

III B.Tech(CSE)						I Semester					
Group	Sub-Code	Name Of Subject	Credits			Total credits	Hours			Total Hours	Total Marks
			L	T	P		L	T	P		
PC	GR15A3050	Unix and Shell Programming	3	1		4				5	100
PC	GR15A2055	Microcontrollers	3	1		4				5	100
PC	GR15A3051	Compiler Design	3	1		4				5	100
Open Elective 1			2	1		3				4	100
OE	GR15A3154	Principles of E-Commerce									
Professional Elective 1			3	1		4				5	100
PE	GR15A3061	Artificial Intelligence and Neural Networks									
PE	GR15A3053	Principles of Programming Languages									
PE	GR15A3107	Introduction to Data Sciences									
PC	GR15A3055	Unix Programming and Compiler Design Lab			2	2				4	75
PC	GR15A2059	Microcontrollers Lab			2	2				4	75
PC	GR15A3054	Advanced Java Programming Lab			2	2				4	75
Total			14	5	6	25				36	725

III B.Tech(CSE)						II Semester					
Group	Sub-Code	Name Of Subject	Credits			Total credits	Hours			Total Hours	Total Marks
			L	T	P		L	T	P		
PC	GR15A3056	Design and Analysis of Algorithms	3	1		4				5	100
PC	GR15A3057	Software Engineering	3	1		4				5	100
PC	GR15A3059	Web Technologies	3	1		4				5	100
Open Elective 2			2	1		3				4	100
OE	GR15A3164	Human Computer Interaction									
Professional Elective 2			3	1		4				5	100
PE	GR15A3062	Multicore Computing and Architecture									
PE	GR15A3111	Big Data Analytics									
PE	GR15A3058	Information Security									
PC	GR15A3063	Web Technologies Lab			2	2				4	75
PC	GR15A3100	Advanced English Communication Skills Lab			2	2				4	75
PC	GR15A3101	Industry Oriented Mini Project			2	2				4	75
Total			14	5	6	25				36	725

IV B.Tech(CSE)			I Semester								
Group	Sub-Code	Name Of Subject	Credits			Total credits	Hours			Total Hours	Total Marks
			L	T	P		L	T	P		
PC	GR15A2077	Computer Networks	3	1		4				5	100
PC	GR15A3067	Datawarehousing and Datamining	3	1		4				5	100
PC	GR15A3102	Management Science	3	1		4				5	100
Open Elective 3			2	1		3				4	100
OE	GR15A4164	Mobile Computing and Applications									
Professional Elective 3			3	1		4				5	100
PE	GR15A4079	Cloud Computing									
PE	GR15A3069	Computer Graphics									
PE	GR15A4077	Software Testing Methodologies									
PC	GR15A4084	Scripting Languages Lab			2	2				4	75
PC	GR15A4146	DMDW and BI Lab			2	2				4	75
PC	GR15A4083	Advanced Network Programming Lab			2	2				4	75
Total			14	5	6	25				36	725

IV B.Tech(CSE)			II Semester								
Group	Sub-Code	Name Of Subject	Credits			Total credits	Hours			Total Hours	Total Marks
			L	T	P		L	T	P		
PC	GR15A3065	Object Oriented Analysis and Design	2	1		3				4	100
Professional Elective 4			3	1		4				5	100
PE	GR15A4088	Fundamentals of Image Processing									
PE	GR15A4101	Software Project Management									
PE	GR15A4089	Cyber Security									
Professional Elective 5			3	1		4				5	100
PE	GR15A4095	Information Retrieval Systems									
PE	GR15A4086	Real Time Operating Systems									
PE	GR15A4090	Design Patterns									
PC	GR15A4085	Object Oriented Analysis and Design Lab			2	2				4	75
SPW	GR15A4142	Comprehensive Viva Voce			1	1				2	50
SPW	GR15A4143	Seminar			1	1				2	100
SPW	GR15A4144	Major Project			10	10				14	200
Total			8	3	14	25				36	725

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
UNIX AND SHELL PROGRAMMING

Course Code: GR15A3050

L T P C

III Year I Semester

3 1 0 4

UNIT I

Introduction to UNIX: Functions of Operating Systems, Single user and Multi user OS, History of UNIX, Features of UNIX, Structure of UNIX, shell and kernel functionalities.

UNIX Utilities: Directory commands – mkdir, chdir, rmdir, who, ls; I/O redirection and File handling utilities – input output redirection operators, cat, touch, cp, mv, rm, ln, unlink, more; Disk utilities – du, df, mount, unmounts; Security by file permissions – chmod, umask, chown, chgrp; process utilities – ps, nice, nohup, kill; Networking commands – finger, ftp, telnet, arp, mail, wall, news; Backup utilities – cpio, tar; Text processing utilities and Filters - cat, tail, head, sort, nl, uniq, tr, comm, cmp, diff, cut, paste, join, tee, grep, egrep, fgrep; pipe operator, here documents.

UNIT II

Editors in UNIX: Visual Editor – Modes of operation, creating and editing files, Inserting and appending text, Deleting Text, Navigating cursors, Stream editor – Sed commands, regular expressions with Sed, Sed pattern flags, examples.

Working with UNIX shell: Introduction to shell, types of shell, shell Meta characters, shell variables, shell commands, control structures, positional parameters, command line arguments, shell script examples.

UNIT III

Unix File System: Types of Files, Hierarchical Unix file system, Structure of file system, file descriptors, System calls – File related system calls - usage of open, creat, read, write, close, unlink, link, symlink, lseek, stat, fstat, umask, dup, dup2, chmod, chown,; Directory handling system calls - opendir, readdir, closedir, rewinddir, seekdir, telldir, mkdir, rmdir, chdir, getcwd

The Standard I/O library function - fopen, fclose, fgetc, getc, fputc, putc, fgets, gets, fflush, fseek; Formatted I/O library function – fscanf, fprintf, scanf, printf.

UNIT IV

Unix Process: process basics, process identifiers, process structure, process control, creating a new process, waiting for a process, process termination, Daemon Process, zombie process, orphan process, system call interface for process management - fork, vfork, exit, wait, waitpid, exec.

Signals: Signal concepts, unreliable signals, interrupted system calls, kill and raise functions, signal handling mechanism, signal function, alarm, pause, abort, sleep, system functions.

UNIT V

Awk - advanced filter: Simple awk filtering, Fields, variables and expressions, Arrays, Functions, control flow, example awk scripts.

Inter process Communication Overview: Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, streams and messages, name spaces, pipes, FIFOs.

TEXT BOOKS

1. Unix the ultimate guide, Sumitabha Das, TMH
2. Unix and Shell Programming, B.M.Harwani, Oxford university press.
3. Unix Network Programming, W.R.Stevens, Pearson/PHI

REFERENCES

1. Advanced Programming in the Unix environment, W.R.Stevens, Pearson education.
2. Unix system programming using C++, T.Chan, PHI
3. Unix for programmers and users, third edition, Graham Glass, King Ables, Pearson education.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

MICROCONTROLLERS

Course Code: GR15A2055

L T P C

III Year I Semester

3 1 0 4

UNIT I

Introduction and 8086 Architecture: Introduction to microprocessors, 8086 Architecture: Functional diagram, Register organization, Memory segmentation, Programming model, Memory address, Physical memory organization, Signal description of 8086, Timing diagrams, Interrupts of 8086.

UNIT II

Introduction and 8051 Architecture: Introduction to microcontrollers, comparing microprocessors and microcontrollers, 4,8,16 and 32 bit microcontrollers, Development systems for Microcontrollers, Architecture; Architecture of 8051, pin configuration of 8051 microcontroller, hardware input pins, output pins ports and external memory, counters and timers, serial data input/output and interrupts.

UNIT III

Moving Data and Logical Operations: Introduction, Addressing modes, External Data moves, Code Memory Read-only Data Moves, PUSH And POP Op codes, Data Exchanges, Logical Operations; Introduction, Byte-Level Logical Operations, Bit-Level Logical Operations, Rotate and Swap Operations

UNIT IV

Arithmetic Operations, Jump and Call Op codes: Introduction, Flags, Incrementing and Decrementing, Addition, Subtraction, Multiplication and Division, Decimal Arithmetic, Jump and Call op codes; introduction, The jump and call program range, Jumps, Calls and Subroutines, call and returns, Interrupts and Returns

UNIT V

8051 Microcontroller Design: Introduction, Microcontroller specification, Microcontroller Design, Testing the Design, Timing subroutines, Serial Data Transmission.

Applications and Serial Data Communication: Keyboards, Displays, Pulse Measurement, D/A and A/D Conversions, Multiple Interrupts, Serial data Communication;

Teaching methodologies:

- Power Point presentations
- Tutorial Sheets
- Assignments

TEXTBOOKS

1. D.V.Hall, Microprocessors and Interfacing, TMH, 2nd edition 2006.

2. Kenneth J. Ayala, The 8051 Microcontroller Architecture Programming and Applications, 2nd Edition, Penram International Publishers (I), 1996.

REFERENCES

1. A.K. Ray and K.M. Burchandani, TMH, 2nd edition, Advanced Microprocessors and Peripherals TMH, 2006
2. Mohammed Ari Mazidi and Janci Gillispie, The 8051 Microcontroller and Embedded Systems, Pearson Education Asia, New Delhi, 2003.

COMPILER DESIGN

Course Code: GR14A3051

L T P C

III Year I Semester

3 1 0 4

UNIT I

Overview of Compilation: Phases of Compilation – Lexical Analysis, Regular grammar and regular expression for common programming language features, pass and phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzer generator.

UNIT II

Top down Parsing: Context free grammars, Top down parsing – Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictive parsing.
Bottom up parsing: Shift Reduce parsing, LR and LALR parsing, Error recovery in parsing, handling ambiguous grammar, YACC – automatic parser generator.

UNIT III

Semantic analysis: Intermediate forms of source programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, Syntax directed translation, Conversion of popular programming languages language constructs into Intermediate code forms, Type checker.

Symbol Tables: Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information.

UNIT IV

Block structures and non-block structure storage allocation: Static, Runtime stack and heap storage allocation, storage allocation for arrays, strings and records.

Code optimization: Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation.

UNIT V

Data flow analysis: Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.

Object code generation: Object code forms, machine dependent code optimization, register allocation and assignment, generic code generation algorithms, DAG for register allocation.

TEXT BOOKS

1. Principles of compiler design -A.V. Aho , J.D.Ullman, Pearson Education.

2. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

REFERENCES

1. Lex&Yacc – John R. Levine, Tony Mason, Doug Brown, O’reilly
2. Modern Compiler Design- Dick Grune, Henry E. Bal, Cariel T. H. Jacobs, Wiley dreamtech.
3. Engineering a Compiler-Cooper & Linda, Elsevier.
4. Compiler Construction- Loudon, Thomson.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
ARTIFICIAL INTELLIGENCE AND NEURAL NETWORKS
(PROFESSIONAL ELECTIVE – I)

Course Code: GR15A3061

L T P C

III Year I Semester

3 1 0 4

UNIT I

Introduction: AI problems, foundation of AI and history of AI intelligent agents, Agents and Environments, concept of rationality, nature of environments, structure of agents, problem solving agents, problem formulation.

Searching: Searching for solutions, uniformed search strategies – Breadth first search, depth first Search. Search with partial information (Heuristic search) Greedy best first search, A* search. **Game Playing:** Adversal search, Games, minmax, algorithm, optimal decisions in multiplayer games, Alpha-Beta pruning, Evaluation functions, cutting of search.

UNIT II

Knowledge Representation & Reasons: logical Agents, Knowledge – Based Agents, Wumpus world, logic, Propositional logic, Resolution patterns in propositional logic, Resolution, Forward & Backward Chaining.

First order logic: Inference in First order logic, Propositional vs First order inference, unification & lifts, Forward chaining, Backward chaining, Resolution.

UNIT III

Characteristics of Neural Networks: Historical Development of Neural Networks Principles. **Artificial Neural Networks:** Terminology, Models of Neuron, Topology, Basic Learning Laws, Pattern Recognition Problem, Basic Functional Units, Pattern Recognition Tasks by the Functional Units.

UNIT IV

Feed forward Neural Networks: Introduction, Analysis of pattern Association Networks, Analysis of Pattern Classification Networks, Analysis of pattern storage Networks. Analysis of Pattern Mapping Networks.

Feedback Neural Networks: Introduction, Analysis of Linear Auto-associative FF Networks, Analysis of Pattern Storage Networks.

UNIT V

Competitive Learning Neural Networks & Complex pattern Recognition: Introduction, Analysis of Pattern Clustering Networks, Analysis of Feature mapping Networks, Associative Memory.

TEXT BOOKS

1. Artificial Intelligence – A Modern Approach. Second Edition, Stuart Russel, Peter Norvig, PHI/ Pearson Education.
2. Artificial Neural Networks B. YagnaNarayana, PHI

REFERENCES

1. Artificial Intelligence, 2nd Edition, E.Rich and K.Knight (TMH).
2. Artificial Intelligence and Expert Systems – Patterson PHI.
3. Expert Systems: Principles and Programming- Fourth Edn, Giarrantana/ Riley, Thomson.
4. PROLOG Programming for Artificial Intelligence. Ivan Bratka- Third Edition – Pearson Education.
5. Neural Networks Simon Haykin PHI
6. Artificial Intelligence, 3rd Edition, Patrick Henry Winston., Pearson Edition.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

PRINCIPLES OF PROGRAMMING LANGUAGE

(PROFESSIONAL ELECTIVE – I)

Course Code: GR15A3053

L T P C

III Year I Semester

3 1 0 4

UNIT I

Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, Influences on Language design, Language categories, Programming Paradigms – Imperative, Object Oriented, Functional Programming , Logic Programming.

Programming Language Implementation: Compilation and Virtual Machines, programming environments.

UNIT II

Syntax and Semantics: General Problem of describing Syntax and Semantics, formal methods of describing syntax - BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, denotational semantics and axiomatic semantics for common programming language features.

Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

UNIT III

Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation, mixed mode assignment, Assignment Statements, Control Structures – Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions, user defined overloaded operators, co routines.

UNIT IV

Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95.

Concurrency: Subprogram level concurrency, semaphores, monitors, message passing, Java threads, C# threads.

Exception handling: Exceptions, Exception propagation, Exception handler in Ada, C++ and Java.

Logic Programming Language : Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

UNIT V

Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative languages.

TEXT BOOKS

1. Concepts of Programming Languages Robert .W. Sebesta 6/e, Pearson Education.
2. Programming Languages –Louden, Second Edition, Thomson.

REFERENCES

1. Programming languages –Ghezzi, 3/e, John Wiley
2. Programming Languages Design and Implementation – Pratt and Zelkowitz, Fourth Edition PHI/Pearson Education
3. Programming languages –Watt, Wiley Dreamtech
4. LISP Patric Henry Winston and Paul Horn Pearson Education.
5. Programming in PROLOG Clocksin, Springer

INTRODUCTION TO DATA SCIENCE

(PROFESSIONAL ELECTIVE – I)

Course Code: GR15A3107

L T P C

III Year I Semester

3 1 0 4

UNIT I

Introduction: What is Data Science? Big Data and Data Science hype - and getting past the hype,-Why now? Data fiction, Current landscape of perspectives, Skill sets needed

Statistical Inference: Populations and samples, Statistical modeling, probability distributions, fitting a model, Intro to R

UNIT II

Exploratory Data Analysis and the Data Science Process , Basic tools (plots, graphs and summary statistics) of EDA, Philosophy of EDA ,The Data Science Process, Case Study: Real Direct (online real estate _rm)

Three Basic Machine Learning Algorithms: Linear Regression, k-Nearest Neighbors (k-NN),k-means

UNIT III

Introduction to Machine learning, One More Machine Learning Algorithm and **Usage in Applications:** Motivating application: Filtering Spam, Why Linear Regression and k-NN are poor choices for Filtering Spam, Naive Bayes and why it works for Filtering Spam, **Data Wrangling:** APIs and other tools for scrapping the Web

UNIT IV

Feature Generation and Feature Selection (Extracting Meaning from Data): Motivating application: user (customer) retention,- Feature Generation (brainstorming, role of domain expertise, and place for imagination)

Feature Selection algorithms: Filters; Wrappers; Decision Trees; Random Forests

UNIT V

Data Science and Ethical Issues: Discussions on privacy, security, ethics, A look back at Data Science, Next-generation data scientists

TEXT BOOKS:

1. Cathy O'Neil and Rachel Schutt. Doing Data Science, Straight Talk From The Frontline. O'Reilly. 2014.
2. Kevin P. Murphy. Machine Learning: A Probabilistic Perspective. ISBN 0262018020. 2013.

REFERENCES

1. Foster Provost and Tom Fawcett. Data Science for Business: What You Need to Know about Data Mining and Data-analytic Thinking. ISBN 1449361323. 2013

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
UNIX PROGRAMMING AND COMPILER DESIGN LAB

Course Code: GR15A3055

L T P C

III Year I Semester

0 0 2 2

Task 1

a) Practice the following commands in UNIX environment

(i) File Handling Utilities –cat, cp, rm, sort (ii) Disk Utilities -du, df

b) Practice the given commands in UNIX environment

(i) Security by File Permissions- Umask, chmod (iii) Process Utilities-Ps, kill

c) Demonstrate Text Processing Utilities in UNIX.-Head, Tail, Comp, Diff, Comm

d) Filter commands-Grep, Tee

Task2

a) Write a shell script to print the sum of even numbers from given n numbers.

b) Write a shell script that accepts a file name as argument and display specified number of lines from the beginning of file.

c) Write a shell script that takes an argument and checks if argument supplied is a file or a directory and reports accordingly. If the argument is a directory, display the contents of directory.

d) Write a shell script to demonstrate the creation of a menu to display list of files, process status, users of a system, current date, present working directory and exit from prompt (using case statement).

Task 3

a) Write an awk script to count the number of lines in a file that do not contain vowels.

b) Write an awk script to find the number of characters, words and lines in a file.

c) Create a student database file. Display all the records of the file, counts the number of records and display the average and total marks obtained by students.

Task 4

a) Write a C program that makes a copy of a file using standard I/O and system calls.

b) Implement in C the following UNIX commands using System calls

A. cat B. ls

c) Write a program that takes one or more file/directory names as command line input and reports the following information on the file.

A. File type. B. Number of links.
C. Time of last access. D. Read, Write and Execute permissions.

d) Write a C program that demonstrates redirection of standard output to a file.

Ex: ls> f1.

Task 5

a) Write a C program to create a child process and allow the parent to display “parent” and the child to display “child” with Process ID’s on the screen.

b) Write a C program to create a Zombie process.

c) Write a C program that illustrates how an orphan is created.

d) Write a C program that illustrates suspending and resuming processes using signals.

Task 6

a) Write a C program that illustrates how to execute two commands concurrently with a command pipe. Ex: - ls -l | sort

b) Write C programs that illustrate communication between two unrelated processes using named pipe.

Task 7: Design a lexical analyzer for tokenizing an expression and identify comment lines in the program.

Task 8: Implement top down parsing techniques.

- Brute force technique b) RDP

Task 9: Find the first set and follow of a given grammar.

Task 10: Design shift-reduce parser for a given grammar.

Task 11: Implement intermediate code generation and code generation for a given expression.

Task 12: a) LEX Program to count the number of lines, words and letters, capital letters, small letters and digits in a file.

b)Function usage in LEX program.

c)Design a simple arithmetic calculator: USE LEX and YACC.

Case Study: Implement parsing techniques for a given grammar and show DFA.

TEXT BOOKS

1. Unix the ultimate guide, SumitabhaDas, TMH.
2. Unix Network Programming, W.R.Stevens, Pearson/PHI
3. Principles of compiler design -A.V. Aho ,J.D.Ullman, Pearson Education.
4. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

REFERENCES

1. Unix System Programming using C++, T.Cahn.PHI.
2. Unix for programmers and users , third edition, Graham Glass, King Ables, Pearson education.
3. Lex&Yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
4. Compiler Construction- Loudon, Thomson

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

MICROCONTROLLERS LAB

Course Code: GR15A2059

L T P C

III Year I Semester

0 0 2 2

List of experiments on 2G kit

Task1: LED patterns

- a) Blinking LEDs, b) Serial lights, c) Half on/Half off, d) Alternate on/off

Task2: Switches & LEDs

- a) Press switch to make corresponding LED on, b) Press switch to make corresponding LED off
- c) First switch press, last LED on, d) First switch press, last LED off

Task3: LCD

- a) Character & string display on LCD, b) SW1-Display string1 on first line of LCD, c) SW2-Display string1 on first line of LCD, SW2

Task4: UART

- a) Echo Program, b) Take command from PC & glow corresponding LED, c) Press Switch & display switch number on PC, d) Display data received by UART on LCD

Task5: TRIAC

- a) 220V AC bulb switch on/off b) 220V AC fan speed control with fixed step size

Task6: ADC

- a) Raw ADC value display on LCE, b) Raw ADC value display on Hyper Terminal, c) Engineering unit conversion and display on LCD, d) Engineering unit conversion and display on Hyper Terminal
- e) Limit checking for temperature value and switching on fan using triac f) Limit checking for ambient light value and switching on light using triac.

Task7: DAC

- a) Fixed step incremented DAC, output seen on multi-meter, b) DAC input value received from Hyper Terminal c) DAC input value taken from switches

Task8: DC motor

- a) DC motor control-CW, CCW and stop using switches, b) DC motor control- CW, CCW and stop using commands received from Hyper Terminal

Task9: ZigBee

- a) Receive data on ZigBee from PC ZigBee dongle and display data on LEDs
- b) Receive data on ZigBee from PC ZigBee dongle and display data on LCD
- c) Read ADC and transmit data using ZigBee
- d) Triac based control of fan and light using data received on ZigBee

Task10: RF 433MHz

- a) Receive data on RF from another kit with RF transmitter. Connect PCs to both kits. Type in data in Hyper Terminal of Transmitter kit & see on Hyper Terminal of Receiver kit

- b) Read switches on transmitter kit, send their status on RF to receiver kit and control motor using switch status

Task11: Bluetooth

- a) Transfer data to PC using Bluelink, b) Receive data from PC using BlueLink & display on LCD c) Transfer data from mobile phone(using a J2ME app) and receive using Blue link and control motor operation d) Transfer data from mobile phone(using a J2ME app) and receive using BlueLink and control electrical appliance operation

Task12: Ethernet

- a) Transfer data to PC using WIZI05SR and display on Hyper Terminal, b) Implement an embedded web server

Task13: RTC

- a) Read and display RTC data on LCD, b) Read and display RTC data on Hyper Terminal, c) Set RTC using Hyper terminal and display data on Hyper Terminal, d) Implement an Event Logger with Time Stamp display

Task14: SDcard

- a) Transfer data to PC, store on SDcard and retrieve it back(block transfer) b) Implement FAT file system on SDcard c) Implement data acquisition system and store data in a CSV file on SD card with time stamp

Note: A minimum of 10 (Ten) experiments have to be performed and recorded by the candidate to attain eligibility for Practical Examination

Lab methodologies:

- Assignments
- Lab experiments with Arduino software

ADVANCED JAVA PROGRAMMING LAB

Course Code: GR15A3054

L T P C

III Year I Semester

0 0 2 2

Exception Handling and Packages:

Task 1:

Create a package griet.cse.hyd<your branch id>. <your id>.<your first name>.

For e.g., griet.cse.Hyd05.14241A0510.Anu

Now create a Greeter class in this package having the following features:

Attributes:

name String //indicates name of the person to be greeted

Member functions:

Greeter(aName) //constructor to initialize the name of the person to be greeted by this greeter.

sayHello() //returns a hello message with the name of the person initialized earlier.

sayGoodBye() //bids goodbye to the person named earlier.

Create another class in the same package called Advisor that has the following features:

Attributes:

message string[5] // contains five advice messages

Member functions:

advisor() // default constructor to initialize an array of strings with atleast five advice messages

getAdvice() // randomly selects an advice from the available list of messages and returns it to the caller of this method

Outside the package, from your working directory, create a class GreeterTest that constructs Greeter objects for all command-line arguments and prints out the results of calling sayHello().

The program should then display an advice and finally bid goodbye to each of the persons/entities in reverse order of the names entered at the command line.

Task 2:

a) Create a class Number having the following features:

Attributes

int first number

int second number

result double stores the result of arithmetic operations performed on a and b

Member functions

Number(x, y) constructor to initialize the values of a and b

add() stores the sum of a and b in result

sub() stores difference of a and b in result

mul() stores product in result
div() stores a divided by b in result

Test to see if b is 0 and throw an appropriate exception since division by zero is undefined.

Display a menu to the user to perform the above four arithmetic operations.

b) Create a class BankAccount having the members as given below:

1.accNo integer 2.custName string
3.accType string (indicates 'Savings' or 'Current') 4.balance float

Include the following methods in the BankAccount class:

1.void deposit(float amt); 2.void withdraw(float amt); 3.float getBalance();

- deposit(float amt) method allows you to credit an amount into the current balance. If amount is negative, throw an exception Negative Amount to block the operation from being performed.
- withdraw(float amt) method allows you to debit an amount from the current balance. Please ensure a minimum balance of Rs. 1000/- in the account for savings account and Rs. 5000/- for current account, else throw an exception Insufficient Funds and block the withdrawal operation. Also throw an exception Negative Amount to block the operation from being performed if the amt parameter passed to this function is negative.
- getBalance() method returns the current balance. If the current balance is below the minimum required balance, then throw an exception Low Balance Exception accordingly.

Have constructor to which you will pass, accno, cust_name, acctype and initial balance. And check whether the balance is less than 1000 or not in case of savings account and less than 5000 in case of a current account. If so, then raise a Low Balance Exception.

In either case if the balance is negative then raise the Negative Amount exception accordingly.

c) Create a class USERTRAIL with following specifications.

val1, val2 type int

Methods

- boolean show () will check if val1 and val2 are greater or less than Zero

Have constructor which will val1, val2 and check whether if it is less than 0 then raise a custom Exception (name: Illegal value exception.)

IO Streams & GUI Programming:

Task 3:

Write a program which take source file and destination file as input as command line arguments. It copies the source file contents to destination file. If source file does not exist, it should give appropriate message to use. If destination file does not exist, it should be created. If it exists, program should ask that, "whether you want to overwrite?(Yes/No)". On the basis of user choice, appropriate action should be taken.

Note: Files may be any type of files like bitmap files, exe files, text files etc

Task 4:

a) Write a stream based program which will accept Roll Number, Name, Age and Address from user. Age and Roll-no should be numeric. Handle with built-in exception. None of the field should be blank. Handle with custom exception, Ask user, whether to write the data in the file .If answer is yes then data is saved into a file as an object (User can write many records in the file), otherwise terminate the current program .Write another program to display all the records saved into the file.

b) Write a program which will accept an input String from and write the input in the file io.txt, Show size of the file, Read contents from the file and display them on console, Delete io.txt file using File class

Multithreading:

Task 5:

Write a multithreaded program that will accept 4 strings from the command line and search in a particular file for a given string and display the status of each search on the screen. Note that, all threads are operating on the same file. Write a Java application that will accept two filenames (text files) as command line arguments and use two threads to read contents from the two text files. Each of the threads should sleep for a random time after displaying filename with each line. Write a java application that will create and start two threads. One thread will read a text file (Number.txt) containing five positive integers one on each line. The second thread should calculate factorial of the number read by the first thread and print the message on the screen as “Factorial of x is y”, here x is number & y is factorial of the number. The two threads should work in synchronization. Handle all necessary exceptions.

Task 6:

a) Implement three classes: Storage, Counter and Printer.

- The Storage class should store an integer.
- The Counter class should create a thread and starts counting from 0 (0,1,2,3...) and stores each value in the Storage class.
- The Printer Class should create a thread that keeps reading the value in the Storage class and printing it.

Write a program that creates an instance of the Storage class and set up a Counter and Printer object to operate on it. Identify that, whether synchronization is required or not in this program. If yes, implement it.

b) Modify the above program to ensure that each number is printed exactly once, by adding suitable synchronization.

Networking & Collections:

Task 7:

a) Write console based networking application as follows, Write client Application which should send hello to server. Server application should accept client request and it should send welcome client message to client application.

b) Write a client application which will send login Id and password to the server as an object. Server Application should respond to the client request by validating login Id and Password. If login Id and Password are GRIET and CSE respectively send valid user or invalid user message to client application. Create a class called Login, attribute are user Id and password.

Task 8:

a) Write a program to add list of student names to ArrayList and it should find a particular name whether it exists or not in the list.

b) Create a Product class with Product Id & Product Name. Write a program to accept information of 10 products and store that in Hash Table. Search a particular product in the Hash Table. Remove a particular product id and product name from the Hash Table.

The product list is as follows:

Product Id	Product Name
P001	Maruti800

P002	MarutiZen
P003	MarutiEsteem

Task 9:

Implement vector class for this problem

- Create an Employee class which will have details like EmployeeNo, EmployeeName and Address. You should pass value for EmployeeNo, EmployeeName and Address through constructor.
- Create a method addInput() which will add employee details to vector.
- Create method display() which should display all data from vector using Enumeration.

Note : addInput() and display() should not be member functions of Employee class.

Task 10:

Create Phone book having user interface like

- 1.Add new phone book entry
- 2.Search Phone Number
- 3.Quit.

Option 1 it allows add name and Phone no.

Option 2 it has to take name as input from the user based on that it should return phone number

Option 3: will terminate the program

Use HashMap to store phone book entries.

JDBC:

Task 11:

- Write a java program to display the first 5 records from the table Emp. (Use Type-4 driver for oracle)
- Write a java program to display the first 5 records from the table Emp. (Use Type-1 driver for oracle)
- Write a java program to display the first 5 records from the table Emp. (Use Type-1 driver for MS-Access)
- Write a java program to find number of records in the table Emp. (Use Type-4 driver for Oracle)

Task 12:

Write a java program as follows:

Accept the empno from the user.

a) Write a method display() which takes the empno as parameter and displays the detail information of the employee.

b) Write a method update() which takes the empno as a parameter.

Displays the current salary and updates the salary entered by user.

c) Delete the record of the employee whose empno is entered. If employee with the entered empno doesn't exist ask for the new empno .if employee with the empno does not exist display appropriate message to user.

Oracle Query to For Emp Table.

```
create table emp
```

```
( EMPNO NOT NULL NUMBER(4),
```

```
ENAME VARCHAR2(10) ,
```

```
JOB    VARCHAR2(9),  
MGR    NUMBER(4),  
HIREDATE DATE,  
SAL    NUMBER(7,2),  
COMM   NUMBER(7,2),  
DEPTNO NUMBER(2)  
);
```

Task 13:

Any Applications on Result Set , Prepared Statement, Callable Statement, Transaction Management.

WATER RESOURCES ENGINEERING
(Open Elective-I)

Course Code: GR15A3151
III Year. I Semester

L T P C
2 1 0 3

UNIT I

Introduction to Engineering Hydrology and its applications: Hydrologic Cycle, types and forms of precipitation, rainfall measurement, types of Rain gauges, computation of average rainfall over a basin, processing of rainfall data-adjustment of record-Rainfall Double Mass Curve. Runoff-Factors affecting Runoff over a Catchment- Empirical and Rational Formulae.

Abstraction from rainfall: Evaporation, factors effecting evaporation, Measurement of evaporation- Evapotranspiration- Penman and Blaney&Criddle Methods -Infiltration, factors affecting infiltration, measurement of infiltration, infiltration indices'.

UNIT II

Distribution of Runoff: Hydrograph Analysis Flood Hydrograph – Effective Rainfall - Base Flow- Base Flow Separation - Direct Runoff Hydrograph– Unit Hydrograph, definition and limitations of application of Unit hydrograph, Derivation of Unit Hydrograph from Direct Runoff Hydrograph and vice versa S- hydrograph, Synthetic Unit Hydrograph.

UNIT III

Ground water Occurrence: Types of aquifers, aquifer parameters,' porosity' Specific yield, permeability, transmissivity and storage coefficient, Darcy's law, radial flow to wells in confined and unconfined aquifers, Types of wells, Well Construction - Well Development.

UNIT IV

Necessity and importance of irrigation: Advantages and ill-effects of irrigation, Types of irrigation, Methods of application of irrigation water, Indian Agriculture soils, Methods of improving soil fertility-Crop rotation, preparation land for irrigation, Standards of quality for irrigation water.

Soil-water-plant relationship: Vertical distribution of soil moisture, soil moisture constants, soil moisture tension, consumptive use, Duty and delta, factors Affecting duty- design discharge for a water course. The depth and frequency of Irrigation, Irrigation efficiencies-Water Logging.

UNITV

Classification of canals: Design of Irrigation canals by Kennedy's and Lacey's theories, balancing depth of cutting, IS standards for canal design canal lining.

Design discharge over a catchment: computation of design discharge–rational formula, SCS curve number method, flood frequency analysis introductory part only. Stream gauging-measurement and estimation of stream flow.

TEXT BOOKS

1. A text book of hydrology by P. Jaya Rami Reddy, laxmi publications pvt limited
2. Irrigation and water power engineering- B.C. Punmia, PandeB. B.Lal, Ashok kumarjain, Arunkumarjain- Laxmi publications 16th edition

REFERENCES

1. Elementary hydrology by V.P. Singh PHI publications
2. Irrigation and Water- Resources & Water Power by P'N 'Modi' Standard Book House.
3. Irrigation Water Management by D'K' Majundar' Printice Hall of Indra.
4. Irrigation and Hydraulic structures by S'K'Grag'
5. Applied Hydrology by VenTe Chow' David R' MaidmentlarryW'MaysTataMC. GrawHill'
6. Introduction to Hydrology by Warren Viessman' Jr' Garyl' Lewis'
7. Handbook of Hydrology by David R. Maidment (Editour-in-chief)-McGrow - Hill

SOLAR AND WIND ENERGY SYSTEMS
(Open Elective- I)

Course Code: GR15A3152
III Year I Sem

L T P C
2 1 0 3

UNIT I

Solar Energy Basics: The sun as a source of energy, The Earth Sun, Earth Radiation Spectrums, Extra-terrestrial and Terrestrial Radiations, Spectral Energy Distribution of Solar Radiation, Depletion of Solar Radiation, Solar Radiation Data, Measurement of Solar Radiation, Solar Time(Local Apparent Time), Solar Radiation Geometry, Solar Day Length, Empirical Equations for Estimating Solar Radiation Availability on Horizontal Surface For Cloudy skies, Hourly Global, Diffuse and Beam Radiation on Horizontal Surface Under Cloudless Skies, Solar Radiation on Inclined Plane Surface

UNIT II

Solar Thermal Systems: Solar Collectors, Solar Water Heater, Solar Passive Space-Heating and Cooling Systems, Solar Ustrial Heating Systems, Solar Refrigeration and Air-Conditioning Systems, Solar Cookers, Solar Furnaces, Solar Green House, Solar Dryer, Solar Distillation(or Desalination of Water), Solar Thermo-Mechanical Systems.

UNIT III

Solar Photovoltaic Systems: Solar Cell Fundamentals, Solar Cell Characteristics, Solar Cell Classification, Solar Cell, Module, Panel and Array Construction, Maximizing The Solar PV Output and Load Matching, Maximizing Power point tracker(MPPT),Balance of System Components, Solar PV Systems, Solar PV Applications

UNIT IV

Wind Energy: Origin of Winds, Nature of Winds, Wind Turbine Siting, Major Applications of Wind Power, Basics of Fluid Mechanics, Wind Turbine Aerodynamics.

UNIT V

Wind Energy Conversion Systems: Wind Energy Conversion Systems (WECS), Wind-Diesel Hybrid System, Effects of Wind Speed and Grid Condition (System Integration), Wind Energy Storage, Environmental Aspects.

TEXT BOOKS

1. B.H.Khan, "Non- Conventional Energy Resources", 2nd edition, Tata McGraw-Hill, New Delhi

REFERENCES

1. SP Sukhatme, Solar Energy - Principles of thermal collection and storage, 2nd edition, Tata McGraw-Hill, New Delhi

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

APPLIED THERMODYNAMICS

(Open Elective-I)

Course Code: GR15A3153

L T P C

III B. Tech I Semester

2 1 0 3

UNIT I

Steam Power Cycles: Carnot cycle, Rankine cycle, Modified Rankine - Schematic layouts, Thermodynamic Analysis, Concept of Mean Temperature of Heat addition, Methods to improve cycle performance – Regeneration & Reheating. Binary vapour cycle

Combustion: Fuels and combustion, basic chemistry, combustion equations, stoichiometric air fuel ratio, volumetric and mass basis conversion, Flue gas analysis by Orsat apparatus.

UNIT II

Boilers : Classification – Working principles – with sketches including H.P. Boilers, L.P. Boilers and Modern H.P. Boilers – Mountings and Accessories – Working principles, Boiler horse power, equivalent of evaporation, efficiency and heat balance. Draught, classification – Height of chimney for given draught and discharge, condition for maximum discharge, efficiency of chimney – Artificial draught: induced, forced, balanced and steam jet draught,

UNIT III

Steam Nozzles: Function of a nozzle – applications - types, Flow through nozzles, thermodynamic analysis, assumptions -velocity of nozzle at exit-Ideal and actual expansion in nozzle, velocity coefficient, condition for maximum discharge, critical pressure ratio, criteria to decide nozzle shape: Super saturated flow, its effects, degree of super saturation and degree of under cooling - Wilson line.

Steam Condensers: Requirements of steam condensing plant – Classification of condensers – working Principle of different types – vacuum efficiency and condenser efficiency – air leakage, sources and its affects, Air pump- cooling water requirement. Cooling towers.

UNIT IV

Steam Turbines: Classification – Impulse turbine ,De-Laval Turbine its features; Mechanical details – Velocity diagram – effect of friction – power developed, axial thrust, blade or diagram efficiency – condition for maximum efficiency.-.

Reaction Turbine: Mechanical details – principle of operation, thermodynamic analysis of a stage.-Degree of reaction –velocity diagram – Parson’s reaction turbine – condition for maximum efficiency.

Compounding: Methods to reduce rotor speed-Velocity compounding and pressure compounding, pressure velocity compounding, Velocity and Pressure variation along the flow – combined velocity diagram for a velocity compounded impulse turbine.

UNIT V

Gas Turbines: Simple gas turbine plant – Ideal cycle, essential components – actual cycle – methods for improvement of performance - regeneration, inter cooling and reheating –Closed and Semi-closed cycles – merits and demerits, Brief concepts about compressors, combustion chambers and turbines of Gas Turbine Plant.

Jet Propulsion: Principle of Operation –Classification of jet propulsive engines – Working Principles with Schematic diagrams and representation on T-S diagram - Thrust, Thrust Power and Propulsion Efficiency– Turbo jet engines – Needs and Demands met by Turbo jet – Schematic Diagram, Thermodynamic Cycle, Performance Evaluation Thrust Augmentation – Methods.

Rockets: Working Principle – Classification – Propellant Type – Thrust, Propulsive Efficiency – Specific Impulse – Solid and Liquid propellant Rocket Engines.

TEXT BOOKS

1. Thermal Engineering / R.K. Rajput / Lakshmi Publications
2. Thermal Engineering-P.L.Ballaney/ Khanna publishers
3. Thermal Engineering/R.S.Khurmi/JS Gupta/S.Chand.

REFERENCES

1. Thermodynamics and Heat Engines / R. Yadav / Central Book Depot
2. Gas Turbines and Propulsive Systems – P.Khajuria&S.P.Dubey - /Dhanpatrai
3. Gas Turbines / Cohen, Rogers and SaravanaMuttoo / Addison Wesley – Longman
4. Thermal Engineering-M.L.Marthur& Mehta/Jain bros
5. Gas Turbines – V.Ganesan /TMH

Teaching Methodology: Power Point Presentations, Working models, White Board & Marker

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

PRINCIPLES OF E-COMMERCE

(OPEN ELECTIVE I)

Course Code: GR15A3154

L T P C

III Year I Semester

2 1 0 3

UNIT I

INTRODUCTION TO E-COMMERCE

E-commerce, Difference between E-commerce and E-business, Purpose of E-Commerce, Eight Unique Features of E-commerce Technology, Web 2.0, Types of E-commerce, Growth of the Internet and the Web, Origins and Growth of E-commerce, Understanding E-commerce.

UNIT II

E-COMMERCE BUSINESS MODELS AND CONCEPTS

E-commerce Business Models, Business-to-Consumer (B2C) Business Models, Business-to-Business (B2B) Business Models, Business Models in Emerging E-commerce Areas.

UNIT III

BUILDING AN E-COM WEB SITE

Building an E-commerce Web Site, Choosing Software, Choosing the Hardware, E-commerce Site Tools.

UNIT IV

ONLINE SECURITY AND PAYMENT SYSTEMS

Security Threats in the E-commerce Environment, Technology Solutions, payment systems, E-commerce Payment System, Electronic Billing Presentment and Payment.

UNIT V

ONLINE CONTENT AND MEDIA

Online Content, Online Publishing Industry, Online Entertainment Industry.

TEXT BOOK

Kenneth C. Laudon Carol GuercioTraver, "E-commerce: business, technology, society", Fifth edition, Pearson Prentice Hall, 2009. (Unit-1:Chapter -1, Unit-II: Chapter-2, Unit-III: Chapter-4, Unit-IV: Chapter-5, Unit-V:Chapter-10)

REFERENCES

1. Dave Chaffey, "E-Business and E-Commerce Management: Strategy, Implementation and Practice", Fifth edition, Pearson Education, 2013.
2. K.K. Bajaj, Debjani Nag, "E-Commerce: The Cutting Edge of Business", Second edition, McGraw Hill Education (India) Private Limited, 2005.
3. David Whiteley , "E-Commerce: Strategy, Technologies And Applications", McGraw Hill Education (India) Private Limited, 2001.
4. SteffanoKorper, "The E-Commerce Book: Building the E-Empire", Morgan Kaufmann, 2000.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

DATA MINING AND APPLICATIONS

(Open Elective – I)

Course Code: GR15A3155

L T P C

III Year I Semester

2 1 0 3

UNIT I

Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Major issues in Data Mining. Data Preprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT II

Mining Frequent Patterns, Associations and Correlations: Basic Concepts, Efficient and Scalable Frequent Itemset Mining Methods, Mining various kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint- Based Association Mining

UNIT III

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Back propagation, Support Vector Machines, Associative Classification, Prediction, Accuracy and Error measures, Evaluating the accuracy of a Classifier or a Predictor.

Cluster Analysis Introduction :Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Outlier Analysis - Distance-Based Outlier Detection, Density-Based Local Outlier Detection

UNIT IV

Mining World Wide Web: Mining web page layout structure, Identification of authoritative web pages using web link structures, Automatic Classification of Web Documents, Web Usage Mining.

Spatial Mining: Mining spatial association and colocation patterns, spatial clustering methods, spatial classification and spatial trend analysis.

UNIT V

Text Mining: Text Data analysis and Information retrieval, Dimensionality reduction for text, text mining approaches.

Applications and trends in Data Mining : Data Mining for Financial Data Analysis, , Data Mining for Telecommunication Industry, Data Mining for Intrusion Detection, Various themes on Data Mining, Social impacts of data mining

TEXT BOOKS

1. Data Mining – Concepts and Techniques - Jiawei Han and Micheline Kamber, Morgan Kaufmann Publishers, Elsevier, Second Edition, 2006.
2. Introduction to Data Mining – Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Pearson education.
3. Data Mining – Introductory and advanced topics – Margaret H. Dunham & S. Sridhar, Pearson Education.

REFERENCES

1. Data Mining Techniques – Arun K. Pujari, Second Edition, Universities Press.
2. Data Warehousing in the Real World, Sam Anahory and Dennis Murray, Pearson Edn Asia.

COMPUTER ARCHITECTURE AND ORGANIZATION
(Open Elective-1)

Course Code: GR15A3156

L T P C

III Year I Semester

2 1 0 3

UNIT I

Introduction

Computing and Computers, Evolution of Computers, VLSI Era, System Design; Register Level, Processor Level, CPU Organization, Data Representation, Fixed Point Numbers, Floating Point Numbers, Instruction Formats, Instruction Types, addressing modes.

UNIT II

Data Path Design

Fixed Point Arithmetic, Addition, Subtraction, Multiplication and Division, Combinational and Sequential ALUs, Carry look ahead adder, Robertson algorithm, booth's algorithm, non-restoring division algorithm, Floating Point Arithmetic, Coprocessor, Pipeline Processing, Pipeline design, Modified booth's Algorithm

UNIT III

Control Design

Hardwired Control, Microprogrammed Control, Multiplier Control Unit, CPU Control Unit, Pipeline Control Instruction Pipelines, Pipeline Performance, Superscalar Processing, Nano Programming.

UNIT IV

Memory Organization

Random Access Memories, Serial Access Memories, RAM Interfaces, Magnetic Surface Recording, Optical Memories, multilevel memories, Cache & Virtual Memory, Memory Allocation, Associative Memory.

UNIT V

System Organization

Communication methods, Buses, Bus Control, Bus Interfacing, Bus arbitration, IO and system control, IOinterface circuits, Handshaking, DMA and interrupts, vectored interrupts, PCI interrupts, pipelineinterrupts, IOP organization, operation systems, multiprocessors, fault tolerance, RISC and CISC processors, Superscalar and vector processor.

TEXT BOOKS:

1. John P.Hayes, 'Computer architecture and Organisation', TMH Third edition, 1998.
2. V. Carl Hamacher, Zvonko G. Varanescic and Safat G. Zaky, "Computer Organisation", V edition, McGraw-Hill Inc, 1996.

REFERENCES:

1. Morris Mano, "Computer System Architecture", Prentice-Hall of India, 2000.
2. Paraami, "Computer Architecture", BEH R002, Oxford Press.
3. P.Pal Chaudhuri, "Computer organization and design", 2nd Ed., Prentice Hall of India, 2007.
4. G.Kane & J.Heinrich, "MIPS RISC Architecture", Englewood cliffs, New Jersey, Prentice Hall, 1992.

**GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
DESIGN AND ANALYSIS OF ALGORITHMS**

Course Code: GR15A3056

L T P C

III Year II Semester

3 1 0 4

UNIT I

Introduction: Definition of algorithm, properties of an Algorithm, performance analysis--space complexity & time complexity, asymptotic notations: big oh notation, omega notation, theta notation, little oh notation & little omega notation.

Disjoint sets: disjoint set Representation, Operations, union and find algorithms.

UNIT II

Divide and conquer: General method, applications, binary search, quick sort, merge sort, strassen's matrix multiplication. Time complexities of divide and conquer algorithms.

Dynamic programming -I: General method, applications, matrix chain multiplication, optimal binary search trees, 0/1 knapsack problem

UNIT III

Dynamic programming -II: All pairs shortest path problem, travelling sales person problem, reliability design.

Greedy method: General method, applications-- job sequencing with deadlines, knapsack problem, minimum cost spanning trees, single source shortest path problem.

UNIT IV

Backtracking: General method, applications, n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT V

Branch and Bound: General method, applications, travelling sales person problem, /1 knapsack problem: LC branch and bound solution, FIFO branch and bound solution

NP-hard and NP-complete problems: Basic concepts, non-deterministic algorithms, deterministic algorithms, Introduction to P class problems, NP class problems.

TEXT BOOKS

1. Ellis Horowitz, SatrajSahni and S Rajasekharam, Fundamentals of Computer Algorithms, Galgotia publishers
2. T H Cormen, C E Leiserson, and R L Rivest, Introduction to Algorithms, 3rdEdn, Pearson Education

REFERENCES

1. R C T Lee, Hang and TT Sai, Introduction to Design and Analysis of Algorithms, A strategic approach, TMH

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

SOFTWARE ENGINEERING

Course Code: GR15A3057

L T P C

III Year II Semester

3 1 0 4

UNIT I

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, Software myths.

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

Process models: The waterfall model, Incremental process models, Evolutionary process models, The 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.

UNIT III

Design Engineering: Design process and Design quality, Design concepts, the design model.

Creating an architectural design: Software architecture, Data design, Architectural styles and patterns, Architectural Design.

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT IV

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

Product metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

UNIT V

Metrics for Process and Products: Software Measurement, Metrics for software quality.

Risk management: Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

Quality Management : Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO

9000 quality standards.

TEXT BOOKS

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition. McGrawHill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson education.

REFERENCES

1. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers
2. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiley.
3. Systems Analysis and Design- Shely Cashman Rosenblatt, Thomson Publications.
4. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.

WEB TECHNOLOGIES

Course Code: GR15A3059

L T P C

III Year II Semester

3 1 0 4

UNIT I

HTML Common tags: List, Tables, images, forms, Frames; Cascading Style sheets; Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

UNIT II

Java Beans: Introduction to Java Beans, Advantages of Java Beans, JDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's.

Database Access: Database Programming using JDBC, Studying Javax.sql.* package

UNIT III

Web Servers and Servlets: Tomcat web server, Introduction to Servlets: Lifecycle of a Servlet, The Servlet API, The javax.servelet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues

UNIT IV

JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Data between Pages – Sharing Session and Application Data – Memory Usage Considerations, Deploying JAVA Beans in a JSP Page.

UNIT V

Model-View-Controller Architecture(MVC), Introduction to struts framework, Validator, Programming using struts framework.

TEXT BOOKS

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech
2. The complete Reference Java Seventh Edition by Herbert Schildt. TMH.
3. Java Server Pages –Hans Bergsten, SPD O'Reilly
4. Struts: The Complete Reference by James Holmes. McGraw-Hill/Osborne.

REFERENCES

1. Programming world wide web-Sebesta,Pearson
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES
By Marty Hall and Larry Brown Pearson
3. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
4. An Introduction to web Design and Programming –Wang-Thomson
5. Web Applications Technologies Concepts-Knuckles,John Wiley
6. Java Script,D.Flanagan,O'Reilly,SPD.
7. Struts 2,Black Book, 2nd Edition,deamtech Press.
8. Web Warrior Guide to Web Programmimg-Bai/Ekedaw-Cengage Learning.
9. Beginning Web Programming-Jon Duckett, WROX.
10. Java Server Pages, Pekowsky, Pearson.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
MULTICORE COMPUTING AND ARCHITECTURE
(PROFESSIONAL ELECTIVE – II)

Course Code: GR15A3062

L T P C

III Year II Semester

3 1 0 4

UNIT I

Introduction to Multi-core Architecture: Motivation, Parallel Computing Platforms, Differentiation between Hyper Threading and Multi-Core architectures, Multi-Threading on Single-Core and Multi-Core Platforms, Understanding the Performance.

System Overview on Threading: Definition, Application Programming Models and Threading, Virtual Environment.

UNIT II

Programming Paradigms: Fundamental Concepts of Programming: Task Decomposition, Data Decomposition and Data Flow decomposition, Parallel Programming Patterns.

Threading and Parallel Programming Constructs: Synchronization, Critical sections, Deadlock, Synchronization Primitives, Flow-Control based Concepts

UNIT III

Models: Threading APIs for Microsoft Windows, Microsoft .Net Framework, POSIX threads.

Open MP: Challenges in Threading a Loop, Data- race conditions, Performance Oriented Programming, Open MP Environment Variables, Compiling, Debugging.

UNIT IV

Algorithm Structure Design Space: Introduction, Choosing an Algorithm Structure Pattern, Task Parallelism Pattern, Divide and Conquer Pattern, Recursive Data Pattern, Pipeline Pattern and Event –Based Coordination Pattern.

Basics of MPI: Getting Started, Basic Point-to-Point Message Passing, Collective Operations and Single –Core Processor Fundamentals.

UNIT V

Optimizations: Enhancing Parallelism, Dependence Analysis, Tiling for Locality and Communication, Aggregation for Communication. Load- Balancing Strategies, Virtualization. Speculative Parallelization, Transactional Memories. Bottlenecks, Small Critical Sections.

TEXT BOOKS

1. Multi-Core Programming-: Increasing Performance through Software , by Shameem Akther and J. Roberts, Intel Press, 2006 Intel Corporation. (Unit I to Unit III)
2. Patterns for Parallel Programming, Timothy G. Mattson, Beverly A. Sanders, Berna L. Massingil, pearson education,2004 (Unit –IV)
3. Parallel Programming: Techniques And Applications Using Networked Workstations And Parallel Computers, 2/E, Pearson Education India, 01-Sep-2006 (Unit V)

REFERENCES

1. Introduction to High Performance Computing for Scientists and Engineers ,Chapman & Hall/CRC Computational Science ,July 02, 2010 by CRC Press.
2. Computer Organization and Design, David A. Patterson, John L. Hennessy, Morgan Kaufmann Publishers, 1998.

BIG DATA ANALYTICS

(PROFESSIONAL ELECTIVE – II)

Course Code: GR15A3111

L T P C

III Year II Semester

3 1 0 4

UNIT I

INTRODUCTION TO BIG DATA AND HADOOP

Introduction to Big Data Platform – Big Data definition, Challenges of Conventional Systems: enterprise/structured data, Social/unstructured Data, Unstructured data needs for Analytics - Intelligent data analysis – Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools - History of Hadoop- Components of Hadoop- Analyzing the Data with Hadoop-Different Ecosystems of Hadoop - IBM Big Data Platform Strategy and Introduction to Infosphere Big Insights.

UNIT II

HDFS (Hadoop Distributed File System)

Significance of HDFS in Hadoop, Design of HDFS, HDFS Architecture overview, 5 daemons of Hadoop: Name Node, Data Node, Secondary Node, Job Tracker and Task Tracker, their functionality, Data Storage in HDFS : Introduction about Blocks, Data replication, Accessing HDFS : CLI(Command Line Interface) and admin commands, How to store various types of data in HDFS using CLI-commands, Safe mode concepts in HDFS.

UNIT III

Map Reduce

Map Reduce Architecture, Map Reduce Programming Model, Its working, Map Reduce Java API, Anatomy of Map Reduce Job run, Failures, Job Scheduling, Sort & Shuffle phase, Task Execution, Reducer phase. Map Reduce Data types, Map Reduce Features.

Introduction to Oozie, Overview of Managing job Execution.

Apache Pig: Introduction to Apache Pig, Map Reduce Vs Apache Pig, SQL Vs Apache Pig, Pig Data types, Modes Of Execution in Pig.

UNIT IV

Data Stores on Hadoop

Moving Data into Hadoop with Sqoop and Flume

Hive: Introduction, architecture Integration with Hadoop, Hive Tables: Managed Tables, External Tables, Hive Query Language(Hive QL), load the data to Hive Tables.

Hbase: Introduction to HBase, Hbase Usecases, Hbase basics, Hbase Architecture, Hmaster. Introduction to Zookeeper.

UNIT V

IBM APPLICATIONS ON HADOOP

Big Sheets: Introduction, Processing and Accessing Big Sheets, Big SQL Integration.

Big R: Architecture, API, Performance and Scalability Use cases.

TEXT BOOKS

1. Tom White “Hadoop: The Definitive Guide” Third Edit on, O’reily Media, 2012.

REFERENCES

1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
2. Jay Liebowitz, “Big Data and Business Analytics” Auerbach Publications, CRC press (2013)
3. Tom Plunkett, Mark Hornick, “Using R to Unlock the Value of Big Data: Big Data Analytics with Oracle R Enterprise and Oracle R Connector for Hadoop”, McGraw-Hill/Osborne Media (2013), Oracle press.
4. AnandRajaraman and Jeffrey David Ulman, “Mining of Massive Datasets”, Cambridge University Press, 2012.
5. Bill Franks, “Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics”, John Wiley & sons, 2012.
6. Glen J. Myat, “Making Sense of Data”, John Wiley & Sons, 2007
7. Pete Warden, “Big Data Glossary”, O’Reily, 2011.
8. Michael Mineli, Michele Chambers, AmbigaDhiraj, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley Publications, 2013.
9. ArvindSathi, “BigDataAnalytics: Disruptive Technologies for Changing the Game”, MC Press, 2012
10. Paul Zikopoulos ,Dirk DeRoos , Krishnan Parasuraman , Thomas Deutsch , James Giles , David Corigan , "Harness the Power of Big Data The IBM Big Data Platform ", Tata McGraw Hill Publications, 2012.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

INFORMATION SECURITY

(PROFESSIONAL ELECTIVE – II)

Course Code: GR15A3058

L T P C

III Year II Semester

3 1 0 4

UNIT I

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.

Conventional Encryption Principles, Conventional encryption algorithms(DES,Blowfish,Idea), cipher block modes of operation, location of encryption devices, key distribution, Approaches of Message Authentication, Secure Hash Functions(MD-5,SHA-1) and HMAC.

UNIT II

Public key cryptography principles, public key cryptography algorithms (RSA, Deffie-Hellman), digital signatures, digital Certificates, Certificate Authority and key management, Kerberos, X.509 Directory Authentication Service.

UNIT III

Email privacy: Pretty Good Privacy (PGP) and S/MIME.

UNIT IV

IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management, 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, Trusted System, Intrusion Detection Systems.

TEXT BOOKS

1. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education.
2. Hack Proofing your network by Ryan Russell, Dan Kaminsky, Rain ForestPuppy, Joe Grand, David Ahmad, Hal Flynn IdoDubrawsky, Steve W.Manzuik and Ryan Permech, wileyDreamtech

REFERENCES

1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Network Security - Private Communication in a Public World by Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI.
3. Cryptography and network Security, Third edition, Stallings, PHI/Pearson
4. Principles of Information Security, Whitman, Thomson.
5. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
6. Introduction to Cryptography, Buchmann, Springer.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

WEB TECHNOLOGIES LAB

Course Code: GR15A3063

L T P C

III Year II Semester

0 0 2 2

XML editor like Altova Xml-spy [www.Altova.com/XMLSpy – free] , Stylusstudio , etc.,

1. A database either Mysql or Oracle
2. JVM(Java virtual machine) must be installed on your system
3. BDK(Bean development kit) must be also be installed

Task -1:

Design the following static web pages required for an online book store web site.

1) HOME PAGE:

The static home page must contain three **frames**.

Top frame : Logo and the college name and links to Home page, Login page, Registration page,

Catalogue page and Cart page (the description of these pages will be given below).

Left frame : At least four links for navigation, which will display the catalogue of respective links.

For e.g.: When you click the link “CSE” the catalogue for CSE Books should be displayed in the Right frame.

Right frame: The *pages to the links in the left frame must be loaded here*. Initially this page contains description of the web site.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart

CSE ECE EEE CIVIL	Description of the Web Site
----------------------------	-----------------------------

Fig 1.1

2) LOGIN PAGE:

This page looks like below:



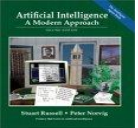




Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Login : <input style="width: 100px;" type="text"/> Password: <input style="width: 100px;" type="password"/> <div style="display: flex; justify-content: center; gap: 20px;"> <input type="button" value="Submit"/> <input type="button" value="Reset"/> </div>			

3) CATOLOGUE PAGE:

The catalogue page should contain the details of all the books available in the web site in a table.

The details should contain the following:

1. Snap shot of Cover Page.
2. Author Name.
3. Publisher.
4. Price.
5. Add to cart button.

Web Site Name				
Logo				
Home	Login	Registration	Catalogue	Cart
CSE		Book : XML Bible Author : Winston Publication : Wiely	\$ 40.5	
ECE		Book : AI Author : S.Russel Publication : Princeton hall	\$ 63	
EEE		Book : Java 2 Author : Watson Publication : BPB publications	\$ 35.5	
CIVIL		Book : HTML in 24 hours Author : Sam Peter Publication : Sam	\$ 50	

		publication		
--	--	-------------	--	--

Note: Week 2 contains the remaining pages and their description.

Task -2:

4) CART PAGE:

The cart page contains the details about the books which are added to the cart.

The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE	Book name	Price	Quantity	Amount
ECE				
EEE	Java 2	\$35.5	2	\$70
CIVIL	XML bible	\$40.5	1	\$40.5
			Total amount -	\$130.5

5) REGISTRATION PAGE:

Create a “*registration form*” with the following fields

- 1) Name (Text field)
- 2) Password (password field)
- 3) E-mail id (text field)

- 4) Phone number (text field)
- 5) Sex (radio button)
- 6) Date of birth (3 select boxes)
- 7) Languages known (check boxes – English, Telugu, Hindi, Tamil)
- 8) Address (text area)

Task 3:

VALIDATION:

Write *JavaScript* to validate the following fields of the above registration page.

1. Name (Name should contains alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

Note : You can also validate the login page with these parameters.

Task 4:

Design a web page using **CSS (Cascading Style Sheets)** which includes the following:

- 1) Use different font, styles:

In the style definition you define how each selector should work (font, color etc.). Then, in the body of your pages, you refer to these selectors to activate the styles.

For example:

```
<HTML>
<HEAD>
<style type="text/css">
B.headline {color:red; font-size:22px; font-family:arial; text-
decoration:underline}
</style>

</HEAD>

<BODY>
<b>This is normal bold</b><br>
Selector {cursor:value}
```

For example:

```
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink {cursor:help}
</style>
</head>

<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>

<b class="headline">This is headline style bold</b>
</BODY>

</HTML>
```

- 2) Set a background image for both the page and single elements on the page.
You can define the background image for the page like this:

```
BODY {background-image:url(myimage.gif);}
```

- 3) Control the repetition of the image with the background-repeat property.

As background-repeat: repeat Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

- 4) Define styles for links as

```
A:link
A:visited
A:active
A:hover
```

Example:

```
<style type="text/css">
A:link {text-decoration: none}
A:visited {text-decoration: none}
A:active {text-decoration: none}
A:hover {text-decoration: underline; color: red;}
</style>
```

5) Work with layers:

For example:

LAYER 1 ON TOP:

```
<div style="position:relative; font-size:50px; z-index:2;">LAYER 1</div>
<div style="position:relative; top:-50; left:5; color:red; font-size:80px; z-
index:1">LAYER 2</div>
```

LAYER 2 ON TOP:

```
<div style="position:relative; font-size:50px; z-index:3;">LAYER 1</div>
<div style="position:relative; top:-50; left:5; color:red; font-size:80px; z-
index:4">LAYER 2</div>
```

6) Add a customized cursor:

Selector {cursor:value}

For example:

```
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>

<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>
```

Task 5:

Write an XML file which will display the Book information which includes the following:

- 1) Title of the book

- 2) Author Name
- 3) ISBN number
- 4) Publisher name
- 5) Edition
- 6) Price

Write a Document Type Definition (DTD) to validate the above XML file.

Display the XML file as follows.

The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.

Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.

Hint: You can use some xml editors like XML-spy

Task 6:

VISUAL BEANS:

Create a simple visual bean with a area filled with a color.

The shape of the area depends on the property shape. If it is set to true then the shape of the area is Square and it is Circle, if it is false.

The color of the area should be changed dynamically for every mouse click. The color should also be changed if we change the color in the “property window “.

Task 7:

- 1) Install TOMCAT web server and APACHE.
While installation assign port number 4040 to TOMCAT and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.
- 2) Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root.
Access the pages by using the urls : <http://localhost:4040/rama/books.html> (for tomcat)
<http://localhost:8080/books.html> (for Apache)

Task 8:

User Authentication :

Assume four users user1,user2,user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a servlet for doing the following.

1. Create a Cookie and add these four user id's and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user(i.e., user-name and password match) you should welcome him by name(user-name) else you should display " You are not an authenticated user ".

Use init-parameters to do this. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters() method.

Task 9:

Install a database(Mysql or Oracle).

Create a table which should contain at least the following fields: name, password, email-id, phone number(these should hold the data from the registration form).

Practice 'JDBC' connectivity.

Write a java program/servlet/JSP to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page (week2).

Task 10:

Write a JSP which does the following job:

Insert the details of the 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database (similar to week8 instead of cookies).

Task 11:

Create tables in the database which contain the details of items (books in our case like Book name , Price, Quantity, Amount) of each category. Modify your catalogue page (week 2)in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using JDBC.

Task 12:

HTTP is a stateless protocol. Session is required to maintain the state.

The user may add some items to cart from the catalog page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time(i.e., from different systems in the LAN using the ip-address instead of localhost). This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method `session.invalidate()`).

Modify your catalogue and cart JSP pages to achieve the above mentioned functionality using sessions.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED ENGLISH COMMUNICATION SKILLS LAB

Course Code: GR15A3100

L T P C

III Year II Semester

0 0 2 2

UNIT I

Functional English

Starting a conversation, responding appropriately and relevantly. Body Language, Role play in different situations

UNIT II

Vocabulary

Synonyms & Antonyms, Word Roots, One word substitutes, Prefixes & Suffixes, Study of word origin, Idioms and Phrases, Analogy.

UNIT III

Group Discussion

Introduction to Group Discussion its features and qualities desired in a participant of Group Discussion.

UNIT IV

Presentation Skills

Knowing audience; acquiring content; organizing ideas; foreseeing the possible clarifications sought; adopting of appropriate medium; positive stage presence; Presenting and feedback

UNIT V

Letter Writing & Résumé Writing

Manual and Emailing; types and formats; content and body of the letter. Email etiquettes; Resume Writing, tools required for writing resume's, role of cover letter in a resume.

UNIT VI

Interview Skills

Introduction, various types of questions asked in an interview, qualities required to be a competent interviewee.

UNIT VII

Reading comprehension

Introduction, types of reading, qualities of a good reader

UNIT VIII

Technical Report Writing

Formats and types of reports

REFERENCES

1. English language laboratories: A Comprehensive Manual; NiraKonar, PHI Learning Pvt.Ltd.,Delhi.
2. Effective Technical Communication: A Guide for Scientist and Engineers;Barun K. Mitra, OUP.
3. Great Answers to Tough Interview Questions; Martin John Yate; Seventh Edition;Kogan Page.
4. Business Communication; HorySankarMukerjee;OUP.
5. Technical Communication, Meenakshi Raman, Sangeeta Sharma, Oxford higher Education.
6. Professional Presentations; Malcom Goodale; Cambridge University Press.
7. Murphy's English Grammar with CD, Murphy, Cambridge University Press.
8. Effective Technical Communication, M. Ashraf Rizvi, Tata McGraw Hill.
9. Communication Skills, Sanjay Kumar, PushpLatha, Oxford Higher Education.
10. Business communication; Second Edition,Prentice Hall of India , New Delhi.
11. English for Engineers Made Easy, AedaAbidi, Ritu Chaudhry, Cengage Learning.
12. Effective Business Communication ; Seventh Edition; Murphy, HertaA.,Herbert W. Hildebrandt, and Jane P.Thomas 2009,Tata McGraw-Hill Publishing Company Limited, New Delhi.

TRANSPORTATION ENGINEERING
(Open Elective – II)

Course Code: GR15A3161
III Year II Semester

L T P C
2 1 0 3

UNIT I

Highway development and planning: Highway development in India – Necessity for Highway Planning- Different Road Development Plans- Classification of Roads- Road Network Patterns – Highway Alignment- Factors affecting Alignment- Engineering Surveys – Drawings and Reports.

UNIT II

Highway geometric design: Importance of Geometric Design- Design controls and Criteria- Highway Cross Section Elements- Sight Distances- Stopping sight Distance, Overtaking Sight Distance, intermediate Sight Distance and Head light sight distance- Design of Horizontal Alignment- Design of Super elevation and Extra widening- Design of Transition Curves-Design of Vertical alignment-Gradients- Vertical curves.

UNIT III

Traffic engineering: Traffic flow parameters-Volume, Speed, Density and headway- Traffic Volume Studies- Data Collection and Presentation-speed studies- Data Collection and Presentation- Parking Studies, Parking types and Parking characteristics- Road Accidents-Causes and Preventive measures- Accident Data Recording – Condition Diagram and Collision Diagrams.

Traffic regulation and management: Road Traffic Signs – Types and Specifications – Road markings-Need for Road Markings-Types of Road Markings- Design of Traffic Signals – Webster Method –IRC Method.

UNIT IV

Intersection design: Types of Intersections – Conflicts at Intersections- Types of At-Grade Intersections- Channelization: Objectives –Traffic Islands and Design criteria-Types of Grade Separated Intersections- Rotary Intersection – Concept of Rotary and Design Criteria-Advantages and Disadvantages of Rotary Intersection.

UNIT V

Introduction to railway and airport engineering: Gradients- Grade Compensation- Cant and Negative Super elevation- Cant Deficiency – Degree of Curve – Crossings and Turn outs.

Factors affecting Selection of site for Airport – Aircraft Characteristics- Geometric Design of Runway- Computation of Runway length – Correction for runway length – Orientation of Runway – Wind Rose Diagram – Runway Lighting system.

TEXT BOOKS:

1. Highway Engineering – S.K.Khanna&C.E.G.Justo, Nemchand& Bros., 9th edition (2011).
2. Railway Engineering – A text book of Transportation Engineering – S.P.Chandola – S.Chand& Co. Ltd. – (2001).
3. Highway Engineering Design – L.R.Kadiyali and Lal- Khanna Publications.
4. Airport Planning and Design- S.K.Khanna and Arora,Nemchand Bros.

REFERENCES:

1. Highway Engineering – S.P.Bindra ,DhanpatRai& Sons. – 4th Edition (1981)
2. Traffic Engineering & Transportation Planning – Dr.L.R.Kadyali, Khanna publications – 8th

Edition – 2011.

3. Railway Engineering – S.C.Rangwala –Charotar Publishers.
4. Air Transportation Planning & design – S.K.Khanna – NemChnd and Bros.

SENSORS AND TRANSDUCERS
(Open Elective – II)

Course Code: GR15A3162
III Year II Sem

L T P C
2 1 0 3

UNIT I

Introduction: Sensors / Transducers, principles, classification, parameters, characterizations

UNIT II

Introduction to mechanical & Electro Mechanical Sensors: Resistive Potentiometer, Inductive sensors, Capacitive Sensors, Ultrasonic Sensors

UNIT III

Basics of Thermal and Magnetic Sensors: Gas thermometric sensors, Thermal expansion type thermometric sensors, acoustic temperature sensors, dielectric constant and refractive index thermo sensors. Sensors and principles: Yoke coil sensor, coaxial type sensor, Force and displacement sensor

UNIT IV

SMART Sensors: Introduction, Primary sensors, Excitation, Amplification, Filters, Converters, Compensation, Information coding / processing, Data Communication, The Automation

UNIT V

SMART Sensors: Introduction, Primary sensors, Excitation, Amplification, Filters, Converters, Compensation, Information coding / processing, Data Communication The Automation

TEXT BOOK:

1. Sensors& Transducers By D. Patranabis , PHI Publications

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

**AUTOMOBILE ENGINEERING
(Open Elective-II)**

Course code: GR15A3163
III B. Tech II Semester

L T P C
2 1 0 3

UNIT I

INTRODUCTION, ENGINE AND LUBRICATION SYSTEM

Components of four wheeler automobile – chassis and body – power unit – power transmission – rear wheel drive, front wheel drive, 4 wheel drive – types of automobile engines, Engine construction, turbo charging and super charging, Engine lubrication, splash and pressure lubrication systems, oil filters, oil pumps – crank case ventilation – engine service, reboring, decarbonisation, Nitriding of crank shaft.

Emissions : Emission from Automobiles – Pollution standards National and international – Pollution Control – Techniques – Energy alternatives – Photovoltaic, hydrogen, Biomass, alcohols, LPG and CNG.

UNIT II

FUEL SYSTEM AND COOLING SYSTEM

Fuel System in S.I. Engine : Fuel supply systems, Mechanical and electrical fuel pump – filters– carburetor – types – air filters – petrol injection-Multi point fuel injection(MPFI).

Fuel System in C.I. Engines: Requirements of diesel injection systems, types of injection systems, fuel pump, nozzle, spray formation, injection timing, testing of fuel pumps. CRDI engines.

Cooling System: Cooling Requirements, Air Cooling, Liquid Cooling, Forced Circulation System – Radiators – Types – Cooling Fan - water pump, thermostat, evaporative cooling – pressure sealed cooling – anti freeze solutions.

UNIT III

IGNITION SYSTEM AND ELECTRICAL SYSTEM

Ignition System: Function of an ignition system, battery ignition system, constructional features of storage, battery, auto transformer, contact breaker points, condenser and sparkplug – Magneto coil ignition system, electronic ignition system using contact breaker, electronic ignition using contact triggers – spark advance and retard mechanism.

Electrical System : Charging circuit, generator, current – voltage regulator – starting system, bendix drive mechanism solenoid switch, lighting systems, Horn, wiper, fuel gauge – oil pressure gauge, engine temperature indicator etc.

UNIT IV

TRANSMISSION AND STEERING SYSTEM

Transmission System: Clutches, principle, types, cone clutch, single plate clutch, multi plate clutch, magnetic and centrifugal clutches, fluid fly wheel – gear boxes, types, sliding mesh, constant mesh, synchro mesh gear boxes, epicyclic gear box, over drive, torque converter. Propeller shaft – Hotch – Kiss drive, Torque tube drive, universal joint, differential rear axles – types – wheels and tyres.

Steering System: Steering geometry – camber, castor, king pin rake, combined angle toein, center point steering. Types of steering mechanism – Ackerman steering mechanism, Davis steering mechanism, steering gears – types, steering linkages.

UNIT V

SUSPENSION AND BRAKING SYSTEM

Suspension System: Objects of suspension systems – rigid axle suspension system, torsion bar, shock absorber, Independent suspension system.

Braking System: Mechanical brake system, Hydraulic brake system, Master cylinder, wheel Cylinder, tandem master cylinder, Requirement of brake fluid, Pneumatic and vacuum brakes.

TEXT BOOKS:

1. Automobile Engineering -R B Gupta
2. Automotive Mechanics – William Crouse
3. Automobile Engineering Vol. 1 & Vol. 2 / Kripal Singh

REFERENCES

1. Automotive Engineering / Newton Steeds & Garrett
2. Automotive Mechanics / G.B.S. Narang
3. Automotive Mechanics / Heitner
4. Automotive Engines / Srinivasan
5. Automobile Engineering – K.K. Ramalingam / Scitech Publications (India) PVT.

Teaching Methodology:

Power point Presentations, Working models, white board & marker

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

ESSENTIALS OF BIG DATA ANALYTICS

(Open Elective – II)

Course Code: GR15A3165

III Year II Semester

L T P C

2 1 0 3

UNIT I

INTRODUCTION TO BIG DATA AND HADOOP: Introduction to Big Data Platform – Big Data definition, Challenges of Conventional Systems: Enterprise/structured data, Social/unstructured Data, Unstructured data needs for Analytics, Analytics vs Reporting, Data Analytic Tools, History of Hadoop, Components of Hadoop, Analyzing the Data with Hadoop, Different Echo systems of Hadoop, IBM Big Data Platform Strategy and Introduction to Infosphere Big Insights.

UNIT II

HDFS (Hadoop Distributed File System): Significance of HDFS in Hadoop, Design of HDFS, HDFS Architecture overview, 5 daemons of Hadoop: Name Node, Data Node, Secondary Node, Job Tracker and Task Tracker, their functionality, Data Storage in HDFS: Introduction about Blocks, Data replication, Accessing HDFS: CLI (Command Line Interface) and admin commands, How to store various types of data in HDFS using CLI-command.

UNIT III

Map Reduce Map Reduce Architecture, Map Reduce Programming Model, Map Reduce Java API, Anatomy of Map Reduce Job run, Failures, Job Scheduling, Sort & Shuffle phase, Task Execution. Map Reduce Program using IBM BigInsights. Adaptive Map Reduce.

Introduction to Oozie: Overview of Managing job Execution. Apache Pig: Introduction to Apache Pig, Map Reduce Vs Apache Pig, SQL Vs Apache Pig, Pig Datatypes, Modes Of Execution in Pig.

UNIT IV

Data Stores on Hadoop Hive: Introduction, architecture, Integration with Hadoop, Hive Tables: Managed Tables, External Tables, Hive Query Language (Hive QL) Hbase: Introduction to HBase, Architecture, HBaseVs RDBMS, HBaseUseCasesHmaster. Introduction to Zookeeper.

UNIT V

BM APPLICATIONS ON HADOOP

Big SQL: Introduction to Big SQL, Datatypes, Big SQL Statistics.

Big Sheets: Introduction, Processing and Accessing BigSheets, Big SQL Integration.

TEXT BOOKS

1. Tom White “Hadoop: The Definitive Guide” Third Edit on, O’reily Media, 2012.

REFERENCES

1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
2. Jay Liebowitz, “Big Data and Business Analytics” Auerbach Publications, CRC press (2013)
3. Tom Plunkett, Mark Hornick, “Using R to Unlock the Value of Big Data: Big Data Analytics with Oracle R Enterprise and Oracle R Connector for Hadoop”, McGraw-Hill/Osborne Media (2013), Oracle press.
4. AnandRajaraman and Jeffrey David Ulman, “Mining of Massive Datasets”, Cambridge University Press, 2012.
5. Bill Franks, “Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams

- with Advanced Analytics”, John Wiley & sons, 2012.
6. Glen J. Myat, “Making Sense of Data”, John Wiley & Sons, 2007
 7. Pete Warden, “Big Data Glossary”, O’Reily, 2011.
 8. Michael Mineli, Michele Chambers, AmbigaDhiraj, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley Publications, 2013.
 9. ArvindSathi, “Big Data Analytics: Disruptive Technologies for Changing the Game”, MC Press, 2012
 10. Paul Zikopoulos, Dirk De Roos, Krishnan Parasuraman, Thomas Deutsch, James Giles, David Corigan, "Harness the Power of Big Data The IBM Big Data Platform", Tata McGraw Hill Publications, 2012.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
PRINCIPLES OF OPERATING SYSTEMS
(OPEN ELECTIVE)

Course Code: GR15A3166
III Year II Semester

L T P C
2 1 0 3

UNIT I

Computer System and Operating System Overview: Overview of computer operating systems, operating systems functions, operating systems structures and systems calls, Evaluation of Operating Systems.

UNIT II

Process Management – Process concept- process scheduling, operations, Inter process communication. Multi Thread programming models. Process scheduling criteria and algorithms, and their evaluation.

UNIT III

Concurrency: Process synchronization, the critical- section problem, Peterson’s Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors and Synchronization examples

Memory Management: Swapping, contiguous memory allocation, paging, structure of the page table, segmentation

UNIT IV

Virtual Memory Management: virtual memory, demand paging, page-Replacement, algorithms, Allocation of Frames, Thrashing

Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock,

UNIT V

File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.

File System implementation- File system structure, allocation methods, free-space management

Mass-storage structure overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, Introduction to Storage Area Networks (SAN), Introduction to Network Attached Storage.

TEXT BOOKS:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.
2. Operating systems - Internals and Design Principles, W. Stallings, 6th Edition, Pearson.

REFERENCES:

1. Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.
2. Operating Systems A concept - based Approach, 2nd Edition, D. M. Dhamdhare, TMH.
3. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.
4. Operating Systems, A. S. Godbole, 2nd Edition, TMH

5. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.
6. Operating Systems, S. Haldar and A. A. Arvind, Pearson Education.
7. Operating Systems, R. Elmasri, A. G. Carrick and D. Levine, McGraw Hill.
8. Operating Systems in depth, T. W. Doeppner, Wiley.

GEOTECHNICAL ENGINEERING-II

Course Code: GR15A4001
IV Year I Semester

L T P C
3 1 0 4

UNIT I

Soil exploration: Introduction, methods of soil exploration, boring and sampling methods, Field tests - penetration tests, plate load test, Menard pressuremeter test, planning and preparation of soil investigation report, borehole logs.

UNIT II

Earth slope stability: Infinite slopes, finite slopes, types of failures, factor of safety of infinite slopes, stability analysis by standard method of slices, total stress and effective stress method of analysis, Taylor's stability Number, stability of earth dam slopes under different conditions.

UNIT III

Earth pressure and retaining walls: Introduction, Rankine's theory of earth pressure, active and passive earth pressures, Coulomb's earth pressure theory, Culmann's graphical method, types of retaining walls, stability of cantilever retaining walls.

UNIT IV

Bearing capacity and settlement analysis of shallow foundations: Types and choice of foundation, location of depth, modes of soil failure, safe bearing capacity by Terzaghi, Meyerhof, Skempton and IS Methods, effect of water table on bearing capacity, safe bearing pressure based on N value, settlement analysis, contact pressure, settlement from plate load test, settlement from penetration tests.

UNIT V

Deep foundations: Types of piles, static pile formulae, dynamic pile formulae, pile load tests, load carrying capacity of pile groups in sands and clays, settlement of pile groups, negative skin friction, types and different shapes of well foundations, components of well foundations.

Ground improvement methods: Introduction, soil stabilization using lime and cement.

TEXT BOOKS

1. GopalRanjan and ASR Rao, Basic and Applied Soil Mechanics, New Age International Pvt. Ltd, New Delhi, 2nd edition (2000), Reprint (2014).
2. B.C.Punmia, Ashok Kumar Jain and Arun Kumar Jain, Soil Mechanics and Foundations, Laxmi publications Pvt. Ltd., New Delhi, 16th edition, Reprint (2012).

REFERENCES

1. Braja M. Das, Principles of Foundation Engineering, Cengage Learning, New Delhi, 6th edition (2007), Reprint (2012).
2. Bowles, J.E., Foundation Analysis and Design, McGraw-Hill Publishing Company, Newyork, 5th edition (1997).
3. Swami Saran, Analysis and Design of Substructures, Oxford and IBH Publishing company Pvt Ltd., 2nd edition (2006).
4. S. K.Gulhati & Manoj Datta, Geotechnical Engineering, Mc.Graw Hill Education Pvt Ltd., New Delhi (2005), 16th Reprint (2013).
5. Teng,W.C, Foundation Design, Prentice Hall, New Jersy, 13th edition, Reprint (1992).

**GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
COMPUTER NETWORKS**

Course Code: GR15A2077

L T P C

IV Year I Semester

3 1 0 4

Unit I

Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference Models: OSI, TCP/IP, Examples Networks: Arpanet, Internet, ATM.

Physical Layer: Guided Transmission media, Wireless Transmission Media, Communication Satellites. The public Switched Telephone Network: Switching and multiplexing, the Mobile Telephone Network.

Unit II

Data link layer: Design issues, framing, error detection and correction, Elementary Data Link Protocol, Sliding Window Protocols. Medium Access sub layer: The Channel Allocation Problem, Multiple Access Protocols, Ethernet, wireless LANS, Bluetooth, Data Link Layer Switching.

Unit III

Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, QoS, & the Network Layer in the Internet.

Unit IV

Transport Layer: Transport Services, Elements of Transport Protocols. The Internet Transport Protocols: UDP & TCP.

Unit V

Application Layer: DNS, Electronic Mail, the World Wide Web, Multi Media, Cryptography.

Teaching methodologies

- White board
- Power Point presentations
- Tutorials
- Assignments

TEXT BOOKS

1. Computer Networks — Andrew S Tanenbaum, 4th Edition, Pearson Education/PHI
2. Data Communications and Networking – Behrouz A. Forouzan, Third Edition TMH.

REFERENCES

1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education
2. Understanding communications and Networks- 3rd Edition, W.A. Shay, Thomson A

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
DATA WAREHOUSING AND DATA MINING

Course Code: GR15A3067

L T P C

IV Year I Semester

3 1 0 4

UNIT I

Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Data base or a Data Ware house System, Major issues in Data Mining. **Data Preprocessing:** Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT II

Data Warehouse and OLAP Technology for Data Mining: Data Warehouse, Multidimensional Data Model, Data Ware house Architecture, Data Warehouse Implementation, Further Development of Data Cube Technology, From Data Warehousing to Data Mining Data Cube Computation and Data Generalization, Attribute-Oriented Induction.

UNIT III

Mining Frequent Patterns, Associations and Correlations: Basic Concepts, Efficient and Scalable Frequent Item set Mining Methods, Mining various kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint- Based Association Mining

UNIT IV

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Back propagation, Prediction, Accuracy and Error measures, Evaluating the accuracy of a Classifier or a Predictor

Cluster Analysis Introduction: Types of Data in Cluster Analysis, A Categorization of Major

Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Outlier Analysis-Distance-Based Outlier Detection, Density-Based Local Outlier Detection.

UNIT V

Mining Streams, Time Series and Sequence Data: Mining Data Streams, Mining Time-Series Data, Mining Sequence Patterns in Transactional Databases Mining Object, Spatial, Multimedia, Text and Web Data: Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Data Mining, Multimedia Data Mining, Text Mining, Mining the World Wide Web.

TEXTBOOKS

1. Data Mining– Concepts and Techniques –Jiawei Hanand Micheline Kamber, Morgan Kaufmann Publishers, Elsevier, Second Edition, 2006.
2. Introduction to Data Mining–Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Pearson education.

REFERENCES

1. Data Mining Techniques– ArunK. Pujari, Second Edition, University Press.
2. Data Ware housing in the Real World, Sam Aanhory and Dennis Murray, Pearson Edn Asia.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
MANAGEMENT SCIENCE

Course Code: GR15A3102

L T P C

IV Year I Semester

3 1 0 4

Unit I

Introduction to Management & Organisation: Concepts of Management and Organization: Nature, Importance, Functions and Theories of Management; Systems Approach to Management; Leadership Styles; Social Responsibilities of Management. **Designing Organisational Structures:** Basic concepts relating to Organisation; Departmentation and Decentralisation, Types and Evolution of mechanistic and organic structures of organisation and suitability.

Unit II

Operations & Marketing 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:** Control Charts for Variables and Attributes (Simple Problems) and Acceptance Sampling, Deming's contribution to quality. Objectives of Inventory Control, EOQ, ABC Analysis, Purchase Procedures, Stores Management and Stores Records - Functions of Marketing, Marketing Mix, Marketing Strategies based on Product Life Cycle, Channels of Distribution.

Unit III

Human Resources Management (HRM): Concepts of Personnel Management, HRM and HRD and Industrial Relations (IR), HRM vs. PMIR. Basic functions of HR Manager: Manpower planning, Recruitment and Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Analysis, Job Description, and Job Evaluation.

Unit IV

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).

Unit V

Strategic Management and Contemporary Strategic Issues: Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives. Contemporary Management Practices: Basic concepts of MIS, End User Computing, Materials Requirement Planning (MRP), Just-In-Time (JIT) System, Total

Quality Management (TQM), Six Sigma and Capability Maturity Model (CMM) Levels, Supply Chain Management, Enterprise Resource Planning (ERP), Performance Management, Business Process Outsourcing (BPO), Business Process Re-engineering and Bench Marking, Balanced Score Card.

Teaching Methodologies:

- a) Lecture Method
- b) Use of OHP
- c) Power Point Presentation
- d) Tutorials and Assignments

TEXT BOOK

1. Aryasri: *Management Science*, TMH, 2009.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
MOBILE COMPUTING AND APPLICATIONS

(Professional Elective III)

Course Code: GR15A4164

L:3 T:1 P:- C:4

IV Year I Semester

UNIT – I

Introduction to Mobile Computing: Introduction, applications, simplified referenced model.

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

UNIT – II

Telecommunication systems: GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

UNIT - III

Mobility and location-based services: Introduction, Data Acquisition of Location Information, GIS, Location Information Modeling, Location-Based Services Applied, Utilizing Location-Based Services with Mobile Applications, Representing Location with UML, Security and Privacy of Location Information, Localization and Internationalization, Latest Developments in Location-Based Efforts

UNIT - IV

The Mobile Development Process: Introduction, Back to the Dimensions of Mobility, Applying the Wisdom Methodology to Mobile Development, UML-Based Development Cycle for Mobile Applications

Architecture, Design, and Technology Selection for Mobile Applications: Introduction, Practical Concerns with Architectures, Architectural Patterns for Mobile Applications

UNIT - V

Mobile Application Development Hurdles: Introduction, Voice User Interface Hurdles, Hurdles with Multimodal Applications, Problems with Building Location-Based Applications, Power Use.

Testing Mobile Applications: Introduction, Validating the Mobile Use Cases before Development, The Effect of the Dimensions of Mobility on Software Testing, Stress Testing and Scalability Issues, Testing Location-Based Functionality.

Support for Mobility: File systems: Consistency, coda, little work, Ficus, Mio-NFS, Rover.

Outlook: Architecture of future networks.

TEXT BOOKS

1. **Jochen Schiller**, “Mobile Communications”, Second Edition, Pearson education, 2004. (Unit I-All chapters, Unit II-All chapters, & Unit V: Last two chapters)
2. **Reza B’far**, “Mobile Computing Principles: Designing And Developing Mobile Applications With UML And XML”, Cambridge University Press, 2005. (Unit III-All chapters, Unit IV-All chapters and Unit V - First two chapters).

REFERENCES

1. **Adelstein, Frank, Gupta, Sandeep KS, Richard, Golden, Schwiebert, Loren**, “Fundamentals of Mobile and Pervasive Computing”, ISBN: 0071412379, McGraw-Hill Professional, 2005.
2. **Hansmann, Merk, Nicklous, Stober**, “Principles of Mobile Computing”, Springer, second edition, 2003.
3. **Martyn Mallick**, “Mobile and Wireless Design Essentials”, Wiley DreamTech, 2003.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

CLOUD COMPUTING

(Professional Elective III)

Course Code: GR15A4079

L T P C

IV Year I Semester

3 1 0 4

UNIT I

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

UNIT II

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

UNIT III

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

UNIT IV

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

UNIT V

Security in the Cloud: Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security

Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.

TEXT BOOKS

1. George Reese, “Cloud Application Architectures: Building Applications and Infrastructure in the Cloud” O'Reilly
2. Kumar Saurabh, “ Cloud Computing – insights into New-Era Infrastructure”, Wiley India,2011
3. RajkumarBuyya, Christian Vecchiola, S.TamaraiSelvi, ‘Mastering Cloud Computing’, TMGH,2013.

REFERENCES

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, Morgan Kaufmann Publishers, 2012.
2. John W.Rittinghouse and James F.Ransome, “Cloud Computing: Implementation, Management, and Security”, CRC Press, 2010.
3. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach”, TMH, 2009.
4. Ronald L. Krutz, Russell Dean Vines, “Cloud Security – A comprehensive Guide to Secure Cloud Computing”, Wiley – India, 2010.
5. Nick Antonopoulos, Cloud computing, Springer Publications, 2010

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
COMPUTER GRAPHICS

(Professional Elective III)

Course Code: GR15A3069

L: 3 T: 1 P: 0 C: 4

IV Year I Semester

UNIT I

Introduction, Application areas of Computer Graphics, overview of graphics systems, Graphics software and standards ,video-display devices, raster-scan systems, random scan systems, graphics monitors and workstations and input devices.

Output primitives: Points and lines, line drawing algorithms ,mid-point circle and ellipse algorithms. Pixel addressing and object geometry, Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms

UNIT II

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, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm

UNIT III

3-D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations.

3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.

3-D object representation: Polygon surfaces, quadric surfaces, s pline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination

models, polygon rendering methods.

UNIT IV

Visible surface detection methods: Classification, back-face detection, depth- buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods. Illumination, light sources, illumination methods (ambient, diffuse reflection, specular reflection),

UNIT V

Computer animation: Animation principles and History, Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

CASE STUDY of advanced open source software: BLENDER software features and basics overview.

TEXTBOOKS

1. "Computer Graphics C version", Donald Hearn and M.Pauline Baker, Pearson Education.
2. "Computer Graphics Principles & practice", second edition in C, Foley, Van Dam, Feiner and Hughes, Pearson Education.

REFERENCES

1. "Computer Graphics", second Edition, Donald Hearn and M.Pauline Baker, PHI/Pearson Education.
2. "Computer Graphics Second edition", Zhigandxiang, Roy Plastock, Schaum's outlines, Tata Mc-Graw hill edition.
3. Procedural elements for Computer Graphics, David F Rogers, Tata Mc Graw hill, 2nd edition.
4. "Principles of Interactive Computer Graphics", Neuman and Sproul, TMH.5.
Principles of Computer Graphics, Shalini Govil, Pai, 2005, Springer.
5. Computer Graphics, Steven Harrington, TMH
6. www.spokentutorials.org/ for BLENDER course.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
SOFTWARE TESTING METHODOLOGIES

(Professional Elective III)

Course Code: GR15A4077

L T P C

IV Year I Semester

3 1 0 4

UNIT I

Introduction: Purpose of testing, Dichotomies, Model for testing, Consequences of bugs, Taxonomy of Bugs

UNIT II

Flow Graphs and Path Testing: Basics concepts of Path Testing, Predicates, Path Predicates and Achievable Paths, Path Sensitizing, Path Instrumentation, Application of Path Testing.

Transaction Flow Testing: Transaction flows, transaction flow testing techniques.

UNIT III

Dataflow testing: Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

Domain Testing: Domains and paths, Nice & ugly domains, Domain Testing, domains and interfaces testing, Distribution, domains and testability tips.

UNIT IV

Paths, Path products and Regular expressions: Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.

Logic Based Testing: Overview, decision tables, path expressions, kv charts, specifications.

UNIT V

State, State Graphs and Transition testing: State graphs, good & bad state graphs, state testing, Testability tips.

Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, Node Reduction algorithm.

TEXT BOOKS

1. Software Testing techniques - BarisBeizer, Dreamtech, second edition.
2. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.

REFERENCES

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing Techniques – SPD (Oreille)
3. Software Testing in the Real World – Edward Kit, Pearson.
4. Effective methods of Software Testing, Perry, John Wiley.
5. Art of Software Testing – Meyers, John Wiley.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
SCRIPTING LANGUAGES LAB

Course Code: GR15A4084
IV Year I Semester

L T P C
0 0 2 2

PHP

Task 1

Write a PHP script for the following.

- a. Find the biggest of 3 numbers.
- b. Find the factorial of a number (while loop)
- c. To reverse the digit (Use do while)
- d. Find the sum of the digits (Use for loop)
- e. Write a PHP script for the following: Design a form to accept the details of 5 different items, such as item code, item name, units sold, rate. Display the bill in the tabular format. Use only 4 text boxes. (Hint: Use of explode function.)
- f. Create a form to accept customer information (name, address, ph-no). Once the customer information is accepted, accept product information in the next form (Product name, qty, rate). Display the bill for the customer in the next form. Bill should contain the customer information and the information of the products entered.

Task 2

- a. Write a PHP script for the following: Design a form to accept two strings from the user. Find the first occurrence and the last occurrence of the small string in the large string. Also count the total number of occurrences of small string in the large string. Provide a text box to accept a string, which will replace the small string in the large string. (Use built-in functions)
- b. Write a menu driven program to perform the following operations on an associative array:
 - i. Display the elements of an array along with the keys.
 - ii. Display the size of an array
 - iii. Delete an element from an array from the given index
 - iv. Reverse the order of each element's key-value pair [Hint: use array_flip()]
 - v. Traverse the elements in an array in random order [[Hint: use shuffle()].

Task 3

- a. Create a login form with a username and password. Once the user logs in, the second form should be displayed to accept user details (name, city, phone no). If the user doesn't enter information within a specified time limit, expire his session and give a warning.
- b. Write a PHP script to store, retrieve and delete data using session variables.

c. Write a PHP script to accept user name and password . If in the first three chances, username and password entered is correct, then display second form, otherwise display error message.

Task 4

- a. Write a PHP program to display the contents of a file using fgets, fgetc, fread functions.
- b. Write a PHP program to upload a file and display the contents in server.

Task 5

Write a PHP script for the following: Design a form to accept a string. Write a function to count the total number of vowels (a,e,i,o,u) from the string. Show the occurrences of each vowel from the string. Check whether the given string is a palindrome or not, without using built-in function.(Use radio buttons and the concept of function. Use 'include' construct.)

Task 6

- a. Design a database in MYSQL using PHP. Create table in database. Store, Update, Delete and Retrieve data from the table. Display the data from the table.
- b. Design a PHP application that will provide a form containing fields to fill book detail (Book title, Author, Publication, ISBN, Price and category). Display filled details to the user.

Task 7

Write a PHP script that will demonstrate POSIX regular expressions for validating

- i) Name
- ii) Pin Code
- iii) Date
- iv)Email-id.

Task 8

Using PHP and MySQL, develop a program to accept book information viz. Accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search results with proper headings.

Task 9

Write a PHP script for the following: Design a form to accept two strings from the user. Find whether the small string appears at the start of the large string. Provide a text box to accept the string that will replace all occurrences of small string present in the large string. Also split the large string into separate words. (Use regular expressions).

PHYTHON

Task 10

Write a Python script using basic data types.

- a. Find the biggest of 3 numbers.
- b. To check whether a number is positive or negative.
- c. Find the factorial of a number
- d. To reverse the digit
- e. Find the sum of the digits
- f. Fibonacci series for a particular limit.

Task 11

- a. Write a Python script to test built in methods of Strings.
- b. Write a Python script to test various functions of List and Tuple.

Task 12

- a. Write a Python script to test various functions of Dictionary.
- b. Write a Python script to define a function and calling the function by passing arguments.
(using pass by value & pass by reference).

TEXT BOOKS

1. Beginning.PHP.and.MySQL.3rd.Edition W. Jason Gilmore-Third Edition Apress publications
2. Python-Standard Library by FrederikLuth- O'Relly
3. Practical Programming in Python by Jeffery Elkener

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
DWDM and BI LAB

Course Code: GR15A4146

L T P C

IV Year I Semester

0 0 2 2

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.

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).
- Own_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 in judging a loan applicant. The goal is to classify the applicant into two categories: good or bad.

Task 1: List all the categorical (or nominal) attributes and the real-valued attributes separately. 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.

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.

Task 2: Suppose you use your above model trained on the complete dataset, and classify credit good/bad for each of the examples in the dataset. What % of examples can you classify correctly? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy? Why or Why not?

Task 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? (10marks)

Task 4: 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.)

Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting the misclassifications equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross-validation results. Are they significantly different from results obtained in problem 6 (using equal cost)?

Task 5: Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees? How does the complexity of a Decision Tree relate to the bias of the model?

You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning - Explain this idea briefly. Try reduced error pruning for training your Decision Trees using cross-validation (you can do this in Weka) and report the Decision Tree you obtain? Also, report your accuracy using the pruned model. Does your accuracy increase?

Task 6: (Extra Credit): How can you convert a Decision Trees into "if-then-else rules". Make up your own small Decision Tree consisting of 2-3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules - one such classifier in Weka is rules. PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough in making the decision, yes, just one! Can you predict what attribute that might be in this dataset? One R classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and one R.

BI LAB:

Task 7:

- a) Create a workspace in IBM Cognos Insight.
- b) Create a report in Cognos Workspace Advanced using a dimensional source.
- c) Create a report in Cognos Workspace Advanced using a relational source.

Task 8:

Create a baseline project

Task 9:

a) Create a simple report using Report Studio.

b) Create a report from a dimensionally modeled relational data source.

Task 10:

a) Create a list report.

b) Apply filters to list report.

Task 11:

a) Create a simple crosstab report.

b) Create a complex crosstab report.

Task 12:

a) Create and format chart reports.

b) Create gauge report and a pie chart report.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
ADVANCED NETWORK PROGRAMMING LAB

Subject Code: GR15A4083

L: T: P: 2 C:2

IV Year I Semester

Task 1: Implement the following forms of IPC.

- a) Pipes b) FIFO

Task 2: Implement file transfer using Message Queue form of IPC.

Task 3: Write a programmed to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions.

Task 4: Design a Client and server application to transfer the given input file. (without using transport layer protocols)

Task 5: Design TCP iterative Client and server application to reverse the given input sentence.

Task 6: Design TCP client and server application to transfer file.

Task 7: Design a TCP concurrent server to convert a given text into upper case using multiplexing system call “select”.

Task 8: Design a TCP concurrent server to echo given set of sentences using poll functions.

Task 9: Design UDP Client and server application to reverse the given input sentence.

Task 10: Design UDP Client server to transfer a file.

Task 11: Design using poll client server application to multiplex TCP and UDP requests for converting a given text into upper case.

Task 12: Design any one internet application to add and subtract a given pair of integers using TCP,UDP or RPC Methods .

REFERENCES

- 1.Advance Unix Programming Richard Stevens, Second Edition Pearson Education
2. Advance Unix Programming, N.B. Venkateswarlu, BS Publication.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREEN BUILDING TECHNOLOGY

(Open Elective-III)

Course Code: GR15A4161

L T P C

IV Year I Semester

2 1 0 3

UNIT 1

Concept of Green Buildings:

Green building Definition, Features, Necessity, Initiatives, Green buildings in India, Green building Assessment- Green Building Rating Systems (BREEAM,USGBC,LEED,IGBC,TERI-GRIHA, GREEN STAR),Criteria for rating, Energy efficient criteria ,environmental benefits economic benefits, health and social benefits , Major energy efficiency areas for building, Contribution of buildings towards Global Warming. Life cycle cost of buildings, Codes and Certification Programs

UNIT II

Sources of Energy:

Renewable and Non-renewable sources of energy ; Coal, Petroleum, Nuclear, Wind, Solar, Hydro, Geothermal sources; potential of these sources, hazards, pollution; Global scenario with reference to demand and supply in India, Global efforts to reduce carbon emissions, Performance testing (new and existing): Building modeling , Energy analysis, Commissioning, Metering, Monitoring.

Carbon emission: Forecasting, Control of carbon emission, Air quality and its monitoring carbon foot print; Environmental issues, Minimizing carbon emission, Energy retrofits and Green Remodels.

UNIT III

Green Building Materials: Sustainably managed Materials, Depleting natural resources of building materials; renewable and recyclable resources; energy efficient materials; Embodied Energy of Materials , Green cement, Biodegradable materials, Smart materials, Manufactured Materials, Volatile Organic Compounds (VOC's), Natural Non-Petroleum Based Materials, Recycled materials, Renewable and Indigenous Building Materials, Engineering evaluation of these materials.

Green Building Planning Methods, Energy Conservation Measures in Buildings, Waste &Water management and Recycling in Sustainable Facilities, Heating, Ventilation and Air Conditioning, Passive Solar & Daylight, Plumbing and its Effect on Energy Consumption

UNIT IV

Design of Green Buildings; Sustainable sites, Impact of building on environment, Life cycle assessment, Principles of sustainable development in Building Design ,Design on Bioclimatic **and Specifications:** Environment friendly and cost effective Building Technologies, Integrated Life cycle design of Materials and Structures, Green Strategies for Building Systems, Alternative Construction and solar passive architecture, Considerations of energy consumption, water use, and system reliability, indoor air quality, noise level, comfort, cost efficiency in building design, Advanced Green building technologies and innovations.

UNIT V

Construction of Green Buildings: Energy efficient construction, Practices for thermal efficiency and natural lighting. Eco- friendly water proofing; ECB codes building rating, Maintenance of green buildings, Cost and Performance Comparisons and Benchmarking, Green Project Management Methods and Best Practices, Cost/benefit analysis of green buildings, Life-cycle analysis of green buildings, Case studies of rated buildings (new and existing)

TEXT BOOKS:

1. Alternative Building Materials and Technologies – By K S Jagadeesh, B V Venkatta Rama Reddy & K S Nanjunda Rao – New Age International Publishers
2. Integrated Life Cycle Design of Structures – By Asko Sarja – SPON Press
3. Non-conventional Energy Resources – By D S Chauhan and S K Sreevasthava – New Age International Publishers
4. Green Buildings (McGraw hill publication): by Gevorkian
5. Emerald Architecture: case studies in green buildings, The Magazine of Sustainable Design
6. Understanding Green Building Guidelines: For Students and Young Professionals, Traci Rose Rider, W. W. Norton & Company Publisher.
7. Understanding Green Building Materials, Traci Rose Rider, W. W. Norton & Company Publisher.

REFERENCES

1. IGBC reference guide
2. Free abridged versions of LEED reference guides
3. ECBC latest version
4. US GBC's Reference Material:

SOFT COMPUTING TECHNIQUES

(Open Elective-III)

Course Code: GR15A4162

L T P C

IV Year I Sem

2 1 0 3

UNIT I

Neural Networks-I(Introduction & Architecture) Neuron, Nerve structure and synapse, Artificial Neuron and its model, activation functions, Neural network architecture: single layer and multilayer feed forward networks, recurrent networks. Various learning techniques; perception and convergence rule, Auto-associative and hetero-associative memory.

UNIT II

Neural Networks-II (Back propagation networks) Architecture: perceptron model, solution, single layer artificial neural network, multilayer perception model; back propagation learning methods, effect of learning rule co-efficient; back propagation algorithm, factors affecting back propagation training, applications.

UNIT III

Fuzzy Logic-I (Introduction) Basic concepts of fuzzy logic, Fuzzy sets and Crisp sets, Fuzzy set theory and operations, Properties of fuzzy sets, Fuzzy and Crisp relations, Fuzzy to Crisp conversion.

UNIT IV

Fuzzy Logic –II (Fuzzy Membership, Rules) Membership functions, interference in fuzzy logic, fuzzy if-then rules, Fuzzy implications and Fuzzy algorithms, Fuzzyfication & Defuzzification, Fuzzy Controller, Industrial applications.

UNIT V

Genetic Algorithm(GA) Basic concepts, working principle, procedures of GA, flow chart of GA, Genetic representations, (encoding) Initialization and selection, Genetic operators, Mutation, Generational Cycle, applications.

TEXT BOOKS:

1. S. Rajsekaran & G.A. Vijayalakshmi Pai, “Neural Networks, Fuzzy Logic and Genetic Algorithm: Synthesis and Applications” Prentice Hall of India.
2. Introduction to Artificial Neural Systems - Jacek M. Zurada, Jaico Publishing House, 1997.
3. N.P. Padhy, “Artificial Intelligence and Intelligent Systems” Oxford University Press.

REFERENCES

1. Timothy J. Ross, “Fuzzy Logic with Engineering Applications” Wiley India
2. P. Vas: Artificial-Intelligence-Based Electrical Machines and Drives: Application of Fuzzy, Neural, Fuzzy-Neural, and Genetic-Algorithm-Based Techniques, Oxford University Press, 1999.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

**OPERATION RESEARCH
(Open Elective-III)**

Course Code: GR15A4163

L T P C

IV B. Tech I Semester

2 1 0 3

UNIT I

INTRODUCTION: Development – Definition– Characteristics and Phases of operations Research– Types of models – operation Research models– applications.

ALLOCATION: Linear Programming Problem Formulation – Graphical solution – Simplex method –Artificial variables techniques -Two–phase method, Big-M method – Duality Principle.

UNIT II

TRANSPORTATION MODELS: Formulation – Methods for finding feasible solution, Optimal solution, unbalanced transportation problem –Degeneracy.

ASSIGNMENT MODELS - Formulation – Optimal solution - Variants of Assignment Problem

UNIT III

SEQUENCING: Introduction – Flow –Shop sequencing – n jobs through two machines – n jobs through three machines – Job shop sequencing – two jobs through ‘m’ machines.

INVENTORY : Introduction – Single item – Deterministic models – Purchase inventory models with one price break and multiple price breaks – shortages are not allowed – Stochastic models – demand may be discrete variable or continuous variable – Instantaneous production. Instantaneous demand and continuous demand and no set up cost.

UNIT IV

THEORY OF GAMES: Introduction – Minimax (maximin) – Criterion and optimal strategy – Solution of games with saddle points – Rectangular games without saddle points – 2 X 2 games – dominance principle– m X 2 & 2 X n games -graphical method.

WAITING LINES: Introduction – Single Channel – Poisson arrivals – exponential service times – with infinite population and finite population models– Multichannel – Poisson arrivals – exponential service times with infinite population single channel Poisson arrivals.

UNIT V

REPLACEMENT: Introduction – Replacement of items that deteriorate with time – when money value is not counted and counted – Replacement of items that fail completely, group replacement.

DYNAMIC PROGRAMMING: Introduction – Bellman's Principle of optimality – Applications of dynamic programming- capital budgeting problem – shortest path problem – linear programming problem.

TEXT BOOKS :

1. Operations Research/ Prem Kumar Gupta,Dr.D.S. Hira
2. Operations Research / S. D.Sharma-Kedarnath
3. Operation Research /J.K.Sharma/MacMilan.

REFERENCES:

1. Operations Research / R.Pannerselvam,PHI Publications.
2. Introduction to O.R /Taha/PHI
3. Operations Research / Wagner/ PHI Publications.
4. Introduction to O.R/Hiller &Libermann (TMH).
5. Operations Research /A.M.Natarajan,P.Balasubramani,A. Tamilarasi/Pearson Education.
6. Operations Research: Methods & Problems / Maurice Saseini, ArhurYaspan& Lawrence Friedman
7. O.R/Wayne L.Winston/Thomson Brooks/cole

Teaching Methodology:

Power point Presentations, Working models, white board & marker

GOKARAJU RANGARAJUINSTITUTE OF ENGINEERING AND TECHNOLOGY

MOBILE COMPUTING AND APPLICATIONS

(Open Elective III)

Course Code: GR15A4164

L T P C

IV Year I Semester

2 1 0 3

UNIT I

Introduction to Mobile Computing: Introduction, applications, simplified referenced model.

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

UNIT II

Telecommunication systems: GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

UNIT III

Mobility and location-based services: Introduction, Data Acquisition of Location Information, GIS, Location Information Modeling, Location-Based Services Applied, Utilizing Location-Based Services with Mobile Applications, Representing Location with UML, Security and Privacy of Location Information, Localization and Internationalization, Latest Developments in Location-Based Efforts

UNIT IV

The Mobile Development Process: Introduction, Back to the Dimensions of Mobility, Applying the Wisdom Methodology to Mobile Development, UML-Based Development Cycle for Mobile Applications

Architecture, Design, and Technology Selection for Mobile Applications: Introduction, Practical Concerns with Architectures, Architectural Patterns for Mobile Applications

UNIT V

Mobile Application Development Hurdles: Introduction, Voice User Interface Hurdles, Hurdles with Multimodal Applications, Problems with Building Location-Based Applications, Power Use.

Testing Mobile Applications: Introduction, Validating the Mobile Use Cases before Development, The Effect of the Dimensions of Mobility on Software Testing, Stress Testing and Scalability Issues, Testing Location-Based Functionality.

Support for Mobility: File systems: Consistency, coda, little work, Ficus, Mio-NFS, Rover.

Outlook: Architecture of future networks.

TEXT BOOKS

1. **Jochen Schiller**, “Mobile Communications”, Second Edition, Pearson education, 2004. (Unit I-All chapters, Unit II-All chapters, & Unit V: Last two chapters)
2. **Reza B’far**, “Mobile Computing Principles: Designing And Developing Mobile Applications With UML And XML”, Cambridge University Press, 2005. (Unit III-All chapters, Unit IV-All chapters and Unit V - First two chapters).

REFERENCES

1. **Adelstein, Frank, Gupta, Sandeep KS, Richard, Golden, Schwiebert, Loren**, “Fundamentals of Mobile and Pervasive Computing”, ISBN: 0071412379, McGraw-Hill Professional, 2005.
2. **Hansmann, Merk, Nicklous, Stober**, “Principles of Mobile Computing”, Springer, second edition, 2003.
3. **Martyn Mallick**, “Mobile and Wireless Design Essentials”, Wiley DreamTech, 2003.

GOKARAJU RANGARAJUINSTITUTE OF ENGINEERING AND TECHNOLOGY

BUSINESS INTELLIGENCE

(Open Elective – III)

Course Code: GR15A4165

L T P C

IV Year I Semester

2 1 0 3

UNIT I

Business Data and Business Intelligence: An Introduction: What is data? Data and business, Big Data, Information and insight, challenges in data decision, operational and informational data, Data decision challenge, Decision Support System, understanding Business Intelligence, Business Intelligence and its components, Importance of Business Intelligence, Business Intelligence areas, Business Intelligence Implementation, Business Intelligence and Integration Implementation, Overview of IBM Cognos BI.

UNIT II

Data warehouse: An Overview Data warehouse architecture, Data warehouse Modelling and Design, Challenges , Data Modelling requirements, Modelling Techniques; Entity relationship Modelling, Dimensional Modelling, Temporal Modelling, Multidimensional data modelling, ERM Vs MDDM, What is Metadata, Types of metadata, Benefits of metadata, Data Analytics Techniques: OLAP and OLTP systems

UNIT III

Building and Accessing a Data Warehouse: Enterprise data warehouse, Challenges of Building a Warehouse, Data warehouse for decision support system, Data Analytics, Data analytics techniques, Information Mining Vs Data mining, Usage of Data Mining, Information Integration, Data warehouse Master Data Management System, MDM Logical Architecture, DB2 UDB Warehouse

UNIT IV

IBM Cognos BI: IBM Cognos Framework Manager, Connection of Framework Manager to Cognos Business Intelligence, Framework Manager Query Model, Frame work manager Model Types, Enterprise Components, Architecture, Security, Query Modes, Model types, Framework Manager Workflow, Administration Workflow, Cognos Configuration

UNIT V

Query and Reporting: Query and Process flow, Report studio, Generation of different reports such as List, cross tab ,Charts, Prompts etc, Focus reports using prompts and filters, Drilling from one report to another, Report using Relational Data

TEXT BOOKS

1. Chuck Ballard, Dirk Herreman, Don Schau, Rhonda Bell, Data Modeling Techniques for Data Warehousing , IBM [ebook]
2. Business Analytics : Data Analytics & Decision Making by S. Christian Albright and Wayne L. Winston.
3. Analytics at Work by Morisson
4. Competing on Analytics - Davenport
5. IBM Cognos 10 Report Studio : Practical Examples by Philip & Roger
6. IBM Cognos BI 10.2 Administration Essentials by Mehmood Awan Khalid

PRINCIPLES OF SATELLITE COMMUNICATIONS

(OPEN ELECTIVE-III)

Course Code: GR15A04166

L T P C

IV Year I Semester

2 1 0 3

UNIT I

Introduction: Origin of satellite communications, Historical background, basic concepts of satellite communications, frequency allocations for satellite services, applications, future trends of satellite communications.

UNIT II

Orbital Mechanics and Launchers: Orbital Mechanics look angle determination, orbital perturbations, orbit determination, launches and launch vehicles, orbital effects in communication systems performance.

UNIT III

Satellite Subsystems: Attitude and orbital control system, Telemetry, Tracking, command and monitoring, power systems, communication subsystems, satellite antenna equipment reliability and space qualification.

UNIT IV

Satellite Link Design: Basic transmission theory, system noise temperature and G/T ratio, design of down links, uplink design, design of satellite links for specified C/N, system design example.

UNIT V

Earth Station Technology: Introduction, transmitters, receivers, Antennas, tracking systems, terrestrial interface, primary power test methods.

Low Earth Orbit and Geo-stationary Satellite Systems: Orbit consideration, coverage and frequency considerations, delay and throughput considerations, system considerations, operational NGSO constellation designs.

TEXT BOOKS

1. Satellite communications-Timothi Pratt, Charles Bostian and Jeremy Allnutt, WSE, Wiley Publications, 2nd Edition, 2003.

2. Satellite communications Engineering-Wilbur L.Prichard, Robert A. Nelson & Henry G. Snyderhoud, 2nd Edition, Pearson Publications, 2003.

REFERENCES

1. Satellite communications: Design principles-M. Richharia, BS publications, 2nd Edition, 2003.

2. Fundamentals of Satellite communications-K.N.Rajarao, PHI, 2004.

3. Satellite communications-Dennis Roddy, McGraw Hill, 2nd Edition, 1996.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
OBJECT ORIENTED ANALYSIS AND DESIGN

Course Code: GR15A4083

L T P C

IV Year II Semester

2 1 0 3

UNIT I

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

UNIT II

Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

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

UNIT III

Basic Behavioral Modeling-I: Interactions, Interaction diagrams.

Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

UNIT IV

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

TEXT BOOKS

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.
2. UML 2 Toolkit, Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY-Dreamtech India Pvt. Ltd.

REFERENCE BOOKS

1. Fundamentals of Object Oriented Design in UML, Meilir Page-Jones, Pearson Education.
2. Modeling Software Systems Using UML2, Pascal Roques, WILEY-Dreamtech India Pvt. Ltd.
3. Object Oriented Analysis & Design, AtulKahate, The McGraw-Hill Companies.
4. Practical Object-Oriented Design with UML, Mark Priestley, TATA McGrawHill.
5. Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
FUNDAMENTALS OF IMAGE PROCESSING

(Professional Elective IV)

Course Code: GR15A4083

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IV Year II Semester

UNIT – I

Fundamental steps of Image Processing, Components of an Image Processing of System. Image Model and Image acquisition, Sampling and Quantization, relationship between pixels, distance functions, Scanner.

UNIT – II

Statistical and Spatial operations, Intensity functions transformations, Histogram processing, Smoothing & Sharpening – Spatial Filters Frequency Domain filters, Homomorphic filtering, Image filtering & restoration. Inverse and weiner filtering, FIR weiner filter, Filtering using image Transforms, Smoothing Splines and Interpolation.

Morphological and other area operations, basic morphological operations, Opening and Closing operations, Dilation Erosion, Hit or Miss transform, morphological algorithms, extension to grey scale images.

UNIT- III

Segmentation and Edge detection region operations, basic edge detection, second order detection, crack edge detection, gradient operators, Compass and Laplace operators, edge linking and boundary detection, thresholding, region based segmentation, segmentation by Morphological Watersheds.

Image compression: Types and requirements, Statistical Compression, Spatial Compression, Contour Coding, Quantizing Compression, Image data Compression-Predictive technique, Pixel coding, Transfer coding theory, Lossy and Lossless Predictive type coding, Digital Image Water marking.

UNIT –IV

Representation and Description: Chain codes, Polygonal approximation, Signature Boundary Segments, Skeltons, Boundary Descriptors, Regional Descriptors, Relational Descriptors, Principal components for Description, Relational Descriptors

UNIT V

Pattern Recognition Fundamentals: Basic Concepts of pattern recognition, Fundamental problems in pattern recognition system, design concepts and methodologies, example of automatic pattern recognition systems, a simple automatic pattern recognition model

Pattern classification: Pattern classification by distance function: Measures of similarity, Clustering criteria, K-means algorithm, and Pattern classification by likelihood function: Pattern classification as a Statistical decision problem, Bayes classifier for normal patterns.

TEACHING METHODOLOGIES:

1. Power Point presentations
2. Tutorial Sheets
3. Assignments

TEXT BOOKS:

1. Digital Image Processing Third edition, Pearson Education, Rafael C. Gonzalez, Richard E. Woods
2. Pattern recognition Principles: Julius T. Tou, and Rafael C. Gonzalez, Addison-Wesley Publishing Company

REFERENCE BOOKS:

1. Image Processing, Analysis and Machine Vision, Second Edition, Milan Sonka, Vaclav Hlavac and Roger Boyle. Thomson learning.
2. Digital Image Processing – Williamk. Pratl –John wiley edition
3. Fundamentals of digital image processing – by A.K. Jain. PH
4. Pattern classification, Richard Duda, Hart and David strok John Weily publishers.
5. Digital Image Processing, S. Jayaraman, S. Esakkirajan, T. Veerakumar, TMH.
6. Pattern Recognition, R. Shinghal, Oxford University Press.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
SOFTWARE PROJECT MANAGEMENT

(Professional Elective IV)

Subject Code: GR15A4101

L T P C

IV Year II Semester

3 1 0 4

UNIT I

Conventional Software Management: The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

UNIT II

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 III

Work Flows of the process: Software process workflows, Iteration workflows,

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

UNIT IV

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

UNIT V

Process Automation: Automation Building blocks, The Project Environment.

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

TEXT BOOKS

1. Software Project Management, Walker Royce: Pearson Education, 2005.

REFERENCES

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.

2. Software Project Management, Joel Henry, Pearson Education.

3. Software Project Management in practice, PankajJalote, Pearson Education.2005.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

CYBER SECURITY

(Professional Elective IV)

Course Code: GR15A4089

L T P C

IV Year II Semester

3 1 0 4

UNIT I

Introduction to Cyber Crime

Challenges of cybercrime, Classifications of Cybercrimes: E-Mail Spoofing, Spamming, Internet Time Theft, Salami attack/Salami Technique, Data Diddling, Web jacking, Online Frauds, Software Piracy, Computer Network Intrusions, Password Sniffing, Identity Theft, cyber terrorism, Virtual Crime , Perception of cyber criminals: hackers, insurgents and extremist group etc. Web servers hacking, session hijacking.

UNIT II

Cybercrime on Mobile and Wireless Device

Proliferation of Mobile and Wireless Devices, trends in Mobility Credit Card Frauds in Wireless Computing, Types and techniques of Credit Card Frauds, Attacks on Mobiles: Mobile Viruses, Mishing, Vishing, Smishing& Hacking Bluetooth. Web server hacking, session hijacking.

UNIT III

Tools and Methods in Cybercrime

Proxy Servers and Anonymizers, Password Cracking, Keyloggers and Spyware, virus and worms, Trojan Horses, Backdoors, DoS and DDoS Attacks , Buffer and Overflow, Attack on Wireless Networks, Phishing : Method of Phishing, Phishing Techniques.

UNIT IV

Cyber Crime and Criminal justice

Concept of Cyber Crime and the IT Act, 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cheating, Defamation, Harassment and E-mail Abuse, Other IT Act Offences, Monetary Penalties, jurisdiction and Cyber Crimes, Nature of Criminality, Strategies to tackle Cyber Crime and Trends. The Indian Evidence Act of 1872 v. Information Technology Act, 2000: Status of Electronic Records as Evidence, Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages.

UNIT V

Introduction to Cyber Forensics

Information Security Investigations, Corporate Cyber Forensics, Scientific Method in Forensic analysis, investigating large scale Data breach cases. Analyzing Malicious software. Types of Computer Forensics Technology, Types of Business Computer Forensic Technology, Specialized Forensics Techniques.

TEXT BOOKS

1. Principles of Cyber crime, Jonathan Clough Cambridge University Press
2. Cyber Security by Nina Godbole, Sunit Belapure, Willey-India
3. Cyber Law Simplified, Vivek Sood, TMH.

REFERENCES

1. John R. Vacca, Computer Forensics: Computer Crime Scene Investigation, 2nd Edition, Charles River Media, 2005
2. Cyber Laws and IT Protection, Harish Chander, PHI.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
INFORMATION RETRIEVAL SYSTEMS

(Professional Elective V)

Course Code: GR15A4095

L T P C

IV Year II Semester

3 1 0 4

UNIT I

Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses.

Information Retrieval System Capabilities: Search, Browse, Miscellaneous

UNIT II

Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction.

Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure.

UNIT III

Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages

Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.

UNIT IV

User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, Weighted searches of Boolean systems, Searching the Internet and hypertext.

Information Visualization: Introduction, Cognition and perception, Information visualization technologies.

UNIT V

Text Search Algorithms: Introduction, Software text search algorithms, Hardware text search systems.

Information System Evaluation: Introduction, Measures used in system evaluation, Measurement example – TREC results.

TEXT BOOKS

1. Kowalski, Gerald, Mark T Maybury: Information Retrieval Systems: Theory and Implementation, Kluwer Academic Press, 1997.

REFERENCES:

1. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992.
2. Modern Information Retrieval By Yates Pearson Education.
3. Information Storage & Retrieval By Robert Korfhage – John Wiley & Sons.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

REAL TIME OPERATING SYSTEMS

(Professional Elective V)

Course Code: GR15A4086

L T P C

IV Year II Semester

3 1 0 4

UNIT I

REVIEW OF OPERATING SYSTEMS

Basic Principles, System Calls, Files, Processes, Design and Implementation of processes, Communication between processes, Operating System structures.

UNIT II

DISTRIBUTED OPERATING SYSTEMS

Topology, Network types, Communication, RPC, Client server model, Distributed file systems and Design strategies.

UNIT III

REAL TIME MODELS AND LANGUAGES

Event Based – Process Based and Graph based Models, Petrinet Models, Real Time Languages, RTOS Tasks, RT scheduling , Interrupt processing, Synchronization, Control Blocks, Memory Requirements.

UNIT IV

REAL TIME KERNEL

Principles, Design issues, Polled Loop Systems, RTOS Porting to a Target, Comparison and study of RTOS VX works and μ COS, Case studies.

UNIT V

RTOS APPLICATION DOMAINS

RTOS for Image Processing, Embedded RTOS for voice over IP, RTOS for fault Tolerant Applications, RTOS for Control Systems

TEXT BOOKS:

1. Charles Crowley, "Operating Systems-A Design Oriented approach", McGraw Hill 1997.
2. C.M. Krishna, Kang, G.Shin, "Real Time Systems", McGraw Hill, 1997.
3. Tanenbaum, "Distributed Operating Systems", Pearson Education.
4. RaymondJ.A.Bhur, Donald L.Bailey, "An Introduction to Real Time Systems", PHI 1999.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

DESIGN PATTERNS

(Professional Elective V)

Course Code: GR15A4090

L T P C

IV Year II Semester

3 1 0 4

UNIT I

Introduction : What Is a Design Pattern?, Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

UNIT II

A Case Study: Designing a Document Editor: Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, Summary.

UNIT III

Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.

Structural Pattern Part-I: Adapter, Bridge, Composite.

UNIT IV

Structural Pattern Part-II: Decorator, Façade, Flyweight, Proxy.

Behavioral Patterns Part-I: Chain of Responsibility, Command, Interpreter, Iterator.

UNIT V

Behavioral Patterns Part-II: Mediator, Memento, Observer, State, Strategy, Template Method Visitor, Discussion of Behavioral Patterns. What to Expect from Design Patterns, A Brief History, The Pattern Community An Invitation, A Parting Thought.

TEXT BOOKS

1. Design Patterns by Erich Gamma, Pearson Education

REFERENCES

1. Pattern's in JAVA Vol-I by Mark Grand,Wiley DreamTech.
2. Pattern's in JAVA Vol-II by Mark Grand,Wiley DreamTech.
3. JAVA Enterprise Design Patterns Vol-III by Mark Grand,Wiley DreamTech.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
OBJECT ORIENTED ANALYSIS AND DESIGN LAB

Course Code: GR15A4085

L T P C

IV Year II Semester

0 0 2 2

Task 1: Draw the class and object diagrams for the above applications.

Task 2: Draw the Use-case diagrams for the above applications.

Task 3: Draw the sequence diagrams for the above applications.

Task 4: Draw the collaboration diagrams for the above applications.

Task 5: Draw the activity diagrams for the above applications.

Task 6: Draw the State-chart diagrams for the above applications.

Task 7: Draw the component diagrams for the above applications.

Task 8: Draw the deployment diagrams for the above applications.

Task 9: Student should perform forward and Reverse Engineering, and Generate documentation of the project.

II. Student has to take up another case study of his/her own interest and do the same as mentioned in the first nine weeks.

Task 10: Draw the Interactive diagrams for their case study.

Task 11: Draw the Behavioral diagrams for their case study.

Task 12: Perform forward and reverse engineering for the above case study and generate a report of the same.

TEXT BOOKS:

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.
2. UML 2 Toolkit, Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY-Dreamtech India Pvt. Ltd.