruses, firewalls and intrusion detection techniques
4. Learn the basic concepts of network management system and legal and ethical aspects

UNIT - I:

Transport-Level Security

Web Security Considerations, Secure Socket Layer and Transport Layer Security, Transport Layer Security, HTTPS, Secure Shell (SSH).

UNIT - II:

Wireless Network Security: IEEE 802.11 Wireless LAN Overview, IEEE 802.11i Wireless LAN Security, Wireless Application Protocol Overview, Wireless Transport Layer Security, WAP End-to-End Security.

UNIT - III:

Intruders: Introduction, Intrusion Detection, Password, the Base-Rate Fallacy Malicious Software. Types of Malicious Software, Viruses, Virus Countermeasures, Worms, Distributed Denial of Service Attacks.

UNIT - IV:

Firewalls: The Need for Firewalls, Firewall Characteristics, Types of Firewalls, Firewall Basing,

Firewall Location and Configurations.

UNIT - V:

Network Management Security: Basic Concepts of SNMP, SNMPv1 Community Facility, SNMPv3 Legal and Ethical Aspects. Cybercrime and Computer Crime, Intellectual Property, Privacy, Ethical Issues.

TEXT BOOK:

1. Network Security Essentials by William Stallings, Fourth Edition-Pearson Education.

REFERENCE BOOKS:

1. Introduction to Data Mining, Tan, Steinbach and Kumar, Addison Wesley,2006
2. Applied Cryptography by Bruce Schneir-John Willey &Sons.
3. Corporate Computer and Network Security by Raymond panko – Pearson Education.
4. Security in Computing by Charles P P fleeger - O'Reilley Publications.

CSE (DATA SCIENCE)

FUNDAMENTALS OF MULTIMEDIA – C86PE3C

B.Tech VI Semester **L/T/P/C**
3 /0/ 0/ 3

COURSE OBJECTIVE:

1. Understand the fundamental elements in multimedia.
2. Learning the representations, perceptions and applications of multimedia.
3. Software skills and hands on work on digital media will also be emphasized

COURSE OUTCOMES:

After completion of this course, the student will be able to
1. Understand the technologies behind multimedia applications
2. Master the skills for developing multimedia projects.
3. Summarize the key concepts in current multimedia technology.
4. Create quality multimedia software titles.

UNIT – I:

Introduction: What Is Multimedia? **Definitions**: Where to Use Multimedia, Multimedia in Business, Multimedia in Schools, Multimedia at Home, Multimedia in Public Places, Virtual Reality.
Delivering Multimedia: CD-ROM, DVD, Flash Drives, The Broadband Internet.
Text: The Power of Meaning, The Power and Irregularity of English, About Fonts and Faces, Cases ,Serif vs. Sans Serif , Using Text in Multimedia , Designing with Text, Fields for Reading, HTML Documents ,Computers and Text , The Font Wars Are Over, Character Sets and Alphabets, Mapping Text Across Platforms , Languages in the World of Computers Font Editing and Design Tools, Fontlab Making Pretty Text.

UNIT – II:

Sound: The Power of Sound, Digital Audio, Making Digital Audio Files, MIDI Audio MIDI vs. Digital Audio, Multimedia System Sounds, Audio File Formats, Vaughan's Law of Multimedia Minimums, Adding Sound to Your Multimedia Project. Space Considerations ,Audio Recording , Keeping Track of Your Sounds , Audio CDs , Sound for Your Mobile ,Sound for the Internet, Testing and Evaluation , Copyright Issues.

UNIT – III:

Making Multimedia: The Stages of a Multimedia Project, What You Need: The Intangibles Creativity, Organization, Communication, What You Need: Hardware Windows vs. Macintosh,

Connections, Memory and Storage Devices, Input Devices, Output Devices, What You Need: Software. Text Editing and Word Processing Tools OCR Software , Painting and Drawing Tools, 3-D Modeling and Animation Tools, Image-Editing Tools, Sound-Editing Tools, Animation, Video, and Digital Movie Tools Helpful Accessories, What You Need: Authoring Systems.
Multimedia Skills: The Team, Project Manager, Multimedia Designer, Interface Designer, Writer Video Specialist, Audio Specialist, Multimedia Programmer, Producer of Multimedia for the Web , The Sum of Parts.

UNIT – IV:
The Internet and Multimedia: Internet History, Internetworking, Internet Addresses Connections, The Bandwidth Bottleneck, Internet Services, MIME-Types 369 The World Wide Web and HTML, Multimedia on the Web , Tools for the World Wide Web 374 Web Servers , Web Browsers, Search Engines, Web Page Makers and Site Builders, Plug-ins and Delivery Vehicles, Beyond HTML.
Designing for the World Wide Web: Developing for the Web, HTML is a Markup Language, The Desktop Workspace, The Small-Device Workspace, Nibbling.

UNIT – V:
Text for the Web: Making Columns of Text, Flowing Text Around Images, Images for the Web, GIF and PNG Images, JPEG Images, Backgrounds, Clickable Buttons, Client-Side Image Maps, Sound for the Web, Animation for the Web , GIF89a ,Video for the Web, Plug-ins and Players.
Delivering: Testing, Alpha Testing, Beta Testing , Polishing to Gold, Preparing for Delivery , File Archives ,Delivering on CD-ROM , Compact Disc Technology, Compact Disc Standards, Delivering on DVD, DVD Standards 436 Wrapping It Up ,Delivering on the World Wide Web.

TEXT BOOKS:

1. Tay Vaughan, ‒Multimedia making it work‖, Tata McGraw-Hill, 2008.

REFERENCES:

1. Parekh Ranjan, ‒Principles of Multimedia‖, Tata McGraw-Hill, 2007.
2. Anirban Mukhopadhyay and Arup Chattopadhyay, ‒Introduction to Computer Graphics and Multimedia‖, Second Edition, Vikas Publishing House.

CSE (DATA SCIENCE)

NATURAL LANGUAGE PROCESSING LAB – C86PC5

B.Tech. VI Semester **L/T/P/C**
0 /0/ 2/ 1

COURSE OBJECTIVE:

Introduce to some of the problems and solutions of NLP and their relation to linguistics and statistics.

COURSE OUTCOMES:

1. Show sensitivity to linguistic phenomena and an ability to model them with formal grammars.
2. Understand and carry out proper experimental methodology for training and evaluating empirical NLP systems.
3. Able to design, implement, and analyze NLP algorithms
4. Able to design different language modeling Techniques..

LIST OF PROGRAMS:

1. Word Analysis: experiment is to learn about morphological features of a word by analysing it
2. Word Generation : experiment is to generate word forms from root and suffix information
3. Morphology: experiment understands the morphology of a word by the use of Add-Delete table.
4. N-Grams: experiment is to learn how to apply add-one smoothing on sparse bigram table.
5. N-Grams smoothing: experiment is to learn how to apply add-one smoothing on sparse bigram table.
6. POS Tagging: Hidden Markov Model: experiment is to calculate emission and transition matrix which will be helpful for tagging Parts of Speech using Hidden Markov Model.
7. POS Tagging: Viterbi Decoding: experiment is to find POS tags of words in a sentence using Viterbi decoding.
8. Building POS Tagger: experiment is to know the importance of context and size of training corpus in learning Parts of Speech
9. Chunking: experiment is to understand the concept of chunking and get familiar with the basic chunk tagset
10. Building Chunker: experiment is to know the importance of selecting proper features for training a model and size of training corpus in learning how to do chunking.