LAKIREDDY BALIREDDY COLLEGE OF ENGINEERING(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.

B.TECH. (INFORMATION TECHNOLOGY)

COURSE STRUCTURE

III - SEMESTER

Code No.	Name of the Course	Scheme of Instruction			Scheme of Examination		Total	credits
		Periods per Week			Maximum Marks			
		Lectures	Tutorial	Lab.	Internal	External		
IT301	Probability and Statistics	4	1	-	25	75	100	4
IT302	Basic Electrical Engineering**	4	1	-	25	75	100	4
IT303	Digital Logic Design	4	1	-	25	75	100	4
IT304	Advanced Data Structures through Java	4	1	-	25	75	100	4
IT305	Unix Programming	4	1	-	25	75	100	4
IT351	Advanced Data Structures through Java Lab	-	-	3	25	75	100	2
IT352	Unix Programming Lab	-	-	3	25	75	100	2
IT353	English lab	-	-	3	25	75	100	2
IT354	Term Paper	-	-	3	25	25	50	2
TOTAL		20	05	12	225	625	850	28

IT301 – PROBABILITY AND STATISTICS

Lecture	**: 4 Periods/week**	**Internal Marks**	**: 25**
Tutorial	**: 1 Period/Week**	**External Marks**	**: 75**
Credits	**: 4**	**External Examination**	**: 3 Hrs**

UNIT - I

Probability: Sample space and events – Probability – The axioms of probability – Some Elementary theorems - Conditional probability – Baye's theorem.

UNIT - II

Random variables – Discrete and continuous distributions - Distribution function. Binomial, Poisson, normal distribution – related properties. Moment generating function, Moments of standard distributions, Evaluation of mean, standard, variance, kurtosis and skewness.

UNIT - III

Population and samples. Sampling distribution of mean (with known and unknown variance), proportion, variances. - Sampling distribution of sums and differences. Point and interval estimators for mean, variance and proportions.

UNIT - IV

Statistical Hypothesis – Errors of Type I and Type II errors and calculation. One tail and two-tailed tests. Testing of hypothesis concerning means, proportions and their differences using Z-test.

Tests of hypothesis using Student's t-test, F-test and χ^2 test. Applications of decision making using the above tests.

UNIT - V

Simple Correlation and Regression.

Queuing Theory: Pure Birth and Death Process M/M/1 Model and Simple Problems related to the evaluation of waiting time, length of the queue etc. ,

TEXT BOOK

Probability and Statistics for Engineers, Miller ,John E. Freund, PHI

REFERENCES

1. Probability and Statistics, Gupta & Kapoor
2. Probability, Statistics and Queuing theory applications for Comp. Sciences, 2/e, Trivedy, John Wiley

IT302 – BASIC ELECTRICAL ENGINEERING

Lecture	**: 4 Periods/week**	**Internal Marks**	**: 25**
Tutorial	**: 1 Period/Week**	**External Marks**	**: 75**
Credits	**: 4**	**External Examination**	**: 3 Hrs**

UNIT - I

Electrical Circuits : Basic Definitions, Types of elements, Ohms law, Resistive networks, krichhoff's laws, Inductive networks, Capacitive networks, series and parallel circuits and star-delta and delta star transformations

UNIT - II

Magnetic Circuits : Definition of mmf, flux and reluctance, leakage flux, fringing, magnetic materials and B-H relationship. Problems involving simple series-parallel magnetic circuits. Analysis of linear and non-linear magnetic circuits. Energy storage, AC excitation. eddy currents and hysteresis losses. Coupled circuits(Dot rule),self and mutual inductances, coefficient of coupling.

UNIT - III

Induction and Synchronous Motors: Principle of operation of alternators – regulation by synchronous impedance method – MMF and zero power factor methods. Principle of operation of induction Principle of operation of three-phase induction motors –Slip ring and Squirrel cage motors – Slip-Torque characteristics

UNIT - IV

Transformers : Principle of operation of single phase transformers, Ideal Transformer, Practical transformer, phasor diagram, emf equation, losses, efficiency and regulation.

UNIT - V

Electrical and Electronics Measuring Instruments : Electrical Instruments: Basic principle of indicating instruments, permanent magnet moving coil and moving iron instruments.
Electronic Instruments: Principles of CRT(Cathode Ray Tube),Deflection, sensitivity, Electrostatic and magnetic deflection,Applications of CRO,Voltage,Current and frequency instruments.

TEXT BOOKS

1. William H.Kayt Jr.Jack, E.Kemmerly, Steven M.Durbin," Engineering circuit analysis"6th edition, Tata Mc Graw-Hill 2006 Edition
2. David A.Bell "Electric Circuits", PHI 2006

REFERENCES

1. Network Analysis by Vanvalkenburg, PHI
2. Network Theory by N.C.Jagan & C.Lakshminarayana,B.s Publication.
3. Electrical Circuits by S.Sudhakar, P.S.M.Satyanarayana,TMH Publications
4. Electric Circuits by A.Chakrabarthy,Dhanipat Rai & Co.

IT303 – DIGITAL LOGIC DESIGN

Lecture	**: 4 Periods/week**	**Internal Marks**	**: 25**
Tutorial	**: 1 Period/Week**	**External Marks**	**: 75**
Credits	**: 4**	**External Examination**	**: 3 Hrs**

UNIT - I

Digital system, binary numbers, Number base conversions, Complements, Signed binary numbers, binary codes, Storage and registers, Binary logic, Boolean algebra and logic gates: introduction, basic definitions, Axiomatic definition of BA, basic theorems and properties of BA, Boolean functions, Canonical and standard forms, Other logic operations, Digital logic gates, ICs.

UNIT - II

Gate level minimization: introduction, the map method, FOUR variable map, product of sum simplification, don't care conditions, NAND NOR implementations, Ex-OR Function, Other minimization functions,
Combinational logic circuits: combinational circuits, Analysis procedure, Design procedure, Binary adder subtractor, Decimal adder, Binary multiplier, Magnitude comparator, Decoders, Encoders. Multiplexers

UNIT - III

Synchronous sequential logic: sequential circuits, Storage elements, Analysis of clocked sequential circuits, State reduction and assignment, Design procedures.

UNIT - IV

Registers, shift Registers, Ripple counters, Synchronous counters, other counters

UNIT - V

Memory and programmable logic: RAM, memory decoding, Error detection and correction, ROM, PLAs, PALs, Sequential programmable devices.

TEXT BOOK

DIGITAL DESIGN – Third Edition , M.Morris Mano, Pearson Education/PHI.

REFERENCES

1. Switching and Finite Automata Theory by Zvi. Kohavi, Tata McGraw Hill.

2. Switching and Logic Design, C.V.S. Rao, Pearson Education

3. Digital Principles and Design – Donald D.Givone, Tata McGraw Hill, Edition.

4. Fundamentals of Digital Logic & Micro Computer Design , 5TH Edition, M. Rafiquzzaman John Wiley

IT304 – ADVANCED DATA STRUCTURES THROUGH JAVA

Lecture	**: 4 Periods/week**	**Internal Marks**	**: 25**
Tutorial	**: 1 Period/Week**	**External Marks**	**: 75**
Credits	**: 4**	**External Examination**	**: 3 Hrs**

UNIT - I

Introduction: History of Java, types, arrays, type conversion and casting, compiling and running of simple Java program, introducing methods, constructors, usage of static with data and methods, usage of final with data, access control, this key word, garbage collection, overloading methods and constructors, parameter passing - call by value, recursion, nested classes and inner classes, Exploring the String class.

UNIT - II

Inheritance and Interfaces: Basic concepts, method overriding, abstract classes, dynamic method dispatch, using final with inheritance, the Object class. Differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces.
Exception Handling: Concepts of Exception handling, types of exceptions, usage of try, catch, throw, throws and finally keywords, Built in exceptions.

UNIT - III

Multithreading: Concepts of Multithreading, differences between process and thread, creating multiple threads using Thread class, Runnable interface, Synchronization, thread priorities, inter thread communication, daemon threads, deadlocks, thread groups.
Applets : Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

UNIT - IV

Binary Trees: Definitions, properties, counting binary trees, Binary tree traversal algorithm, expression trees, complete binary trees, forests. spanning trees.
Searches Trees: binary search trees, AVL Trees, B-trees, Red Black trees.

UNIT - V

Hash Tables: tables and records, An ADT for Maps, hash tables, Linear probing, rehashing, Other collision resolution algorithms, separate chaining, the java.util.HashMap Class.
Heaps and priority algorithms: Heaps, Heaps algorithms, priority queues.

TEXT BOOKS

1. The Complete Reference Java J2SE 5th Edition, Herbert Schildt, TMH Publishing Company Ltd, NewDelhi.
2. Data Structures with JAVA ,John R. Hubbard and Anita Huray.

REFERENCES

1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI
2. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell,Seventh Edition, Pearson Education.
3. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education.
4. Beginning in Java 2, Iver Horton, Wrox Publications.

IT305 – UNIX PROGRAMMING

Lecture	**: 4 Periods/week**	**Internal Marks**	**: 25**
Tutorial	**: 1 Period/Week**	**External Marks**	**: 75**
Credits	**: 4**	**External Examination**	**: 3 Hrs**

UNIT - I

Introduction to Unix:- The Unix Operating system, Architecture of Unix, Features of Unix **Unix Commands –** PATH, man, echo, printf, script, passwd, uname, who, date, stty, telnet,ftp.
Introduction to Unix file system : The File System Hierarchy, The Unix File System, Unix File System Commands: pwd,cd,mkdir,rmdir,ls,cp,mv,rm,cat,more,wc,lp,od,tar,gzip,zip. File Attributes- ls, File permissions: chmod, umask, File Systems and Inodes. ln file owner ship.

UNIT - II

Introduction to Shell : The shell as process command, pattern matching,Escaping,Quoting, Redirection, Pipes, Tee, Command Substitution.
Shell Programming : vi editor, Shell variables, Shell scripts : read , exit Conditional Statements : if, test, case,expr ,sleep & wait Looping Statements : While and until looping- Examples

UNIT - III

The Process: Process basics- init , ps, The process creation mechanism, Process attributes, signals Running jobs control.- at ,batch, cron and crontab.
Filters: Simple Filters-pr, cmp, comm,diff, head, tail, cut, paste, sort, uniq, tr

UNIT - IV

Filters using Regular Expressions : Sample Database, grep, egrep, fgrep , Sed -line addressing, context addressing , text editing, substitution

UNIT - V

Programming with awk: awk Preliminaries, print & printf statements, numbering processing,Variables and Expressions,Comparsions and logical operators,Begin and End Sections, Positional Parameters, Arrays, Built-in Variables, Decision and Looping statements, Functions

TEXT BOOK

Your Unix The Ultimate Guide: Sumitabha Das. TMH, 2001

REFERENCES

1. Unix and Shell Programming , Sumitabha Das
2. Unix and shell Programming, Behrouz A. Forouzan, Richard F. Gilberg.Thomson
3. Unix for programmers and users, 3rd edition, Graham Glass, King Ables, Pearson Education.
4. Unix programming environment, Kernighan and Pike, PHI. / Pearson Education

IT351 – ADVANCED DATA STRUCTURES THROUGH JAVA LAB

		Internal Marks	**: 25**
Lab/ Practicals	**: 3 Period/Week**	**External Marks**	**: 75**
Credits	**: 2**	**External Examination**	**: 3 Hrs**

WEEK 1

(a) Write the programs using the concept of nested for loops to generate following patterns:

```
* * * * *          *
* * * *            * *
* * *              * * *
* *                * * * *
*                  * * * * *
```

(b) Write a program that prints Fibonacci series using Recursion & Non-Recursion.
(c) Write a program that reverses a number.

WEEK 2

(a) Write the program to perform factorial of a number using the concept of command line argument.
(b) Write a program to perform multiplication of two matrices.
(c) Write a program for implementing static, final access specifies.
(d) Write a program for implementing the usage of this keyword.

WEEK 3

(a) Write a program to perform sum of tokens using String Tokenizer class.
(b) Write a program that converts all characters of a string in capital letters. (Use String Buffer to store a string).
(c) Write a java program that checks whether a given string is a palindrome or not (Use String to store a string).
(d) Write a java program for sorting a given list of name in ascending order.

WEEK 4

(a) Write a program for implementing method overloading.
(b) Write a program for implementing Dynamic Dispatch method.
(c) Create an abstract class Shape and derived classes Rectangle and Circle from Shape class implement abstract method of shape class in Rectangle and Circle class. (Use Inheritance, overloading and overriding concept)

WEEK 5:

(a) Write a program to perform inheritance with Super and Final keywords.
(b) Write a program to perform multiple inheritance concepts using Interface.
(c) Write a program for handling various types of Exceptions Arithmetic, IndexOutofBound and etc.
(d) Write a program to show an implementation of Package and Subpackage.

WEEK 6

(a) Write a java program that reads a file and displays the file on the screen with a line number before each line.
(b) Write a java program that displays the number of characters, lines and words in a text file
(c) Write a java program that reads a filename from user then displays information from User then displays information about whether the file exists, whether file is readable, whether file is writable the type of file and length of file in bytes.

WEEK 7

(a) Write a java program for implementing multithreading concept.
(b) Write a java program that correctly implements producer consumer problem using the Concept of inter thread communication.
(c) Write a java program for implementing Daemon Thread.

WEEK 8

(a) Develop an applet that displays a simple message with different foreground and Background colors.
(b) Write a java program that allows the user to draw&fill lines, rectangles and ovals with different colors.

WEEK 9

Write a binary program to implement binary search tree operations.

WEEK 10

Write a binary program to implement AVL tree operations.

WEEK 11

Write a binary program to implement Red-Black tree operations.

WEEK 12

Write a binary program to implement Hash table linear probing operations.

IT352 – UNIX PROGRAMMING LAB

		Internal Marks	**: 25**
Lab/ Practicals : 3 Period/Week		**External Marks**	**: 75**
Credits	**: 2**	**External Examination**	**: 3 Hrs**

CYCLE - 1

Session-1

a) Log into the system
b) Use vi editor to create a file called myfile.txt which contains some text.
c) correct typing errors during creation.
d) Save the file
e) logout of the system

Session-2

a) Log into the system
b) open the file created in session 1
c) Add some text
d) Change some text
e) Delete some text
f) Save the Changes
g) Logout of the system

Session-3

Practicing the commands PATH, man, echo, printf,script, passwd, uname, who, date,
stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip and other commands.

CYCLE - 2

Session-1

a) Log into the system
b) Use the cat command to create a file containing the following data. Call it mytable use tabs to separate the fields.

1425	Ravi	15.65
4320	Ramu	26.27
6830	Sita	36.15
1450	Raju	21.86

c) Use the cat command to display the file, mytable.
d) Use the vi command to correct any errors in the file, mytable.
e) Use the sort command to sort the file mytable according to the first field. Call the sorted file my table (same name)
f) Print the file mytable
g) Use the cut and paste commands to swap fields 2 and 3 of mytable. Call it my table (same name)
h) Print the new file, mytable
i) Logout of the system.

Session-2

Practicing the commands unlink, du, df, mount, umount, find, unmask, ulimit, ps,w, finger, arp, ftp, telnet, rlogin

CYCLE - 3

Session-1

Practicing the commands

tail, head, nl, uniq, tee, pg, comm, cmp, diff, tr,cpio.

Session-2

1) a) Login to the system

b) Use the appropriate command to determine your login shell

c) Use the /etc/passwd file to verify the result of step b.

d) Use the who command and redirect the result to a file called myfile1. Use the more command to see the contents of myfile1.

e) Use the date and who commands in sequence (in one line) such that the output of date will display on the screen and the output of who will be redirected to a file called myfile2. Use the more command to check the contents of myfile2.

2) Pipe your /etc/passwd file to awk, and print out the home directory of each user.

CYCLE - 4

a) Develop an interactive grep script that asks for a word and a file name and then tells how many lines contain that word

b) Write a sed command that deletes the first character in each line in a file.

c) Write a sed command that deletes the character before the last character in each line in a file.

d) Write a sed command that swaps the first and second words in each line in a file.

CYCLE - 5

a) Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.

b) Write a shell script that accepts one or more file name as arguments and converts all of them to uppercase, provided they exist in the current directory.

CYCLE - 6

a) Write a shell script that determines the period for which a specified user is working on the system

b) Write a shell script that accepts a file name starting and ending line numbers as arguments and displays all the lines between the given line numbers.

CYCLE - 7

a) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.

b) Write a shell script that computes the gross salary of a employee according to the following rules:

i) If basic salary is < 1500 then HRA =10% of the basic and DA =90% of the basic.

ii) If basic salary is >=1500 then HRA =Rs500 and DA=98% of the basic

The basic salary is entered interactively through the key board.

CYCLE - 8

a) Write a shell script that accepts two integers as its arguments and computers the value of first number raised to the power of the second number.

b) Write an interactive file-handling shell program. Let it offer the user the choice of copying, removing, renaming, or linking files. Once the user has made a choice, have the program ask the user for the necessary information, such as the file name, new name and so on.

CYCLE - 9

a) Write shell script that takes a login name as command – line argument and reports when that person logs in

b) Write a shell script which receives two file names as arguments. It should check whether the two file contents are same or not. If they are same then second file should be deleted.

CYCLE - 10

a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.

b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.

c) Write a shell script to perform the following string operations:
   i) To extract a sub-string from a given string.
   ii) To find the length of a given string.

IT353 – ENGLISH LAB

		Internal Marks	**: 25**
Lab/ Practicals : 3 Period/Week		**External Marks**	**: 75**
Credits	**: 2**	**External Examination**	**: 3 Hrs**

The English Language Communications Skills Lab focuses on practice of sounds of language and familiarizes the students with the use of English in everyday situations and contexts. It aims at improving the communicative competence of students and to enrich their power of expression, articulation and persuasiveness. The thrust is on developing competences, both linguistic as well as communicative, in order to improve employability potential.

OBJECTIVES

1. To expose the students to a variety of self-instructional, learner-friendly modes of English language learning and stimulate intellectual and attitudinal exercise.
2. To provide students with the required facility and practice to face computer-based Competitive exams such as GRE, TOEFL , IELTS etc.
3. To enable them to learn better pronunciation through emphasis on word accent, intonation and rhythm.
4. To train them to use language effectively to face interviews, group discussions, public Speaking.
5. To develop necessary attitudes and behaviors so as to improve their employability quotient.

SYLLABUS

The following course content is prescribed for the English Language Communication Skills Laboratory sessions:

1. Dimensions of Phonetics: Phonetic Transcription, Sounds, Stress, Intonation, Rhythm, Varieties of Spoken English: Indian, British and American
2. Oral Presentations -- Prepared and Extempore -- JAM
3. Role Play
4. Describing Objects / Situations / People
5. Information Transfer
6. Debates
7. Group Discussions

SUGGESTED SOFTWARE

- Digital Mentor: Globarena,Hyderabad,2005
- Sky Pronunciation Suite: Young India Films, Chennai, 2009
- Mastering English in Vocabulary, Grammar, Spelling, Composition, Dorling Kindersley,USA,2001
- Dorling Kindersley Series of Grammar, Punctuation, Composition, Dorling Kindersley,USA,2001
- Oxford Talking Dictionary, The Learning Company, USA, 2002
- Learning to Speak English - 4 CDs. The Learning Company,USA,2002
- Cambridge Advanced Learners English Dictionary (with CD). Cambridge University Press, New Delhi, 2008