ACADEMIC REGULATIONS (R – 14)

COURSE STRUCTURE

AND

DETAILED SYLLABI

FOR

B. Tech Regular Four Year Degree Courses

(For the Batches Admitted From 2014-2015)

&

B. Tech (Lateral Entry Scheme)

(For the Batches Admitted From 2015-2016)

INFORMATION TECHNOLOGY

SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

(Affiliated to JNTUA, Anantapuramu, Approved by AICTE, New Delhi, Accredited by NAAC, Bengaluru)

R.V.S. NAGAR, CHITTOOR- 517 127 (AP)
| PO1  | An ability to apply knowledge of mathematics, probability, statistics, science, electronics, electrical and mechanical engineering as applicable to computer science and engineering. |
| PO2  | An ability to design and conduct experiments, as well as to organize, analyze and interprets data to produce meaningful conclusions and recommendations. |
| PO3  | An ability to design hardware and software systems, components and processes to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability. |
| PO4  | An ability to design hardware and software systems, components and processes to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability. |
| PO5  | An ability to design hardware and software systems, components and processes to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability. |
| PO6  | An understanding of professional, legal, and ethical issues and responsibilities |
| PO7  | An ability to communicate effectively in speech and in writing including documentation of hardware and software systems. |
| PO8  | An ability to understand the impact of engineering solutions on the environment, economy and social issues both in the local and global perspective. |
| PO9  | Demonstrate an ability to acquire new knowledge in the computing discipline and to engage in life-long learning. |
| PO10 | Knowledge of contemporary issues in the social sciences and the humanities using computational tools. |
| PO11 | An ability to use the techniques, skills and modern engineering tools necessary for computer engineering practice. |
| PO12 | An Ability to acquire entrepreneurship and leadership qualities |
### I B. Tech I Semester

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**II B.Tech – I Semester**

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OBJECTIVES:
The objective of this course is to make students to:

1. Acquire knowledge about the theory of finite automata, as the first step towards learning advanced topics, such as compiler design.
2. Articulate the fundamental principles in compiler design and to provide the skills needed for building compilers for various situations that one may encounter in a career in Information Technology.
3. Enable to develop software solutions to real-time problems by applying optimization techniques.
4. Understand the phases of compilation.
5. Analyze the issues in design of Code generation.

UNIT-I Compiler, Formal Language, Regular Expressions
Introduction, Phases of Compiler, Specification of Token, Languages, Definition Languages regular expressions, Finite Automata – DFA, NFA, Conversion of regular expression to NFA, NFA to DFA.

UNIT-II Context Free Grammars and Grammar Parsing
Context free grammars, derivation, parse trees, ambiguity LL (K) grammars and LL (1) parsing.
Bottom up parsing handle pruning LR Grammar Parsing, LALR parsing, parsing ambiguous grammars, YACC programming specification.

UNIT-III Semantics, Run Time Storage Management
Syntax directed translation, S-attributed and L-attributed grammars, Chomsky hierarchy of languages and recognizers, Type checking, type conversions, equivalence of type expressions, overloading of functions and operations. Storage organization, storage allocation strategies, scope access to non-local names, parameter passing, language facilities for dynamics storage allocation.

UNIT-IV Intermediate Code Generation
Intermediate code – abstract syntax tree, translation of simple statements and control flow statements, Backpatching, procedure calls.

UNIT-V Code Optimization and Code Generation
OUTCOMES:
At the end of the course the student will be able to:

1. Acquire knowledge to represent the different programming language constructs (keywords, expressions, statement) in the machine understandable language by using the basic tools (REs, Automata) of automata theory.
2. Use the formal attributed grammars for specifying the syntax and semantics of programming language constructs.
3. Perform type checking on the given programming language construct and choose the appropriate storage allocation technique.
4. Analyze various intermediate forms of source programs.
5. Apply the code optimization techniques in the generation of code for a given real time problem.

TEXT BOOK:

REFERENCE BOOKS:
2. Theory of Computation, S. Balakrishnan and V.D. Ambeth Kumar, ACME Learning Publisher, New Delhi.

Mapping of Cos with POs:

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III B. Tech I Semester (IT)   L  T  P  C
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Objectives:
The objective of this course is to make students to:
1. Analyze basic concepts and applications of Computer graphics
2. Understand the design of algorithms for generating geometric shapes.
3. Understand the 2D and 3D geometric transformations.
4. Understand the operations like viewing and clipping in both 2d and 3d coordination system.
5. Understand and demonstrate computer graphics animations.

UNIT I
Introduction: Basic concepts, Application areas of Computer Graphics, overview of graphics systems - video-display devices, raster-scan systems, random scan systems, input devices and their logical classifications, Graphics software.

UNIT II
Output primitives: Points and lines, line drawing algorithms – DDA, Bresenham’s, mid-point circle and ellipse algorithms, Filled area primitives - Scan line polygon fill algorithm, inside-outside tests, boundary-fill and flood-fill algorithms.

UNIT III
2-D geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.
2-D viewing: The viewing pipeline,, window to view- port coordinate transformation, viewing functions, Cohen-Sutherland line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm.

UNIT IV:
Three Dimensional Concepts: 3-D object representation: Polygon surfaces, Curved lines and surfaces, quadric surfaces, spline representation, Bezier curve and surfaces.
3-D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations.

UNIT V
3-D Viewing: Viewing pipeline, viewing coordinates, projections, clipping.
Computer animation: Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.
Outcomes:
At the end of the course the student will be able to:
1. Demonstrate different computer graphics applications.
2. Design algorithms to render different geometric shapes like line, circle, and ellipse.
3. Perform transformations (rotation, scaling, translation, and shearing) on geometric 2D and 3D objects.
4. Compare different 2D, 3D viewing and clipping techniques.
5. Implement animation technique using micro and media flash.

TEXT BOOKS:

REFERENCE BOOKS:

Mapping Course Outcomes with Program outcomes

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OBJECTIVES:

The objective of this course is to make students to:

1. Understand both primary and advanced topics in real-time systems and networks.
2. Analyze and Differentiate Different Real-time task scheduling algorithms.
3. Examine Real-Time communication and networking.
4. Understand Internet protocols and services.
5. Understand the different traffic model in Real Time Networks.

UNIT - I

**Introduction:** Real-time systems, Applications of real time systems, a basic model of real-time system, Characteristics, safety and reliability, Types of real time tasks, Timing Constraints and modeling timing constraints.

**Real-Time task Scheduling:** Types of real time tasks and their characteristics, Task Scheduling, Clock Driven scheduling, Hybrid Schedulers, Event – Driven Scheduling, EDF Scheduling.

UNIT - II

**Handling Resource Sharing and Dependencies Among Real Time Tasks:** Resource sharing among real time tasks, Priority Inversion, Priority Inheritance Protocol, Highest locker Protocols, priority Ceiling Protocol, Different types of priority inversions under PCP, some issues in using Resource sharing protocol, Handling task Dependencies.

UNIT – III

**Multiprocessor Real – Time System:** Multiprocessor scheduling results; Multi processor anomalies; Static and dynamic scheduling; Fault Tolerant Scheduling; Resource Reclaiming.

UNIT - IV

**Distributed Real-Time System:** Scheduling in Distributed Real – Time Systems; Global scheduling (information, transfer, selection, and location policies); Scheduling of object – based tasks in real time systems; Message scheduling.

UNIT - V

**Real-time Networks:** Wide area networks; Traffic models; QoS requirements; Real-time channels; Routing and multicasting; real-time MAC protocols; real – time LAN protocols; DCR Based protocols for multi packet messages; Real time communication with periodic and aperiodic messages.
OUT COMES:
After completion of this course the students would be able to
1. Identify the principle multi-tasking techniques in real time systems.
2. Understand multi task scheduling algorithms.
3. Evaluate the performance of soft and hard real time systems.
4. Develop real time operating systems.
5. Design a routing mechanism in Real Time Networks

TEXT BOOKS:

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Objectives:
The course will provide the student:
1. To familiarize the architecture of 8086 processor.
2. To know Assembly language programming and interfacing with various peripherals.
3. To understand salient features of advanced processors.
4. To provide the knowledge of 8051 microcontroller concepts, architecture.
5. To learn Assembly language programming of 8051.

UNIT-I:
8086 MICROPROCESSOR

History of Microprocessors, Memory Segmentation, 8086 Microprocessor: Architecture, special functions of general purpose registers, flag register and functions of flags, addressing modes and instruction set of 8086.

ASSEMBLY LANGUAGE PROGRAMING

Assembler directives, procedures and macros. Assembly language programs (8086) for addition, subtraction, multiplication, division, sorting, searching, Evaluation of arithmetic expressions.

UNIT-II:
INTERFACING MEMORY AND DMA CONTROLLER

Pin diagram of 8086-Minimum mode and maximum mode of operation. Timing diagram. Memory Interfacing to 8086 (Static RAM & EPROM). Need for DMA. DMA data transfer Method and 8257 DMA Controller.

INTERFACING I/O PORTS AND APPLICATIONS

Keyboard display controller (8279) and interfacing to 8086, PPI 8255 – various modes of operation and interfacing to 8086, Stepper Motor interfacing.

UNIT-III

SERIAL DATA TRANSFER: Asynchronous and Synchronous Serial Data Transfer schemes. 8251 USART architecture.

UNIT-V:

8051 MICROCONTROLLER:

8051 Microcontroller Architecture, Register set of 8051, Memory organization, Addressing modes and Instruction set, simple programs. Interrupt Structure of 8051, Timer modes, Serial Port Operation.

Outcomes:
After completion of this course the student will be able to:
1. Study and understand the architecture and programming of any other microprocessor or microcontroller.
2. Know how to interface various peripherals.
3. Able to understand the special features of latest microprocessors.
4. Do any type of VLSI, Embedded systems, Industrial and real time application.
5. Know how to use the built- in devices of 8051 Microcontroller in any application.

TEXT BOOKS:


REFERENCES:

Objectives:
The objective of this course is to make students to:
1. Comprehend Software engineering principles, functional and nonfunctional, user and system requirements.
2. Implement user interface design & testing strategies.
3. Demonstrate principles of product metrics and process metrics.
4. Analyze the risk management and quality management.

UNIT I
SOFTWARE REQUIREMENTS: Functional and non-functional requirements, user requirements, system requirements, Interface specification, the software requirements document.

UNIT-II
REQUIREMENTS ENGINEERING PROCESS: Requirements Engineering Tasks, Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System Models: Context models, Behavioral models, Data models, Object models, structured methods.
DESIGN ENGINEERING: Design process and Design quality, Design Concepts, The Design Model.


UNIT-III

UNIT –IV

UNIT-V

Outcomes:
Successful completion of this course, students should be able to
1. Identify and evaluate the scope and necessity of software engineering and life cycle models
2. Apply requirement and design engineering concepts.
3. Design the product and process metrics in software quality towards application in software projects.
4. Identify the necessity of risk management in software quality assurance.

Text Books:

Reference Books:

Mapping Course Outcomes with Programme outcomes

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Objectives:
The objective of this course is to make students to:
1. Understand the concepts of AI and Intelligent Agents.
2. Explore Problem solving using search techniques in AI.
3. Understand Logical Agents and First-Order logic.
4. Explore knowledge Representation issues.
5. Understand concepts of learning from examples.

UNIT – I
Intelligent Agents: Agents and Environments, Good Behavior: The Concept of Rationality, The Nature of Environments, And The Structure of Agents

UNIT – II
Solving Problems by Searching: Problem-Solving Agents, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions
Beyond Classical Search: Local Search Algorithms and Optimization Problems, Searching with Nondeterministic Actions and Partial Observations, Online Search Agents and Unknown Environments
Constraint Satisfaction Problems: Definition, Constraint Propagation, Backtracking Search, Local Search, The Structure of Problems

UNIT – III
Logical Agents: Knowledge-Based Agents, Propositional Logic, Propositional Theorem Proving, Effective Propositional Model Checking, Agents Based on Propositional Logic
First-Order Logic: Syntax and Semantics, Knowledge Engineering in FOL, Inference in First-Order Logic, Unification and Lifting, Forward Chaining, Backward Chaining, Resolution

UNIT – IV
Planning: Definition, Algorithms, Planning Graphs, Hierarchical Planning, Multiagent Planning
Knowledge Representation: Ontological Engineering, Categories and Objects, Events, Mental Events and Mental Objects, Reasoning Systems for Categories, Reasoning with Default Information, The Internet Shopping World

UNIT – V
Learning from Examples: Forms of Learning, Supervised Learning, Learning Decision Trees, Evaluating and Choosing the Best Hypothesis, The Theory of Learning, Regression and Classification with Linear Models, Artificial Neural Networks.

Outcomes:

At the end of the course, students should be able to:
1. Understand foundation and basic concepts of AI and Intelligent Agents.
2. Evaluate Searching techniques for problem solving in AI.
3. Apply First-order Logic and chaining techniques for problem solving.
4. Handle knowledge representation techniques for problem solving.
5. Apply supervised learning and Neural Networks for solving problem in AI.

TEXT BOOK:
2. Introduction to Artificial Intelligence and Expert Systems, Dan W. Patterson ,PHI, New Delhi, 2006.

REFERENCE BOOKS:

Mapping Course Outcomes with Programme outcomes

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Objectives:
The course will provide the student:
1. To become skilled in 8086 Assembly Language Programming.
2. To provide the knowledge of interfacing with various peripherals.
3. To write programs for using keyboard display controller.
4. To learn 8051 Microcontroller Assembly Language Programming.
5. To learn about built-in timer of 8051 Microcontroller.

Minimum Ten Experiments to be conducted
(Minimum Eight from Part A and Two from Part B)

Part A

MICROPROCESSORS:

1. ALPs (8086) for addition and subtraction.
2. ALPs (8086) for multiplication and Division.
3. ALPs (8086) for sorting and searching.
4. ALPs(8086) to evaluate arithmetic expressions
5. Logic operations–Shift and rotate–Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
6. String operations – Move block, reverse string, string comparison, Length of string.
7. ALPs (8086) for (i) DOS interrupts (ii) BIOS interrupts
8. ALPs (8086) for square wave and rectangular wave generation using 8255 in I/O mode and BSR mode.
9. Key Board Display Controller (8279)-Write a small program to display a string of characters.
10. Serial communication implementation using USART (8251).
11. Interrupt Controller (8259)-ALP using interrupt request pins of 8259.
12. ALP (8086) for stepper motor control.

Part B

MICRO CONTROLLERS:

1. ALP (8051) to determine the largest and smallest of N bytes.
2. (a) ALP (8051) to multiply a 16-bit number by an 8-bit number.
   (b) ALP (8051) to find square root of an 8-bit number.
3. (a) ALP (8051) to determine LCM of two 8- bit numbers.
   (b) ALP (8051) to determine GCD of two 8- bit numbers.
4. Timer/Counters (8051) in different modes.

**Outcomes:**
At the end of the course, student will be
1. Able to write 8086 Assembly Language Programs.
2. Able to use different peripheral devices.
3. Able to use keyboard display controller.
4. Able to write 8051 Assembly Language Programs.
5. Able to use the built-in devices of 8051 Microcontroller in any application.

*Mapping Course Outcomes with Programme outcomes*

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Objectives:

The course will make the student to

1. Understand various computer graphics algorithms
2. Learn the implementation techniques for basic graphical models
3. Comprehend the working of phases of compiler
4. Understand and operate compiler construction tools
5. Learn the usage of both windows and Unix related features.

PART-A

1. Write a program to draw a line using a midpoint Bresenham algorithm.
2. Write a program to draw a line using a the DDA algorithm.
3. Write a program to draw a Circle using the Bresenham algorithm.
4. Write a program to draw a Ellipse using a midpoint ellipse algorithm.
5. Implement 2D transformations.
6. Implement Cohen-Sutherland 2D Clipping and window view port mapping.
8. Write a program to draw a hut using simple graphics functions.
9. Write a program to fill a polygon.

PART-B

1. Design a Lexical analyzer for the given language. The lexical analyzer should ignore redundant spaces, tabs and newlines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value.
2. Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generating tools.
3. Design Predictive parser for the given language
4. Design LALR bottom up parser for the given language.
5. Convert the BNF rules into YACC form and write code to generate an abstract syntax tree.
**Outcomes:**

At the end the students will be able to

1. Demonstrate the graphical models with suitable algorithms
2. Implement graphics related programs in C language
3. Demonstrate the working of compiler at various stages
4. Demonstrate the working nature of compiler tools.
5. Evaluate the distinction between various platforms and tools.

*Mapping Course Outcomes with Programme outcomes*

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OBJECTIVES:
The main objectives of this course are
1. To evaluate various real life situations by resorting to analysis of key issues and factors.
2. To understand various languages structures.
3. To demonstrate different principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.
4. To explore the possibilities of utilization of concepts of reasoning.
5. To interpret the given data graphically.

Syllabus for Quantitative Aptitude

Competency 1:
1. Area
   - Formulas for Areas
   - Problems on Areas

2. Volumes & Surface Areas
   - Problems on Volumes
   - Problems on Surface Areas

3. Races & Games of Skill

4. Calendars
   - Definition of a Leap Year
   - Finding the number of Odd days
   - Framing the year code for centuries
   - Finding the day of any random calendar date

5. Clocks
   - Finding the angle when the time is given
   - Finding the time when the angle is known
   - Relation between Angle, Minutes and Hours
   - Exceptional cases in clocks

6. Stocks & Shares

7. Permutation and Combinations
   - Definition of permutation
   - Problems on Permutations
Competency 2:

8. Probability
   - Definition of Probability
   - Problems on coins
   - Problems on dice
   - Problems on Deck of cards
   - Problems on Years

9. True Discount

10. Banker’s Discount

11. Heights & Distances

12. Odd man out & Series
   - Problems on number Odd man out
   - Problems on letter Odd man out
   - Problems on verbal Odd man out

13. Data Interpretation
   - Problems on tabular form
   - Problems on Line Graphs
   - Problems on Bar Graphs
   - Problems on Pie Charts

Syllabus for Reasoning

Competency 3:
Deductions
   - Finding the conclusions using Venn diagram method
   - Finding the conclusions using syllogism method

Connectives
   - Definition of a simple statement
   - Definition of compound statement
   - Finding the Implications for compound statements
   - Finding the Negations for compound statements

Competency 4:
Analytical Reasoning puzzles
   - Problems on Linear arrangement
• Problems on Circular arrangement
• Problems on Double line-up
• Problems on Selections
• Problems on Comparisons

Competency 5:

Blood relations
• Defining the various relations among the members of a family
• Solving Blood Relation puzzles
• Solving the problems on Blood Relations using symbols and notations

Outcomes:

After completion of the course the student will be able to
1. Strengthen their ability to meet the challenges in solving real life problems.
2. The student will preserve maturity of the mind in solving linguistic problems.
3. Develop the thinking ability and apply Quadratic equations.
4. Apply the Analytical Reasoning puzzles to solve linear and circular arrangements
5. Analyze the blood relation puzzles in a family tree.

Text Books:

Reference Books:
Sri Venkateswara College of Engineering and Technology (Autonomous)
Chittoor
14AHS13 TECHNICAL ENGLISH-II
(Common to EEE, ECE, CSE & IT)
III B. Tech II Semester (IT) L T P C
3 1 - 3

Preamble:

English is an international language as well as a living and vibrant one. People have found that knowledge of English is a passport for better career and for communication with the entire world. As it is a language of opportunities in this global age, English is bound to expand its domain of use everywhere. The syllabus has been designed to enhance communication skills of the students of Engineering and Technology. The prescribed book serve the purpose of preparing them for everyday communication and to face global competitions in future.

The prescribed text focuses on LSRW skills and vocabulary development. The teachers should encourage the students to use the target language. The classes should be interactive and student-centered. They should be encouraged to participate in the classroom activities keenly.

Objectives:

1. To enable the students to communicate in English for academic and social purpose.
2. To make the students to master LSRW skills to meet the challenges in the society.
3. To strengthen the students to have good command of English Language and thereby to have good command of subject.
4. To develop the skills in students for societal service and the love for work.
5. To make the students to be humane.

UNIT – I
Chapter entitled ‘Humour’ from “Using English”

Listening - Techniques - Importance of phonetics
L- Meet & Greet and Leave taking, Introducing Oneself and Others (Formal and Informal situations)
R- Reading Strategies - Skimming and Scanning
W- Writing strategies- sentence structures
G-Parts of Speech –Noun-number, pronoun-personal pronoun, verb- analysis
V-Affixes-prefix and suffix, root words, derivatives

UNIT – II
Chapter entitled ‘Inspiration’ from “Using English”
L- Listening to details
S- Apologizing, Interrupting, Requesting and Making polite conversations
R- Note making strategies
W- Paragraph-types- topic sentences, unity, coherence, length, linking devices
G-Auxiliary verbs and question tags
V- synonyms-antonyms, homonyms, homophones, homographs, words often confused
UNIT –III
Chapter entitled ‘Sustainable Development’ from “Using English”
L- Listening to themes and note taking
S- Giving instructions and Directions, making suggestions, Accepting ideas, fixing a time and Advising
R- Reading for details - I
W- Resume and cover letter
G- Tenses – Present tense, Past tense and Future tense
V- Word formation and One-Word Substitutes

UNIT –IV
Chapter entitled ‘Relationships’ from “Using English”

UNIT –V
Chapter entitled ‘Science and Humanism’ from “Using English”

Remedial Grammar:
1. Adjectives and Adverbs.
2. Use of Articles.
3. Review of prepositions and conjunctions.
4. Transformation of sentences
   (a) Active and Positive Voice.
   (b) Synthesis and analysis.
   (C) Direct and indirect speech.
5. Common errors in English.

Vocabulary:
1. Synonyms and antonyms.
2. One word substitutions.
3. Phrasal verbs and idioms.
4. Commonly confused words
5. Verbal ability.

Writing practice (composition):
1. Essay writing
2. Report writing
3. Resume writing
4. Creative writing
5. Letter writing
Outcomes:

1. The students will enrich their communication skills both in academic and social arena.
2. The students will master LSRW skills.
3. The students will become proficient in English language and make use of it to be good in his subject.
4. The students will cultivate skills for societal service and inculcate passion for work.
5. The students will understand the human values of life and work.

Text Book:


Reference Books:


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Question Paper pattern:  

Max Marks: 70

PART – I

From the prescribed text book without leaving any lesson

1. 2 marks questions – 5  (Any five out of eight)  5 x 2 = 10M
2. 8 marks questions – 2  (Any two out of four)  2 x 8 = 16M

PART – II

3. General essay – 1  (Any one out of three)  1 x 8 = 8. M
4. Report Writing – 1  (Any one out of two)  1 x 8 = 8. M
5. Resume Writing – 1  (No choice)  1 x 8 = 8. M
6. Idioms – 5  (Any five out of eight)  5 x 1 = 5. M
7. Vocabulary - 5  (Any five out of eight)  5 x 1 = 5. M
8. Correction of sentences - 10  (Any ten out of fifteen)  10 x1 = 10. M

____________________

Total = 70Marks
Objectives:
The objective of this course is to make students to:
1. Acquire knowledge on the notations of unified modeling language.
2. Understand basic and advanced structural modeling concepts.
3. Analyze and design solutions to problems using basic behavioral modeling diagram.
4. Design solutions to problem using the use case and advanced modeling diagram.
5. Understand architecture modeling diagram.

Unit – I

Unit – II
Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.
Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

Unit – III
Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.


Unit- IV
Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.
Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

Unit – V
Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.

Case Study: The Unified Library application

Outcomes:
At the end of the course, students will be able to:
1. Represent the various elements using UML notation
2. Design the specific problem domain using suitable elements.
3. Apply class and object diagram for design solutions.
4. Apply use case and advanced behavioral modeling diagram for designing solutions.
5. Develop solutions to complex problems using behavioral and architecture modeling concepts.
Text Books:


Reference Books:


Mapping Course Outcomes with Program outcomes

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Objectives:
The objective of this course is to make students to:
1. Understand the concepts of World Wide Web and web Technologies.
2. Understand dynamic web pages using JavaScript (client side script programming).
3. Build XML applications with DTD and style sheets that span multiple domains.
4. Build interactive web applications using JSP, Servlets and database technologies.
5. Understand database programs using JDBC.

UNIT - I
Introduction to Web Technology:
Introduction to XHTML: Origins and evolution of HTML and XHTML, Basic syntax, Standard XHTML document structure, Basic text markup, Images, Hypertext Links, Lists, Tables, Forms, Frames, Syntactic differences between HTML and XHTML.

UNIT - II
Cascading Style Sheets: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The Box model, Background images, The <span> and <div> tags, Conflict resolution.
JavaScript: Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

UNIT - III

UNIT – IV
Java Based Web Technologies
Java Servlets: Introduction to Java Servlets, Servlet Life Cycle, Http Servlet Class, Http Servlet Request & Response interfaces, Deploying a web application, Session Tracking, Cookies.

UNIT – V
Outcomes:
1. Analyze and apply the role of languages HTML, DHTML, JavaScript, database access in the working of the web and web applications.
2. Build dynamic web pages using java scripts (client side programming)
3. Create XML documents and XML Schemes.
4. Build interactive web applications using JSP and Servlets.
5. Use JDBC for database programs

TEXT BOOKS:

REFERENCE BOOKS:
1. Internet and World wide Web How to Program, 4th edition, Dietel and Nieto , PHI/Pearson Education Asia, New Jersey, 2008.

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Objectives:
Students undergoing this course are expected to:
1. Understand the concepts of data warehouse architecture and implementation.
2. Understand data preprocessing and architecture.
3. Use associate rule mining for handling large data and to understand the concepts of classification for the retrieval purpose.
4. Understand the clustering techniques in details for better organization and retrieval of data.
5. Identify business applications and trends in data mining.

UNIT-I
INTRODUCTION
Introduction, Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation, Further Development, Data Warehousing to Data Mining

UNIT-II
DATA PREPROCESSING, LANGUAGE, ARCHITECTURES, AND CONCEPT DESCRIPTION:
Why Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Data Mining Primitives, Query Language, Graphical User Interfaces, Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures.

UNIT-III
ASSOCIATION RULES: Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transactional Databases.

UNIT-IV
CLASSIFICATION AND CLUSTERING: Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based, Rule-Based Classification, Classification by Back propagation Prediction, Classifier Accuracy, Cluster Analysis, Types of data, Partitioning methods, Hierarchical methods, Density based methods, Grid based methods, Model based clustering.

UNIT-V
RECENT TRENDS: Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, World Wide Web, Applications and Trends in Data Mining.
Outcomes:
At the end of this course, students should be able to:
1. Acquire a thorough knowledge in Data Warehousing architecture and implementation.
2. Apply data prepressing techniques using modern tools.
3. Create association rule for mining the data in real time.
4. Design and deploy appropriate classification and cluster high dimensional data for better organization of data.
5. Evaluate various mining techniques on complex data objects.

TEXT BOOK:

REFERENCE BOOKS:

Mapping Course Outcomes with Programme outcomes

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III B. Tech II Semester(IT)  

Objectives:
The objective of the course is to make students to:
1. Understand the basic working of computer networking components.
2. Understand channel allocation problem in medium access control sub layer.
3. Understand design issues of network layer, Routing and Congestion control.
4. Understand the concepts of internet transport protocols (TCP, UDP), DNS, Network security.
5. Understand application layer concepts and issues in network security.

UNIT 1  
**Introduction:** Uses of Computer Networks, Network Hardware, Network Topologies, Network Software, References Models. Examples of Networks: Internet, ARPANET, Third Generation Mobile Phone Networks.

**The Data Link Layer:** Data link Layer Design Issues, Error Detection and Correction, Elementary Data Link Protocols, and Sliding Window Protocols.

UNIT II  

UNIT III  
**The Network Layer:** Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, Internetworking, the Network Layer in the Internet.

UNIT IV  

UNIT V  
**The Application Layer:** DNS-The Domain Name System, Electronic Mail. The World Wide web, **Network Security:** Cryptography, Symmetric-Key Algorithms, Public-Key Algorithms.
Outcomes:
After completing this course the student will be able to:
1. Describe various components and topologies of computer networks
2. Use the network reference model layered structure for real time applications.
3. Implement various routing protocols from different layers.
4. Design, implement and test an efficient algorithmic solution for the given problem.
5. Analyze network security mechanics and other issues in the application layer.

TEXT BOOK:

REFERENCE BOOKS:

Mapping Course Outcomes with Programme outcomes

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Sri Venkateswara College of Engineering and Technology (Autonomous)
Chittoor
14AEC36 DIGITAL IMAGE PROCESSING
(CBCC – Inter Department)

III B. Tech-II Semester

Objective:
The course will provide the student:
1. To learn the fundamentals of Image Processing.
2. To learn sampling and reconstruction procedures.
3. To learn the various transforms used in image Processing.
4. To learn how image information are modeled analytically.
5. To learn how to analyze and implement image processing algorithms

UNIT I
Digital Image fundamentals: Digital Image representation – Digital image processing System
–Visual Perception- Sampling and Quantization - Basic relationships between pixels, and
imaging geometry.

UNIT II
Image Transforms: Discrete Fourier Transform – Properties of 2 – D Fourier Transform –
Fast Fourier Transform, Walsh, Hadamard, Discrete cosine transforms.

UNIT III
Image Enhancement: Background enhancement by point processing Histogram processing,
Spatial filtering, Enhancement in frequency Domain, Image smoothing, Image sharpening,
Colour images

UNIT IV
Image Restoration: Degradation model, Algebraic approach to restoration – Inverse filtering
– Least Mean Square filters, Constrained Least square restoration.

UNIT V
Image Coding and Segmentation : Fidelity criteria, Encoding process, transform encoding,
Detection and discontinuities, Edge linking and Boundary detection, Boundary description.

Learning Outcome:
On completion of the course the student will be able to:
1. Develops ability to identify, formulate & solve problems involving images.
2. Develops ability to design &conduct experiments, analyze &interpret image data.
3. Design a software, Component or process as per needs &specifications.
4. Understand how image are analyzed to extract features of interest.
5. Understand various filters in image processing.

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III B. Tech-II Semester (IT)  L  T  P  C

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Objectives:
To make the students learn:
1. The basic concepts of robots.
2. The various robot drives and power transmission systems.
3. The fundamentals of robot sensors and its vision system.
4. The concept of arm kinematics and Programming Languages.
5. The applications of robot in various fields.

UNIT I

UNIT II
ROBOT ACTUATORS AND MOTION CONVERSION SYSTEMS: Robot Actuators- hydraulic, pneumatic and electric, its comparison, Motion Conversion: Rotary-to-Rotary motion conversion- Gears, Harmonic Drives, Belt-and- pulley systems, Rotary-to-Linear motion conversion- Lead screws, Rack and Pinion systems, cams.

UNIT III
ROBOTIC SENSORS: Meaning of sensing, selection of sensor for a robot, types of sensors -Position sensors, range sensors, velocity sensors, touch sensors, force and torque sensors. ROBOT VISION- Block diagram of vision system, lighting techniques and devices, analog to digital conversion, Image storage, Image processing and Analysis, Object recognition, Feature extraction.

UNIT IV
ROBOT ARM KINEMATICS: Homogeneous transformations, Basics of forward kinematics, Inverse kinematics. ROBOT PROGRAMMING: Requirements of good programming language, Types of Robot programming, Robot programming languages and features- AL, AML, RPL, and VAL.

UNIT V
ROBOTIC APPLICATIONS: Present applications-Material Transfer, Material handling, loading and unloading, processing, welding, spray painting, Assembly and Inspection; Future applications.
Outcomes:

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

1. Describe the basic concepts of robotics.
2. Summarize the perception about robot components and programme in industry.
4. Analyze the manipulator kinematics, dynamics and trajectory planning for typical robot with the usage of computer aided technology to develop automotive components.
5. Choose a program that the robot can integrate with the manufacturing system to produce quality products with minimum cost with optimum usage of resources.
6. Formulate a project team to promote the system integration and enrichment of knowledge with continuous learning and career progress.

Text Books


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Competency addresses outcome: - 1 = slightly; 2 = moderately; 3 = substantially
Sri Venkateswara College of Engineering and Technology (Autonomous)
Chittoor
14AEC31 MEMS & MICROSYSTEMS
(Common to CSE & IT)
(CBCC – Inter Department)

III B. Tech - II Semester(IT) L T P C
3 1 - 3

Objectives:
The course will provide the student:
1. To know about various MEMS and Microsystems products.
2. To understand the construction and working principle of various Microsensors.
3. To know about the different materials used for the construction of MEMS and Microsystems.
4. To know about the steps involved in Microsystems fabrication processes.
5. To Know about Micromanufacturing and Microsystems packaging.

UNIT – I
OVERVIEW OF MEMS AND MICROSYSTEMS:
MEMS and Microsystems, Typical MEMS and Microsystems products, Evolution of Microfabrication, Microsystems and Microelectronics, The Multidisciplinary nature of Microsystem design and manufacture, Microsystems and Miniaturization, Applications of Microsystems in the Automotive industry and Applications of Microsystems in other industries.

UNIT-II
WORKING PRINCIPLES OF MICROSYSTEMS:
Introduction, Various Microsensors, Microactuation, MEMS with Microactuators, Micro-accelerometers, and Microfluidics.

UNIT-III
MATERIAL FOR MEMS AND MICROSYSTEMS:
Introduction, Substrates and Wafers, Active Substrate Materials, Silicon as a Substrate material, Silicon Compounds, Silicon Piezoresistors, Gallium Arsenide, Quartz, Piezoelectric crystals, Polymers and Packaging materials

UNIT-IV
MICROSYSTEM FABRICATION PROCESSES:
Introduction, Photolithography, Ion Implantation, Diffusion, Oxidation, Chemical Vapor Deposition, Physical Vapor Deposition-Sputtering, Deposition by Epitaxy, and Etching.

UNIT-V
MICROMANUFACTURING AND MICROSYSTEM PACKAGING:
Micromanufacturing: Introduction, Bulk Micromanufacturing, Surface Micromachining and The LIGA process.

Microsystem Packaging: Introduction, Overview of Mechanical Packaging of Microelectronics, Various Microsystem Packaging techniques, Interfaces in Microsystem Packaging and Essential Packaging Technologies.
Outcomes:
After the completion of the course, the student will be able to:

1. Understand about various MEMS and Microsystem products.
2. Understand about the construction and functionality of various Microsensors.
3. Know about the materials used for the construction of MEMS and Microsystems.
4. Understand the entire Microsystems fabrication processes.
5. Understand Micromanufacturing and Microsystems packaging technologies.

TEXT BOOKS:

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Objectives:
1. To identify different attributes of credit assessment and develop a decision tree
2. To derive associations from dataset and do clustering using weka
3. To develop web pages.
4. To program Client side scripting languages
5. To implement Java servlets in web technology

DATA Engineering LAB
Credit Risk Assessment
Description: The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient. To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways.
1. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules.
2. Books. Find some training manuals for loan officers or perhaps a suitable textbook on finance. Translate this knowledge from text form to production rule form.
3. Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant.
4. Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application.

The German Credit Data:
Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. credit dataset (original) Excel spreadsheet version of the German credit data (Download from web). In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer!)
A few notes on the German dataset
• DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter).
• owns_telephone. German phone rates are much higher than in Canada so fewer people own telephones.
• foreign_worker. There are millions of these in Germany (many from Turkey). It is very hard to get German citizenship if you were not born of German parents.
• There are 20 attributes used in judging a loan applicant. The goal is to classify the applicant into one of two categories, good or bad.

Subtasks: (Turn in your answers to the following tasks)
1. What attributes do you think might be crucial in making the credit assessment? Come up with some simple rules in plain English using your selected attributes.

2. One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.

3. One approach for solving the problem encountered in the previous question is using cross-validation? Describe what is cross validation briefly. Train a Decision Tree again using cross validation and report your results. Does your accuracy increase/decrease? Why? (10 marks)

4. Check to see if the data shows a bias against "foreign workers" (attribute 20), or "personal-status" (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss.

5. Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.)

6. Associations
Derive associations manually from the following dataset.

```
@relation weather.symbolic
@attribute outlook {sunny, overcast, rainy}
@attribute temperature {hot, mild, cool}
@attribute humidity {high, normal}
@attribute windy {TRUE, FALSE}
@attribute play {yes, no}

@data
sunny,hot,high,FALSE,no
```
sunny,hot,high,TRUE,no
overcast,hot,high,FALSE,yes
rainy,mild,high,FALSE,yes
rainy,cool,normal,FALSE,yes
rainy,cool,normal,TRUE,no
overcast,cool,normal,TRUE,yes
sunny,mild,high,FALSE,no
sunny,cool,normal,FALSE,yes
rainy,mild,normal,FALSE,yes
sunny,mild,normal,TRUE,yes
overcast,mild,high,TRUE,yes
overcast,hot,normal,FALSE,yes
rainy,mild,high,TRUE,no

7. Clustering
i. Open Weka and Load the data set editor. Get familiarize with the editor operations.
   a. Load the weather. nominal dataset. Use the filter weka. Unsupervised, instance.
      Remove with Values to remove all instances in which the humidity attribute has the value
      high. To do this, first make the field next to the Choose button show the text Remove with
      Values. Then click on it to get the Generic Object Editor window, and figure out how to
      change the filter settings appropriately.
   b. Undo the change to the dataset that you just performed, and verify that the data has
      reverted to its original state.
ii. Choosing k-means clustering algorithm for clustering use the Cancer data (.arff) perform
    clustering with a Euclidean distance function and visually inspect the nature of the clusters.

8. Analyzing data with ROLLAP, CUBE.

9. Cube slicing – come up with 2-D view of data.

10. Drill-down or Roll-down- going from summary to more detailed data.

11. Roll up – summarize data along a dimension hierarchy.

12. Dicing – projecting 2-D view of data.


WEB TECHNOLOGIES LAB
Week 1:
1. Develop a static web page that demonstrates basic HTML tags.

Week 2:
2. Develop a web page to demonstrate different types of CSS.

Week 3:
3. Develop a web application using Java script to perform the following tasks:
   a. Registration validation
   b. User login
c. User profile and credit card payment.

**Week 4:**
4. Design an XML document to structure the student data and validate using DTD.

**Week 5:**
5. Design an XML document to structure and display the data using an XSL.

**Week 6:**
6. Install TOMCAT web server. Convert the static web pages of assignments 2 into dynamic web pages using servlets and cookies. Hint: User’s information (user id, password, credit card number) would be stored in web. XML. Each user should have a separate shopping cart

**Week 7:**
7. a. Implement a simple Hello world program using Java Servlets.
    b. Implement User Management application using Java Servlets.

**Week 8:**
8. a. Implement a simple JSP page to perform simple functions.
    b. Implement User Management application using JSP.

**Week 9:**
9. Implement session Tracking and cookie Management in JSP.

**Week 10:**
10. Develop a simple application to create a custom tag using JSP.

**Outcomes:** At the end of the course the student will be able to
1. Analyze data with ROLLAP, CUBE
2. Implement cube Slicing drill down, Roll up and Dicing of data
3. Develop web pages.
4. Program Client side scripting languages
5. Implement Java servlets in web technology

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Sri Venkateswara College of Engineering and Technology (Autonomous)
Chittoor
14AHS14 TECHNICAL ENGLISH LAB-II
(Common to EEE, ECE, CSE & IT)

III B. Tech-II Semester (IT) L T P C
- - 4 2

Objectives:

1. To inculcate the confidence of using correct pronunciation (recollecting the sounds of Monophthongs, diphthongs, consonants and identifying the rules of accent/stress and intonation).
2. To enable the students to improve the proficiency in English (based on the previous learning) at all levels.
3. To train the students to use English effectively in participating group discussions, interviews & in public speaking.
4. To enhance the confidence in problem solving while facing the career.
5. To train the students to face job interviews with confidence.

1. **Listening comprehension**: Listening to passage – Understanding the passage – answering the questions – personal and professional situations.


3. **Speaking Activities**:
   
   
   **Debates** – importance – rules - beginning – taking a stand – supporting & defending.
   


5. **Oral & PowerPoint Presentation**: Importance – developing and organizing the presentations – verbal and visual support - using body language – how to make it effective.

**MINIMUM REQUIREMENT FOR ELCS LAB:**

1) Computer aided language lab for 70 students, 70 systems – one master console software for self-study.

2) T.V, digital stereo – audio – visual system.

3) Computer laboratory with LAN Connectivity of minimum 70 multimedia systems with the following configuration.
   a) Intel Pentium® D 3.00GHZ
   b) RAM-1GB minimum
   c) Hard disk – 160GB
d) Headphones of durable quality.

**Prescribed Software – Globarena**

**Suggested Software:**

- K-Van Advanced Communication Skills
- TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
- *DELT*A’s ke*y* to the Next Generation TOEFL Test: Advanced Skill Practice.
- Lingua TOEFL CBT Insider, by Dreamtech
- Cambridge Advanced Learners’ English Dictionary with CD.
- Oxford Advanced Learner’s Compass, 8\textsuperscript{th} Edition

**Outcomes:**

1. The students will use English fluently in communication by following LSRW.
2. The students will develop the art of oral presentation to develop leadership qualities.
3. The students will assimilate the importance of English in the modern world to compete with the career in the challenging world.
4. The students will strengthen the required skills to be employable.
5. The students will face the interviews confidently and improve the chances of getting a job.

**Reference Books:**

2. Developing Communication Skills, Krishna Mohan & Meera Benerji, Macmillan
3. *English Skills for Technical Students*, WBSCTE with British Council, OL
4. *TOEFL & GRE* (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)

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Sri Venkateswara College of Engineering and Technology (Autonomous)
Chittoor
14AMB01 MANAGEMENT SCIENCE (Audit Course)
(Common to EEE, ECE, CSE & IT)
III B. Tech-II Semester(IT)           L  T  P  C
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Objectives:

1. To learn the principles of management
2. To apply concepts in administering technology driven industrial units.
3. To gain an understanding of management functional areas like Production, HR, Marketing etc
4. To develop knowledge using OR techniques for project management
5. To analyse the importance of production in the organization

UNIT I

UNIT II
Operations Management: Principles and Types of Plant Layout - Methods of production (Job, batch and Mass Production), Work Study - Basic procedure involved in Method Study and Work Measurement-Statistical Quality Control: $\bar{x}$ chart, R chart, c chart, p chart, (simple Problems), Acceptance Sampling, TQM Concept - Deming’s principles, Six sigma, Benchmarking.

UNIT III

UNIT IV
UNIT V

**Project Management (PERT/CPM):** Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (Simple Problems)

**Outcomes:**

After completion of this course students will be able to:

1. Apply various areas of functional management for the prospects of business organization
2. Apply management principles for decision making
3. Handle intricacies of projects efficiently
4. Use tools and techniques to become an effective manager
5. Apply production tools and techniques in every area of business

**TEXT BOOKS:**


**REFERENCES:**

1. Marketing Management, 12/e, Kotler Philip & Keller Kevin Lane, PHI, 2005.

*Mapping course outcomes with POs*

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OBJECTIVES:
The objective of this course is to make students to:
1. Understand information security’s importance in our increasingly computer-driven world.
2. Understand various security attacks and security service.
3. Understand various security policies (such as authentication, integrity and confidentiality), as well as protocols to implement such policies in form of message exchanges.
4. Understand basic information security principles and approaches.
5. Understand the different versions of SNMP protocols

UNIT I
SECURITY ATTACKS:
Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, a model for Internetwork Security, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

UNIT II

UNIT III
EMAIL PRIVACY: Pretty Good Privacy (PGP) and S/MIME.IP Security Overview, IP Security Architecture, Authentication Header, Combining Security Associations and Key Management.

UNIT IV
Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

UNIT V
Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders, Viruses and related threats, Firewall Design principles.
OUTCOMES:
At the end of this course, students will be able to:
1. Demonstrate conventional Encryption Principles and algorithms.
2. Evaluate the performance of cryptography algorithms.
3. Develop an Intrusion Detection Systems using appropriate modern tool.
4. Analyze the major information security threats and countermeasures.
5. Compare the performance of a network using SNMP protocol.

TEXT BOOKS:

REFERENCE BOOKS:

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Objectives:
The Objective of this course is to make students to
1. To analyze the components of cloud computing and its business perspective.
2. Understand the various services of cloud and to identify various relations in cloud based information systems
3. To collaborate with real time cloud services...
4. Understand various cloud virtualization applications.

UNIT I

Overview of Cloud Computing: Meaning of the terms cloud and cloud computing, cloud based service offerings, Grid computing vs Cloud computing, Benefits of cloud model, limitations, legal issues, Key characteristics of cloud computing, Challenges for the cloud, The evolution of cloud computing.

UNIT II

Web services delivered from the cloud: Infrastructure as a service, Platform-as-a-service, Software-as-a-service. Building Cloud networks: Evolution from the MSP model to cloud computing and software -as-a-service, The cloud data center, SOA as step toward cloud computing, Basic approach to a data center based SOA.

UNIT III

CLOUD SERVICES: Collaborating on calendars, Schedules, and Task Management, Exploring online scheduling applications, Exploring online planning and task management, Collaborating on Word Processing, Storing and sharing files and Other Online Content. Exploring Online Photo-Editing Applications.

UNIT IV

INTRODUCTION TO VIRTUALIZATION History of virtualization, objectives of virtualization, benefits of virtualized technology, VIRTUALIZATION TECHNOLOGIES VMware, Microsoft Hyper-V, Virtual Iron, Xen, Ubuntu (Server Edition), Software Virtualization, Para Virtualization, OS Virtualization, Oracle Virtualization, Storage Virtualization Technologies, Virtualization and Storage Management.
UNIT V


**Outcomes:**
At the end of course student should be able to
1. Use practical cloud applications in daily life.
2. Apply various cloud services in real time applications.
3. Collaborate with different practical web applications for business management.
4. Differentiate cloud security services and standards.

**TEXT BOOKS:**

**REFERENCES:**
1. Cloud Application Architectures Building Applications and Infrastructure in the Cloud, George Reese, and O'Reilly Media Released, April 2009.

*Mapping Course Outcomes with Programme outcomes*

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OBJECTIVES:
The objective of the course is to make students to:
1. Understand the purpose of testing.
2. Understand the various types of transaction and dataflow testing.
3. Understand the process of domain testing.
4. Understand the concepts of logic based testing.
5. Understand graph matrices and tools involved in test automation.

UNIT I
Introduction: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.
Flow graphs and Path testing: Basics concepts of path testing, predicates, path predicates and Achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT II
Transaction Flow Testing: Transaction flows, transaction flow testing techniques.
Data flow testing: Basics of data flow testing, strategies in data flow testing.

UNIT III
Domain Testing: Domains and paths, Nice & ugly domains, domain testing, domains and interface testing, domain and interface testing, domains and testability.
Paths, Path Products and Regular Expressions: Path products & path expression, reduction Procedure, applications, regular expressions & flow anomaly detection.

UNIT IV
Logic Based Testing: overview, decision tables, path expressions, kv charts, specifications, building tools (The student should be given an exposure to a tool like IBM Rational Functional Tester).

UNIT V
Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools (The student should be given an exposure to a tool like IBM Rational Quality Manager).

OUTCOMES:
At the end of the course, students should be able to:
1. Develop the importance of testing and debugging cases.
2. Perform transaction flow testing and data flow testing on various applications.
3. Design the applications of domain testing and regular expressions.
4. Apply logic based testing techniques.
5. Handle automation test tools like IBM rational functional tester and IBM Rational quality manager.
**TEXT BOOKS:**

**REFERENCE BOOKS:**

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OBJECTIVES:
The Course will provide the student:
1. To Know the fundamental concepts of embedded systems.
2. To study state machine models and concurrent process models.
3. To study processor peripherals and communication interfaces.
4. To learn the kernel, RTOS.
5. To study hardware and software design.

UNIT I
INTRODUCTION: Embedded systems overview, design challenge, processor technology, IC technology, Design Technology, Trade-offs. Custom single purpose processors - RT-level combinational logic, sequential logic (RT-level), custom single purpose processor design (RT-level), optimizing custom single purpose processors.

UNIT II
STATE MACHINE AND CONCURRENT PROCESS MODELS: Introduction, models Vs. languages, finite state machines with data path model (FSMD), using state machines, program state machine model (PSM), concurrent process model, concurrent processes, communication among processes, synchronization among processes, implementation, data flow model, real-time systems.

UNIT III
STANDARD SINGLE PURPOSE PROCESSORS: PERIPHERALS – Timers, Counters and Watch dog timers, real time clock.

UNIT IV
operating systems Embedded Linux, Real-time operating systems, RT Linux, Handheld operating systems, Windows CE.

UNIT V

OUTCOMES:
On completion of the course the students will be able to:
1. Understand the fundamental concepts of Embedded systems.
2. Know the state machine models and concurrent process models.
3. Know the watch dog timer, real time clock and communication interfaces.
4. Understand the RTOS and kernel.
5. Understand the hardware and software design.

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OBJECTIVES:
The objective of this course is to make students to:

1. Understand the specifications and functionalities of various protocols/standards of mobile networks.
2. Build working knowledge on various telephone and satellite networks.
3. Understand the working principles of wireless LAN and its standards.
4. Build skills in working with Wireless Application Protocols to develop mobile content applications.
5. Understand the TCP/IP header format.

UNIT I WIRELESS COMMUNICATION FUNDAMENTALS

UNIT II TELECOMMUNICATION NETWORKS

UNIT III WIRELESS LAN

UNIT IV MOBILE NETWORK LAYER

UNIT V TRANSPORT AND APPLICATION LAYERS
Traditional TCP – Classical TCP improvements – WAP, WAP 2.0.

OUTCOMES:
Upon completion of the subject, students will be able to

1. Analyse and compare the performance of different data dissemination techniques and algorithms for mobile real-time applications.
2. Understand the characteristics and limitations of mobile hardware devices including their user-interface modalities.
3. Develop applications that are mobile-device specific and demonstrate current practice in mobile computing contexts.
4. Understand the design and development of context-aware solutions for mobile devices.
5. Establish a TCP/IP based Network.

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Sri Venkateswara College of Engineering and Technology (Autonomous)
Chittoor
14ACS39  BIG DATA ANALYTICS
(Common to CSE & IT)
(CBCC – I)

IV B. Tech-I Semester(IT)  L  T  P  C
3 1 - 3

Objectives:
The objective of this course is to make students to:
1. Understand big data analytics principles.
2. Understand data analysis techniques
3. Understand techniques involved in Mining data streams.
4. Understand frequent item sets and clustering techniques.
5. Understand Analytics frameworks.

UNIT I
Introduction To Big Data:

UNIT II
Data Analysis:

UNIT III
Mining Data Streams:

UNIT IV
Frequent Item sets And Clustering:
Mining Frequent Item sets -Market Based Model –Apriori Algorithm –Handling Large data Sets in Main Memory –Limited Pass Algorithm –Counting Frequent Item sets in a stream –Clustering Techniques –Hierarchical –K-Means –Clustering High Dimensional Data –CLIQUE And PROCLUS –Frequent Pattern based Clustering Methods –Clustering in Non-Euclidean Space –Clustering for Streams and Parallelism.

UNIT V
Frameworks and Visualization:

Outcome:
At the end of the course the student will be able to:
1. Analyze the real time data using any appropriate data analytic tools.
2. Evaluate the performance of Data Model used in big data.
3. Developing applications for Real time Analytics Platform
4. Apply different clustering techniques for forming clusters, analysis of outlier and formation of association.
5. Optimize the performance of a social network.

TEXT BOOKS:

REFERENCE BOOKS:
3 “Data Mining Concepts and Techniques”, Second Edition, Jiawei Han, Micheline Kamber ,Elsevier, Reprinted 2008.

Mapping Course Outcomes with Program outcomes

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Objectives:
The objective of the course is to make students to:
1. Understand and practice the process of project management and its application in delivering successful projects.
2. Understand the evaluation of the project.
3. Gain knowledge about the artifacts and model based software architectures.
4. Gain knowledge about Future software project management.
5. Acquire knowledge in emerging trends in software Engineering.

UNIT I
Introduction to Software Project Management:
Process and Project Metrics: Introduction, Software measurement, Software quality metrics, integrating metrics within the software process, Metrics for small organizations.

UNIT II
Project Evaluation:

UNIT III
Artifacts and Model Based Software Architectures:
Artifacts of the process - the artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.


UNIT IV
Future Software Project Management:
Modern Project Profiles, Next generation Software economics, modern process transitions.

UNIT V:
Emerging Trends in Software Engineering:
Outcomes:
At the end of course, students should be able to:
1. Implement a project to develop the scope of work, provide accurate cost estimates and to plan the various activities.
2. Analyze the various artifacts of the process and technical perspectives.
3. Evaluate the resources required for a project and to produce a work plan and resource schedule.
4. Implement emerging trends in software engineering.
5. Apply various models for software architectures

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Objectives:
The objective of this course is to make students to:

1. Acquire the knowledge on different addressing schemes and enable to configure router and host routing tables.
2. Articulate the different routing techniques.
3. Differentiate the connection oriented and connectionless services over the Internet.
4. Analyze the different error control and congestion control techniques with appropriate networking protocols.
5. Understand advanced Internet Protocol concepts and file transfer concepts.

UNIT I
The OSI Model and the TCP/IP Protocol suite:
IPv4 Addresses: Introduction, Classful Addressing, Classless Addressing, Special Addresses, NAT.

UNIT II
Unicast Routing Protocols (RIP, OSPE, and BGP): Introduction, Intra- and Inter-Domain Routing, Distance Vector Routing, RIP, Link State Routing, OSPF, Path Vector Routing, BGP.

UNIT III

UNIT IV
Windows in TCP: Flow Control, Error Control, Congestion Control, TCP Timers, Options, TCP Package.

UNIT V
Remote Login: TELNET and SSH: TELNET, Secure Shell (SSH).
File Transfer: FTP, TFTP.
Learning Outcomes:
At the end of the course the student will be able to:

1. Differentiate the different network architectures by comparing the basic network model.
2. Identify the networking, internetworking requirements and networking protocols.
3. Apply the requirements of routing and choose appropriate routing methods using appropriate modern tools.
4. Ascertain and handle the selection of applications and protocols for transferring data across the internet.
5. Analyze and control the passage of user information over the network by using appropriate network protocols.

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Objectives:
The objective of this course is to make students to:
1. Understand object-oriented programming concepts and apply them in C# program
2. familiarize with .Net Architecture
3. Learn the basic concepts to develop applications in C# & ASP.Net
4. Build a web application using .Net
5. Understand .NET framework components

UNIT I
Introduction to Web services
Business motivations of Web Services-B2B-B2C-Service Oriented Architecture(SOA)-Architecting Web Services-Web Services Technology stack-logical view-composition of web services-deployment view-from application server to peer to peer-procees view-life in runtime

UNIT II
Introduction to C#: Introducing C#, Understanding .NET, Overview of C#, Literals, Variables, Data types, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations.

UNIT III
Object oriented aspects of C#: Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exceptions.

UNIT IV
Application Development on .NET: Building Windows Applications, Accessing Data with ADO.NET

UNIT V
Web Based Application Development on .NET
Programming Web applications with Web Forms, Programming Web Services.
The CLR and the .NET Framework:
Assemblies, Versioning, Attributes, Reflection, Viewing Meta Data, Type Discovery, Reflecting on a type, Marshalling, Remoting, Understanding Server Object Types, Specifying a server with an Interface, Building a server, Building the Client, Using Single Call, Threads.
Outcomes:
At the end of the course the student will be able to:
1. Apply OOP Concepts through C#.
2. Design classes and objects in C#.
3. Design windows applications on .NET
4. Use .NET components in C# programs and develop web application.
5. Use .NET framework for elaborate and complex building web application.

TEXT BOOKS:

REFERENCE BOOKS:

Mapping Course Outcomes with Program outcomes

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OBJECTIVES:

The objective of this course is to make students to:

1. Understand the design of various computer architectures.
2. Evaluate the performance of memory module in computer system.
3. Analyse the need of heterogeneous multicore architectures.
4. Acquire knowledge about an application designed for multicore architectures using open MP.
5. Understand the process of Benchmarking a processor.

Unit I: CONTROL UNIT DESIGN

Overview of IAS Computer, Data path implementation, Register Transfer Notation (RTN), Abstract RTN, Concrete RTN, Control sequence for Simple RISC computer (SRC); Control unit Design, Hardwired control unit Design and Micro programmed control unit, Design using control Sequences.

Unit II: MEMORY MODULE DESIGN

Conceptual view of memory cell, Memory address map, Memory connections to CPU, Cache memory- Cache memory management techniques, Types of cache’s: Look-through, look aside, write through, write around, unified Vs Split, multilevel, cache levels, Cache Misses, performance issues: Mean memory access time, Execution time, Cache Coherence Protocols, Snoopy, MSI, MESI, and MOESI.

Unit III: MULTICOREARCHITECTURE

Parallel computing and why it failed, Multi-processor architecture and its limitations, Need for multi-core architectures, Architecting with multi-cores, Homogenous and heterogeneous cores, Shared resources, shared busses, and optimal resource sharing strategies. Performance evaluation of multi-core processors, Error management.

Unit IV: MULTITHREADING CONCEPTS

Unit V: MULTICOREPROGRAMMING
Introduction to Open MP, Open MP Directives, Parallel constructs, Work-sharing constructs, Data environment constructs, Synchronization constructs, Extensive API library for finer control, benchmarking multi-core architecture: Benchmarking of processors. Comparison of processor performance for specific application domains.

OUTCOMES:
At the end of the course the student will be able to:
1. Develop a Micro routine for micro programmed control unit using appropriate modern tool.
2. Design the system for coordination of components in computer system.
3. Identify the performance issues with memory module in computer design.
4. Evaluate the Performance of multi-core processors.
5. Compare the performance of different processor for specific application domains.

TEXT BOOKS:

REFERENCE BOOKS:

Mapping of Cos with POs:

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OBJECTIVES:
1. To know the use of Microcontroller.
2. To know about various scheduling techniques
3. To know about various memory management techniques.
4. To know how to design basic embedded systems

1. Write a program to a) Clear the Register and b) Add 3 to Register Ten Times and Place the Result into Memory Use the Indirect Instructions to Perform Looping.

2. To transfer the data serially between two microcontroller kit using RS232C.

3. Write a program to use the TIMER 0 as a counter

4. Write a Program to monitor Door Sensor and when it Open, Sounds the Buzzer by sending a Square Wave of few Hundred Hz Frequency to it. A Door Sensor is connected to RB1 Pin and a Buzzer is connected to RB7.

5. Write a Program to Toggle all the Bits of PORT B parts continuously with a 250ns delay.

6. Write an Interfacing Program to blink LED.

7. Write an Interfacing Program to blink LED in dancing fashion.

8. Write an Interfacing Program for LCD

9. Write a program to implement data transmission using serial mode.

10. Write a program to implement data receiving using serial mode.

OUTCOMES:
1. Able to use microcontroller in various applications.
2. Able to design systems where serial communication requires.
3. Able to design simple embedded systems.
4. Able to know real time scheduling.
Objectives:

1. To understand and implement cloud environment for storing, accessing and updating the data.
2. To learn basic applications for family and business management.
3. To manage free cloud storage services for regular usage.
4. To learn the basic concepts of software testing tools using win runner and selenium.
5. To build test cases for various applications.

PART -A

1. Implement the following in Cloud Environment
   a) Storing the data
   b) Accessing the data
   c) Updating the data
2. Working on google drive to make spread sheets and notes.
3. Installation and configuration of dropbox
4. Desktop synchronization with dropbox.
5. Business management using cloud services.
6. Cloud mail services.
7. Cloud applications for Family.

PART –B

1. Write programs in ‘C’ Language to demonstrate the working of the following constructs:
   i) do...while ii) while….do iii) if…else iv) switch v) for
2. “A program written in ‘C’ language for Matrix Multiplication fails” Introspect the causes for its failure and write down the possible reasons for its failure.
3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
4. Write the test cases for any known application (e.g. Banking application)
5. Create a test plan document for any application (e.g. Library Management System)
6. Study of any testing tool (e.g. Win runner)
7. Study of any web testing tool (e.g. Selenium)
8. Study of any bug tracking tool (e.g. Bugzilla, bugbit)

9. Study of any test management tool (e.g. Test Director)

10. Study of any open source-testing tool (e.g. Test Link)

11. Take a mini project (e.g. University admission, Placement Portal) and executes it. During the Life cycle of the mini project create the various testing documents* and final test report document.

Outcomes.

1. Understand the key dimensions of challenges of cloud computing.
2. Designing and implementing applications of cloud computing.
3. Able to analyze and implement practical cloud applications.
4. Understand the software development lifecycle in developing a software
5. Evaluating various testing tools

Mapping course outcomes with POs

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Sri Venkateswara College of Engineering and Technology (Autonomous)
Chittoor
14AMB02 PROFESSIONAL ETHICS
(Audit Course)
(Common to Civil, EEE, Mechanical, ECE, CSE, IT & Automobile Engg.)
IV B. Tech-I Semester(IT)  L  T  P  C
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Objectives:
1. To understand the fundamental concepts of professional ethics.
2. To impart and inculcate ethical decision making.
3. To apply ethical and human values in engineering profession.
4. To prepare engineering students to meet global demands on human values.
5. To explain the importance of environmental protection in engineering activities.

Unit-I Introduction
Professionalism-models of professionalism-Ethics-Types of ethics and morality-Engineering ethics-Positive and negative faces of ethics-Responsibility for safety-Technology pessimism and perils of technological optimism.

Unit-II Ethical Concepts

Unit III Engineers Role in Safety

Unit IV Roles of Engineers
Engineers asmanagers, Advisors, Consultants, Experts and witnesses- Engineers role in industry and society- models of professional roles-Theories about right action-paternalism-different business practices-Moral leadership- Cases - Bhopal gas tragedy, Nuclear power plant disasters-

Unit V Environmental Ethics
Global Issues-Multinational corporations-Living in harmony with NATURE-Holistic technology-Eco friendly production system-sustainable technology and development-weapon development-Four orders of living, their interconnectedness-Eco system-Ozone depletion-pollution
Outcomes:
After the completion of the course the students shall be able to

1. Understand human values and ethical standards to lead career accordingly.
2. Able to incorporate appropriate safety measures in designing systems.
3. Play the role of “responsible engineer” in the society.
4. Use natural resources in a sustainable manner and be conscious of environment.
5. Incorporate safety measures in engineering and product design aspects.

Text Books

Reference Books

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