15AVP201 / 15AVP211 — AMRITA VALUES PROGRAMME I / AMRITA VALUES PROGRAMME II — 1 0 0 1

Amrita University's Amrita Values Programme (AVP) is a new initiative to give exposure to students about richness and beauty of Indian way of life. India is a country where history, culture, art, aesthetics, cuisine and nature exhibit more diversity than nearly anywhere else in the world.

Amrita Values Programmes emphasize on making students familiar with the rich tapestry of Indian life, culture, arts, science and heritage which has historically drawn people from all over the world.

Students shall have to register for any two of the following courses, one each in the third and the fourth semesters, which may be offered by the respective school during the concerned semester.

Courses offered under the framework of Amrita Values Programmes I and II

Message from Amma's Life for the Modern World
Amma's messages can be put to action in our life through pragmatism and attuning of our thought process in a positive and creative manner. Every single word Amma speaks and the guidance received in on matters which we consider as trivial are rich in content and touches the very inner being of our personality. Life gets enriched by Amma's guidance and She teaches us the art of exemplary life skills where we become witness to all the happenings around us still keeping the balance of the mind.

Lessons from the Ramayana
Introduction to Ramayana, the first Epic in the world – Influence of Ramayana on Indian values and culture – Storyline of Ramayana – Study of leading characters in Ramayana – Influence of Ramayana outside India – Relevance of Ramayana for modern times.

Lessons from the Mahabharata
Introduction to Mahabharata, the largest Epic in the world – Influence of Mahabharata on Indian values and culture – Storyline of Mahabharata – Study of leading characters in Mahabharata – Kurukshetra War and its significance - Relevance of Mahabharata for modern times.

Lessons from the Upanishads
Introduction to the Upanishads: Sruti versus Smrti - Overview of the four Vedas and the ten Principal Upanishads - The central problems of the Upanishads – The Upanishads and Indian Culture – Relevance of Upanishads for modern times – A few Upanishad Personalities: Nachiketas, Satyakama Jabala, Aruni, Shvetaketu.

Message of the Bhagavad Gita
Introduction to Bhagavad Gita – Brief storyline of Mahabharata - Context of Kurukshetra War – The anguish of Arjuna – Counsel by Sri. Krishna – Key teachings of the Bhagavad Gita – Karma Yoga, Jnana Yoga and Bhakti Yoga - Theory of Karma and Reincarnation – Concept of Dharma – Concept of Avatar - Relevance of Mahabharata for modern times.

Life and Message of Swami Vivekananda
Brief Sketch of Swami Vivekananda's Life – Meeting with Guru – Disciplining of Narendra - Travel across India - Inspiring Life incidents – Address at the Parliament of Religions – Travel in United States and Europe – Return and reception India – Message from Swamiji's life.

Life and Teachings of Spiritual Masters India
Sri Rama, Sri Krishna, Sri Buddha, Adi Shankaracharya, Sri Ramakrishna Paramahamsa, Swami Vivekananda, Sri Ramana Maharshi, Mata Amritanandamayi Devi.

Insights into Indian Arts and Literature
The aim of this course is to present the rich literature and culture of Ancient India and help students appreciate their deep influence on Indian Life - Vedic culture, primary source of Indian Culture – Brief introduction and appreciation of a few of the art forms of India - Arts, Music, Dance, Theatre.

Yoga and Meditation
The objective of the course is to provide practical training in YOGA ASANAS with a sound theoretical base and theory classes on selected verses of Patanjali's Yoga Sutra and Ashtanga Yoga. The coverage also includes the effect of yoga on integrated personality development.

Kerala Mural Art and Painting
Mural painting is an offshoot of the devotional tradition of Kerala. A mural is any piece of artwork painted or applied directly on a wall, ceiling or other large permanent surface. In the contemporary scenario Mural painting is not restricted to the permanent structures and are being done even on canvas. Kerala mural paintings are the frescos depicting mythology and legends, which are drawn on the walls of temples and churches in South India, principally in Kerala. Ancient temples, churches and places in Kerala, South India, display an abounding tradition of mural paintings mostly dating back between the 9th to 12th centuries when this form of art enjoyed Royal patronage. Learning Mural painting through the theory and practice workshop is the objective of this course.

Course on Organic Farming and Sustainability
Organic farming is emerging as an important segment of human sustainability and

healthy life. 'Haritamritam' is an attempt to empower the youth with basic skills in tradition of organic farming and to revive the culture of growing vegetables that one consumes, without using chemicals and pesticides. Growth of Agriculture through such positive initiatives will go a long way in nation development. In Amma's words "it is a big step in restoring the lost harmony of nature".

Benefits of Indian Medicinal Systems

Indian medicinal systems are one of the most ancient in the world. Even today society continues to derive enormous benefits from the wealth of knowledge in Ayurveda of which is recognised as a viable and sustainable medicinal tradition. This course will expose students to the fundamental principles and philosophy of Ayurveda and other Indian medicinal traditions.

Traditional Fine Arts of India

India is home to one of the most diverse Art forms world over. The underlying philosophy of Indian life is 'Únity in Diversity" and it has led to the most diverse expressions of culture in India. Most art forms of India are an expression of devotion by the devotee towards the Lord and its influence in Indian life is very pervasive. This course will introduce students to the deeper philosophical basis of Indian Art forms and attempt to provide a practical demonstration of the continuing relevance of the Art.

Science of Worship in India

Indian mode of worship is unique among the world civilisations. Nowhere in the world has the philosophical idea of reverence and worshipfulness for everything in this universe found universal acceptance as it in India. Indian religious life even today is a practical demonstration of the potential for realisation of this profound truth. To see the all-pervading consciousness in everything, including animate and inanimate, and constituting society to realise this truth can be seen as the epitome of civilizational excellence. This course will discuss the principles and rationale behind different modes of worship prevalent in India.

15BUS102 INTRODUCTION TO MANAGEMENT 1 0 0 1

Objectives: *The objective of this course to enable the students to have a basic knowledge of principles of management.*

Unit 1

Management: meaning and definition.

Unit 2

Importance of management, administration and management.

Unit 3

Functional management.

Unit 4

Functions of management.

Unit 5

Levels of management.

TEXTBOOK:

Dinkar Pagare – Principles of Management, Sultan Chand and Sons

REFERENCE:

VSP Rao, V. Hari Krishna – Management Text and Cases, Excel Books

15COM216 PRINCIPLES OF ACCOUNTING 2 0 0 2

Objective: *The objective of this course to enable the students to have a basic knowledge of theoretical and practical aspects of various systems of accounting.*

Unit 1

Financial Accounting: Meaning and important terms, accounting concepts, double entry book keeping, types of accounts, journal, ledger, trial balance.

Unit 2

Final Accounts: Preparation of Trading and Profit and Loss Accounts and Balance Sheet, adjustments relating to outstanding expenses, prepaid expenses, accrued income unearned income, depreciation and bad and doubtful debts.

Unit 3

Cost Accounting: Meaning and Definition, elements of cost, Cost sheet, Materials, purchase of materials, stores and stock control.

Unit 4

Theoretical and Practical orientation on usage of a Financial Accounting Software, Tally for Accounting purposes – preparation of various accounts – valuation of stock.

Unit 5

Some exercises and case studies.

TEXTBOOKS:

1. *S.P. Jain, K.L. Narang – Financial Accounting, Kalyani Publishers*
2. *S.P. Jain, K.L. Narang – Cost Accounting, Kalyani Publishers*
3. *Tally Manual*

REFERENCES:

1. *S.N. Maheshwari and S.K. Maheshwari: Advanced Accountancy, Vikas Publishers*
2. *R.S.N. Pillai and Bagavathi: Management Accounting, S. Chand*

15CSA101 BASICS OF PROGRAMMING 2 0 0 2

Objectives: *Describe the main principles of procedure oriented programming languages, programming language history and the central formalisms used in the description of programming languages.*

Unit 1

Introduction to programming - problem solving techniques, algorithms, flowcharts. Introduction to C language – History of C, features, C as a structured language, C as a middle level language, applications, advantages,

Unit 2

Structure of 'C' program, preprocessor directives, Execution phases, C conventions, character set, Programming elements (tokens) Classes of data types, Declaration of variables, escape sequences (backslash character constants), Operators, operator precedence and associativity,

Unit 3

Expressions – arithmetic, relational and logical, Evaluation of expressions, type conversions (type casting), mathematical library functions. Input and Output operations – Conversion specifiers, Control statements,

Unit 4

Arrays – single dimensional arrays (linear arrays), Two-dimensional arrays – declaration, initialization, accessing elements in 2D array and memory representation, Multidimensional arrays.

Unit 5

Strings – defining strings, initializing, accessing, character handling functions, arithmetic operations on characters, character by character input and output, string handling functions, array of strings and its features.

TEXTBOOKS:

1. *"Let us C", Yashavant Kanetkar, 13th Edition, BPB Publications.*
2. *"Programming in ANSI C", E. Balagurusamy, Sixth Edition, Tata McGraw-Hill Publishing Company Limited.*

REFERENCES:

1. *"Test your C skills", Yashavant Kanetkar,*
2. *"Exploring C", Yashavant Kanetkar,*

15CSA102 FUNDAMENTALS OF DBMS 1 0 0 1

Objectives: *The course helps in understanding the basic concepts and needs for and uses of database management systems. Also gives a good formal foundation on the relational model of data and provides a base in SQL.*

Unit 1

Introduction to DBMS - Basic Concepts.

Unit 2

Data Independence - The Three Levels of Architecture Constraints.

Unit 3

Keys - Data Models - ER – Model - Relational Model.

Unit 4

Structure of Relational Databases Normalization - Functional Dependency – Boyce One NF-2 NF, 3 NF.

Unit 5

Transaction Processing: ACID properties - Indexes SQL Basics - Classification of SQL – DDL – DML – TCL - DCL.

TEXTBOOKS:

1. *Silberschatz Korth. Sudarshan: Database System Concepts - 6th Edition McGraw Hill International Edition*
2. *Ivan Bayross: Sql-PL/SQL The Programming Language of Oracle - 4rd Edition - BPB Publications*

REFERENCE:

C.J. Date: An Introduction to Database Systems - Eighth Edition - Pearson Education Asia

15CSA103 FUNDAMENTALS OF WEB TECHNOLOGY 2 0 0 2

Objectives: *This course provides the student with experience in the design and implementation of Internet Web sites for business applications. Defines and discuss major concepts, tool, techniques, and methods of web application development.*

Unit 1

History of SGML - Introduction to Internet – Resources of Internet - Hardware and Software requirements for Internet - Internet Service Providers (ISP).

Unit 2

Introduction to Web - Using the Web - World Wide web Consortium - web services 2.0, Search engine, Blogging, Social Networking, Social Book Marking, Rich Internet Application, Mashups, Widgets and Gadgets, xml, RSS, web 2.0 Monetization models.

Unit 3

Web Browser - Web Development Languages – HTML - tags as content containers - Document structures DOCTYPE, head, body, and frameset tags – elements – Attributes - Attribute values – Font – Images – Tables - Linking URLs – Schemes.

Unit 4

HTML5 – HTML5 elements - Building a form and form elements - Introduction to CSS - Style Sheets Formatting - Advanced Layouts and Positioning with style Sheets.

Unit 5

Using JavaScript with Style Sheets - Inline Styles - Linking External Style Sheets – CSS3 – Box Model – Text Effects – Animations.

TEXTBOOKS:

1. *Harley Hahn - Internet Complete Reference - Second Edition - TMH*
2. *Dietel, Nieto, Lin, Sadhu - XML How to Program- Pearson Education - 2001*
3. *Ajax, Rich Internet Applications and web development for Programmers Deitel Developer Series. First Impression - 2009*

15CSA111 ADVANCED C 3 0 0 3

(Prerequisite: 15CSA101 Basics of Programming)

Objectives: *This course is intended to introduce the advanced concepts in C and shows how these concepts are useful in programming.*

Unit 1

Functions – defining function, accessing a function, need for functions, function declaration and prototypes, function call, return statement, actual and formal arguments, passing arguments to functions, passing arrays to functions, other types of functions – functions with no arguments and no return values, function with arguments but no return values, function with arguments and return values, function with no arguments and return values, recursive functions, Nesting of functions, Passing structures to functions, call by value and call by reference, storage class specifiers – automatic, register, static and external.

Unit 2

Structures – defining a structure, declaring structure variables, accessing structure elements, initializing structures, array of structures, array within structures, structures within structures, self-referential structures, uses of structures, Unions – defining unions, union of structures, uses of unions, Enumerated data types, uses of enumerated data type, typedef.

Unit 3

C - Preprocessor Macros - Macro substitution, simple, macros with arguments arguments, nesting of macros, File inclusion, Command line arguments.

Unit 4

Pointers - Fundamentals of pointers, usage, pointer declaration and accessing the address of the variable. Initialization of pointer variables, accessing a variable through its pointer, Operations - Pointer increments, decrements, comparison and scale factor. Pointers as function arguments. Passing one dimensional array, two dimensional array to functions and array pointers. Pointers to structures and troubles with pointers.

Unit 5

Input Output in C - File modes, opening and closing of files, reading and writing of files. Introduction to binary files, difference between text and binary files. Insertion, modifying, deletion and searching records in a file.

TEXTBOOKS:

"Let us C", Yashavant Kanetkar, 13th Edition, BPB Publications.

"Programming in ANSI C", E. Balagurusamy, Sixth Edition, Tata McGraw-Hill Publishing Company Limited.

REFERENCES:

"Test your C skills", Yashavant Kanetkar,

"Exploring C", Yashavant Kanetkar,

15CSA112 ADVANCED DBMS 2 0 0 2

(Prerequisite: 15CSA102 Fundamentals of DBMS)

Objectives: *Understanding of the components of a database system, experience with the programming version of SQL i, PL/SQL and an introduction of some advanced topics in database management, e.g., object-relational databases and design, distributed databases, database administration and data warehousing.*

Unit 1

Introduction - Data Independence - Architecture - The Database Administrator - The Database Management System - Client/Server Architecture - Distributed Processing - Introduction and Definition of Data Information, Concept of databases - Introduction to Client Server Models - Distributed Systems - Database System Applications. Constraints – Keys - Design Issues.

Unit 2

Data Models - ER – Model - Weak Entity Sets - Extended ER Features - Relational Model - Structure of Relational Databases - CODD's Rule - The Relational Algebra.

Unit 3

Integrity And Security – Normalization - Functional Dependency – Boyce-Codd Normal Form SQL - Built in SQL functions Sub-Queries – Joins - DCL – TCL - Views – Sequences – Index – Locks.

Unit 4

Query Processing and Optimization: Evaluation of Relational algebra expressions - Query Equivalence - join strategies - Transaction Processing: ACID properties - Introduction to concurrency control – Deadlock – Recovery.

Unit 5

PL/SQL Basics – Exceptions – Cursors - Sub Programs - Stored Functions – Procedures – Packages – Triggers - object-relational databases and design - distributed databases - database administration (security, backup and restore, tuning - data warehousing.

TEXTBOOKS:

1. *Silberschatz Korth. Sudarshan: Database System Concepts - 6th Edition McGraw-Hill International Edition*
2. *Ivan Bayross: Sql-PL/SQL The Programming Language of Oracle - 4rd Edition - BPB Publications*

REFERENCES:

1. *C.J. Date: An Introduction to Database Systems - Eighth Edition - Pearson Education Asia*
2. *Kevin Loney - George Koch: Oracle 9i The Complete Reference McGraw-Hill International Edition*

15CSA113 ANALYSIS OF ALGORITHMS 2 0 0 2

Objectives: *To introduce techniques for analyzing the efficiency of computer algorithms, to provide knowledge about various searching and sorting techniques*

Unit 1

Introduction - Types of algorithms - Properties of algorithms - Implementation and Empirical Analysis - Analysis of algorithms – classification of algorithms and their efficiencies - average-case and worst-case analysis.

Unit 2

Growth of functions – Big-Oh Notation – Basic Recurrences – Examples of Algorithm Analysis.

Unit 3

Sorting – Efficiency Considerations – Efficiency of Sorting, Exchange Sorts – Bubble Sort – Quick Sort – Efficiency of Quick Sort. Selection and Tree Sorting.

Unit 4

Optimal-time algorithms - Straight Selection Sort – Heap Sort – Insertion Sort – Simple insertion sort – Merge Sort - Analysis of sorting algorithms.

Unit 5

Searching - Basic Search Techniques – Sequential Searching – Efficiency of

sequential searching – Indexed Sequential Search – Binary Search - Analysis of searching algorithms.

TEXTBOOK:

Algorithm in C++ (Third Edition) – Robert Sedgewick (Pearson Education Asia)

REFERENCES:

Introduction to Algorithms by Thomas H. Cormen MIT; 3rd edition (2010)

Mark Allen Weiss, Data Structures and Algorithm Analysis in C++, Third Edition, Addison Wesley, 2007.

15CSA114 COMPUTER ORGANIZATION AND SYSTEM ARCHITECTURE 3 0 0 3

Objectives: *This course is intended to give an idea about digital circuits, basic organization and internal architecture of a computer system.*

Unit 1

SOP and POS Expressions, Karnaugh Map Simplification - Simplification of circuits using K-Map. Arithmetic circuits. Decoder, Encoder, Multiplexer, De-multiplexer, Sequential circuits and combinational circuits, Flip Flops, Registers, Counters.

Unit 2

Basic Computer Organization and Design - Instruction Codes - Computer Registers - Computer Instructions – Timing and Control - Instruction Cycle - Memory Reference Instructions - Input Output Configuration.

Unit 3

Central Processing Unit: Introduction - General Register Organization - Stack Organization - Instruction Formats - Addressing Modes - Data Transfer and Manipulation - Conditional Branch Instructions - RISC and CISC.

Unit 4

Parallel Processing - Pipelining - Arithmetic Pipeline - Instruction Pipeline - RISC pipeline - Vector Processing.

Unit 5

Computer Arithmetic – Introduction - Floating point representation - Multiplication Algorithm - Booth's Algorithm - Memory Organization - Memory Hierarchy - Types of Memory - Main Memory - Auxiliary Memory - Associative Memory - Cache Memory.

TEXTBOOKS:

1. *M Morris Mano - Computer System Architecture - PHI - Third Edition*
2. *Gideon Langholz, Abraha & Joe L Mott - Digital Logic Design - World Scientific Publishing Co Ltd.*

REFRENCES:

1. *P Pal Chaudhuri - Computer Organization and Design - PHI - Second Edition*
2. *Thomas C Bartee - Digital Computer Fundamentals - Tata Mc Graw Hill - Sixth Edition*

15CSA115 OBJECT ORIENTED PROGRAMMING USING C++ 2 0 0 2

Objectives: *This course is intended to introduce the advanced concepts of object oriented programming and shows how these concepts are useful in problem solving.*

Unit 1

Introduction to Object Oriented Programming, C++ Environment: Manipulators - Classes and Objects, Making sense of core object concepts (Encapsulation, Abstraction, Polymorphism, Classes, Messages Association, Interfaces) Implementation of class in C++, C++ Objects as physical object, Object as function arguments, returning object from function, Structures and classes. Classes objects and memory static class data. Const and classes.

Unit 2

Data Members, Access Specifiers, Array within a Class, Array of Objects - Scope Resolution Operators, Inline Functions, Constructors, Default Constructors, Destructors, Static Members, This Pointer.

Unit 3

Compile Time Polymorphism: Overloading Operators, Function Overloading, Overloading Constructors, Friend Functions, Friend Classes, Inheritance Types, Function Overriding, Virtual Base Class, Constructors in Base Derived Classes, Class Containership,

Unit 4

Run time Polymorphism: Virtual Functions, Pure Virtual Functions, Abstract Class, Class Templates, Function Templates, Exception Handling.

Unit 5

Data files - C++ stream classes, unformatted and formatted I/O operations, Opening and closing of files, File modes, File pointers and manipulation, Sequential input and output operations , Updating a file, Error handling during file operations

TEXT/ REFERENCES:

1. *H.M. Deitel and P.E. Deital,"C++ How to Program", Eighth Edition Prentice Hall of India, 1998.*
2. *E. Balagurusamy "Object-Oriented Programming with C++", Fifth Edition, Tata Mcgraw-Hill Publishing Company Ltd*

15CSA181 BASICS OF PROGRAMMING LAB. 0 0 3 1

1. Program to accept two numbers and find their sum, difference, product, quotient and remainder
2. Program to accept three numbers and find their average
3. Program to swap two numbers with and without using a temporary variable
4. Program to find whether the given number is even or odd
5. Program to check whether a number is positive or negative
6. Program to find area and circumference of the circle given its radius
7. Program to find radius of the circle given its area
8. Program to find radius of the circle given its circumference
9. Program to find the area of a triangle given three sides
10. Program to find area of a triangle given two sides and an included angle.
11. Program to accept height in feet and display the height in inches and centimeters
12. Program to find the biggest of two numbers using ternary operator
13. Program to find the biggest of three numbers using ternary operator
14. Program to find the largest of three numbers using nested if statement
15. Program to find the largest, second largest and smallest of three numbers
16. Program to find the highest of four marks of a student using else-if ladder
17. Program to find the roots of a quadratic equation using else-if ladder
18. Program to find the reverse of a given number and check if the number is palindrome or not
19. Program to find the GCD of given two numbers and hence compute LCD
20. Program to generate the multiplication table for a number in a proper format
21. Program to find whether a given number is an Armstrong number
22. Program to find the factorial of a given number
23. Program to display all numbers from 1 to n which are not divisible by 5
24. Program to generate Fibonacci series
25. Program to generate Pascal triangle
26. Program to accept day number of the week and display the corresponding week day using switch statement
27. Program to convert binary number to decimal
28. Program to find the frequency of a given digit in a number
29. Program to check whether the given date is valid or not
30. Program to find the difference between two dates
31. Program to search an element in a given array
32. Program to find the sum of elements of an array
33. Program to print odd numbers first and then even in an array
34. Program to insert an element at position k in an array of size n where k<=n
35. Program to delete an element from position k in an array of size n where k<=n
36. Program to generate first n Fibonacci terms using an array
37. Program to find the sum of even and odd numbers between 1 and n where n is an integer using array

38. Program to find the sum and difference on two matrices
39. Program to identify the matrix as square or rectangular or scalar matrix given order mxn
40. Program to find the sum of all elements in upper triangular and lower triangular elements
41. Program to check if a given matrix is symmetric or not
42. Program to find the row and column sum for each row and column of a given matrix
43. Program to find trace and norm of a square matrix
44. Program to print the sum of diagonal elements of a matrix
45. Program to determine whether the given matrix is an upper triangular matrix
46. Program to find the largest and smallest in each row of a given matrix
47. Program to find the largest and smallest in each column of a given matrix
48. Program to print ASCII code for a given character
49. Program to check if a given character is a letter or a digit or a special character using ASCII value
50. Program to check if a given character is a letter or a digit or a special character without using ASCII value
51. Program to check if the given character is a vowel or consonant
52. Program to accept a string and count the number of vowels and consonants in it
53. Program to input a line of text and remove all blanks and punctuations
54. Program to search for a given name in a list of names

15CSA182 FUNDAMENTALS OF DBMS LAB. 0 0 3 1

1. Create the following tables and perform the query below.

SUPPLIER

FIELD NAME	TYPE	CONSTRAINT
SNO	VARCHAR2(5)	PRIMARY KEY
SNAME	VARCHAR2(30)	NOT NULL
CITY	VARCHAR2(30)	
STATUS	NUMBER(5)	

PARTS

FIELD NAME	TYPE	CONSTRAINT
PNO	VARCHAR2(5)	PRIMARY KEY
PNAME	VARCHAR2(30)	NOT NULL
COLOR	VARCHAR2(30)	
WEIGHT	NUMBER(5)	

SUPPLIER_PARTS

FIELD NAME	TYPE	CONSTRAINT
SNO	VARCHAR2(5)	FOREIGN KEY
PNO	VARCHAR2(30)	FOREIGN KEY
SDATE	DATE	
QTY	NUMBER(10,2)	

a. Insert 10 records inside three tables.
b. Get the details of all Parts.
c. Get the details of all Suppliers.
d. Get the details of Suppliers in the city ‘Paris’.
e. Count the number of Suppliers
f. Get the maximum status in the Supplier Table
g. Get the name of the suppliers in the city of London
h. Get the details of Suppliers whose status is between 10 and 20
i. Get the name of the Parts in the colours (Red, Blue, Green) (using ‘IN’ and ‘OR’).
j. Get the name of the Supplier who lives in the same city of Supplier ‘James’.
k. Get the details of Suppliers currently not supplying any product.
l. Get the Sname and total qty of Parts supplied by each Supplier.
m. Get the date on with product ‘Nut’ was last supplied.
n. Get the third highest weight in the Parts table.
o. Get the name of the Part having the second highest weight.
p. Get the Sname and total number of Parts supplied by each Supplier
q. Update the weight of the least weight ‘Nut’ with the same weight of least weight ‘Bolt’.
r. Delete the Supplier not supplying any products.
s. Get the name of the Supplier supplying all the Parts.
t. Get the names of the supplying the products supplied by supplier ‘Harry’
u. Get the Pname and total qty of Parts supplied by each Supplier.
v. Get the details of Supplier supplying more than 3 Parts.
w. Add a new field ‘State’ inside Supplier Table.
x. Drop the foreign key constraint from Supplier Parts Table.
y. Add a constraint inside Parts Table that Pno must start with letter ‘P’.
z. Drop the Table Supplier.

15CSA183 FUNDAMENTALS OF WEB TECHNOLOGY LAB. 0 0 3 1

1. Create a personal Blog. Add personal information.
2. Create a simple web page, which reveals the personal Information of yours.
3. Design a web page with an interface for creating an e-mail Id.
4. Develop a web site for a University, which offers different UG and PG Courses. (Hint: Using Frames, Framesets, Images Menus and Hyperlinks)
5. Create a web page with advanced layouts and positioning with CSS and HTML.
6. Design a website with different methods of embedding CSS in a web page.
7. Create a static web page which displays your personal details. (Hint: CSS3 and HTML5)
8. Create a web page through which the user can enter his / her details to become an authenticated user of that page.

9. Create a web site for a Computer Hardware shop. (Hint: CSS3 and HTML5)
10. Create a web site for Amrita School of Arts and Sciences. (Hint: CSS3 and HTML5)

15CSA184 INFORMATION TECHNOLOGY BASICS LAB. 0 1 3 2

PC assembly using Simulation tools
Office Automation Tools: Word processors, spreadsheet, presentations
Internet applications (eg: Google Docs, Google Forms etc.)

15CSA188 ADVANCED C LAB. 0 0 3 1

1. Program to find the length of a given string with and without using string function
2. Program to copy source string into destination string with and without using string function
3. Program to compare two given strings with and without using string function
4. Program to concatenate two strings with and without using string function
5. Program to reverse a given string with and without using string function
6. Program to convert a given string to lowercase with and without using string function
7. Program to convert a given string to uppercase with and without using string function
8. Program to search for a substring in a given string with and without using string function
9. Program that counts the number of lines, words, and characters in its input
10. Program to convert the characters in a string from lowercase to uppercase and vice versa
11. Program to find whether a given string is palindrome or not
12. Program to find whether a given number is prime or not using function
13. Program to find x^n where x is real and n is integer using function
14. Program to find factorial of a given number using recursion
15. Program to find the sum of n natural numbers using recursion
16. Program to find nth Fibonacci number using recursion
17. Program to generate Fibonacci series using recursion
18. Program to compute xn where x is real and n is integer using recursion
19. Program to calculate GCD of two integers using recursion
20. Program to print a line of text in reverse order using recursion
21. Program to find the employees who is getting salary between Rs 10000 to 20000 using structures
22. Program to find the student record whose age is between 18 to 25
23. Program to find the employee record who is working in a research department
24. Program to find the employee records having the same name
25. Program for matching the names of countries with their corresponding capitals using structures
26. Program that creates a structure for a product which includes product number, product name and cost.

27. Program to search for a given employee record based on id
28. Program to use union to declare a single variable that can store an integer, a character and a character string.
29. Program to define a union that can store an integer, a floating point quantity and a double precision quantity. Then define a structure that contains a union of the above type, a character and an integer. Then declare 2 structure variables
30. Write a c program to test whether a character entered is a small case letter or not (using Macros).
31. Write a c program to find the largest of 2 numbers (using Macros).
32. Write a macro definitions with arguments for calculations of area and perimeter of a triangle, a square and a circle. Store these macro definitions in a file called “areaperi.h”. Include this in your program and call macro definitions for calculating area and perimeter for different squares, triangles and circles.
33. Write a program to illustrate command line arguments.
34. Write a program that uses pointers to set each element of an array to zero.
35. Write a function that takes a single string as its argument and returns a pointer to the first nonwhite character in the string.
36. Write a program to display the contents of array using pointer.
37. Write a c program to perform arithmetic operations on pointers.
38. Write a c program to find the Fibonacci series using pointers.
39. Write a program that dynamically allocates a chunk of memory large enough to store 6 integers. Then prompt the user to enter 6 integers and store them in your newly-allocated memory. Finally, print the integer values in reverse order. Did you remember to free the memory you allocated? If not, please add this to your program.
40. Find sum of all the employees salaries using pointers in structures.
41. Write a program to implement a linear list and perform the operation such as insert(), search() and delete().
42. Write a program to display the contents of a file on the screen.
43. Write a program to store every character typed at the keyboard to store in a text file.
44. Write a c program to count the number of lines, characters and words in a file.

15CSA189 ADVANCED DBMS LAB. 0 0 3 1

1. Create a program to print the squares of a number at To Limit.
2. Using reverse for Loop Finds the Reverse of a string.
3. Consider the following tables:

BANK_MAST

FIELD NAME	TYPE	CONSTRAINT
ACCNO	VARCHAR2(5)	PRIMARY KEY
NAME	VARCHAR2(30)	
BALANCE	NUMBER(10,2)	

BANK_TRANS

FIELD NAME	TYPE	CONSTRAINT
TNO	NUMBER	PRIMARY KEY
ACCNO	VARCHAR2(5)	FOREIGN KEY
TTYPE	CHAR(1)	'W' OR 'D'
AMOUNT	NUMBER(10,2)	
TDATE	DATE	

Create a PL/SQL to insert into Transaction Table. No transactions are possible on Sundays. While inserting Accno check it exists or not. Update the Master Table according to the Type of Transaction. A balance of Rs.1000 should be always maintained. Tno must be automatically Generated. Tdate Is Sysdate. (Use exceptions in your program)

4. Create a program to print the details of first five highest paid employees from the Emp Table.
5. Count the number of employees in each department in the Employee Table. If the number of employees is more than two put those employees in a separate table maintained for that Dept. (Use parameterized cursor).
6. Create a program to split Emp Table into two. After splitting merge the Splitted tables inside a third table.
7. Create a function to find the factorial of a number (using recursive function)
8. Create a function to find the Fibanocci Series (using recursive function)
9. Create a function to check whether a table exists in your User Area.
10. Consider the Inventory Tables Item Master and Sales. Create a procedure to delete the items having no sales.
11. Create a Library Information System using PL/SQL.
12. Create a package having two procedures, one to check whether the Inputted number is Positive or Negative, other to check whether the inputted date is greater than or less than Sysdate.
13. Create a trigger to insert into RET_EMP when a record is deleted from EMP.
14. Create a trigger to prevent insertions on Product Table on Sundays
15. Create a trigger to update the stock of an item when a sale is made for the item.
16. Using dynamic SQL create a Table at Run Time.
17. Create a procedure to drop a Table passed as parameter.
18. Create a procedure for the automatic generation of primary key
19. Create user defined type person having attributes Pno, Name, Dob and Member Function Derive Age to calculate age. Define a column Person_ Det of Emp_Table and Student_Table of type person.
20. Create a PL/SQL to insert into object tables.
21. Create V array 'Hobby' of array size 5 and define Column Hobbies in Emp_Table of type hobby. Generate an OID for above created object types.

15CSA191 OBJECT ORIENTED PROGRAMMING USING C++ LAB 0 0 3 1

1. Write a C++ program to implement flight class with data member as flight no., source, destination and fare. Write a copy constructor and a member function to display the flight information.
2. Write a C++ program to implement a string object. Include member functions to compare two strings and to concatenate two strings.
3. Write a C++ program to implement a class to represent complex numbers. Include member functions to add and multiply to complex numbers. Overload assignment operator =
4. Write a C++ program to implement time class that has separate data members for hours, minutes and seconds. Overload + Operator to add two times (object) and ++ operator to increment the time by one second.
5. Write a C++ program to implement a student class having roll no.name, rank, addresses as data members. Overload assignment operator =
6. Write a C++ program to implement user defined string class. Overload the constructor and a member function to concatenate two strings.
7. Write a C++ program implement Complex class with the member function Add, Subtract and Multiply two complex Numbers.
8. Write a C++ program to implement Bank-SB-Account Class with member functions to deposit, withdraw and show the balance. Assume appropriate data members.
9. Write a C++ program to implement a telephone bill class with Name, Address, Tel. No., No. of calls as data members. Compute the amount to be paid if the charges per call is Rs. 2/-.
10. Write a program that creates a binary file by reading the data for the students from the terminal. The data of each student consist of roll no., name (a string of 30 or lesser no. of characters) and marks.

15CSA201 COMPUTER NETWORKS 3 0 0 3

Objectives: *This course presents an in-depth discussion of the most important networking protocols comprising the TCP/IP protocol suite. Students will be able to understand state of the art in network protocols, architectures, and applications.*

Unit 1

Evolution of Computer Networking - Types of Network - Transmission Technology - Scale-networks topologies - Protocols & standards – Connection oriented and Connection less Services - Network Devices - The OSI reference model - TCP/IP Reference Model.

Unit 2

Physical Layer: transmission media - Analog Transmission - Digital transmission - Data Link Layer Design Issues - Services provided to the Network Layer - Framing – Design methods - Error Control - Flow Control - Error Detection – Parity – Checksum

- CRC and Correction – Hamming Code - Sliding Window Protocols - One-Bit Sliding Window - A Protocol Using Go Back N-Selective repeat: sender-receiver windows - Multiple Access Protocols - IEEE Standard for LANs – 802.x standards.

Unit 3

Introduction to Network Layer – Services - Circuit Switching vs Packet Switching - Packet Switched Networks – Routing and Forwarding - Types of Routing - routing algorithms - congestion control algorithms – internetworking - Network Protocols – IP – Datagram – IP header format – Class full Addressing – Classless addressing – Special Addresses - Private addresses – Subnets and subnet masks – ARP and RARP-ICMP.

Unit 4

Introduction to Transport Layer – Services provided to the upper layers - Elements of transport Protocols - Addressing – Connection Establishment – Connection Release – Error Control and Flow Control – Multiplexing – Crash Recovery - Congestion Controls in Transport Layer. Internet Transport Protocols - UDP - Process to Process communication - User datagram – Checksum - UDP operation - uses of UDP – TCP - TCP Services – TCP Protocol – Segment Header – Connection Management – Flow Control – Congestion Control.

Unit 5

Principles of Network Applications - Web and HTTP - Electronic mail – DNS - DNS Name space – Resource Records – Name Servers – FTP.

TEXTBOOK:

Computer Networks (Fifth Edition) – Andrew S. Tanenbaum (Prentice Hall of India)

REFERENCES:

1. *Computer Networking A Top-Down Approach(Fifth Edition) - James F. Kurose-Keith W. Ross (Pearson)*
2. *Computer Networks - Protocols, Standards and Interfaces (Second Edition) – Uyless Black (Prentice Hall of India Pvt. Ltd.)*
3. *Data communication and Networking (Fourth Edition) - Behrouz A Forouzan (Tata McGraw Hill)*

15CSA202 DATA STRUCTURES 3 0 0 3

Objectives: *This course is intended to introduce abstract concepts and shows how those concepts are useful in problem solving, and then shows how the abstractions can be made concrete by using a programming language. Equal emphasis is placed on both the abstract and the concrete versions of a concept.*

Unit 1

Information and meaning – Binary and Decimal Integers - Real numbers – Character

Strings – Abstract Data Types – ADT for varying length character strings. Elementary Data Structures – Arrays – The arrays as an ADT – Using One Dimensional Arrays - implementing one dimensional arrays – Arrays as Parameters – Two Dimensional Arrays - Multidimensional Arrays.

Unit 2

The Stack – Definition – Primitive operations – Stack as an abstract Data Type – Stack in C++ using Templates. Example: Infix, Postfix and Prefix Basic definitions and examples – Evaluating a Postfix Expression – Converting an Expression from infix to postfix.

Recursion – Recursive definition and Processes – Factorial Function – multiplication of natural numbers – Properties of Recursive Definitions or Algorithms. Recursive Programs – The Towers of Hanoi Problem – Translation from Prefix to Postfix using Recursion.

Unit 3

Queues and lists – The queue and its Sequential Representation – The Queue as an Abstract Data Type – Insert operation – Priority Queue.

Unit 4

Linked lists – Inserting and Removing nodes from a list – Linked list implementation of Stack – getnode and freenode operations – Linked implementation of Queues – Linked List as a Data Structure – Nodes.

Other List Structures – Circular Lists – Stack as a Circular List – Queue as a Circular List – Primitive Operations on Circular Lists – Doubly linked Lists. The Linked List in C++.

Unit 5

Trees – Binary Trees – Operations and Applications – Node Representation of Binary Trees – Internal and External Nodes - Binary Tree Traversals – Threaded Binary Trees.

TEXTBOOK:

Data Structures Using C and C++ (Second Edition) – Yedidyah Langsam. Moshe J. Auguenstein Aaron M. Tenenbaum (Prentice Hall of India Pvt. Ltd.)

REFERENCE:

Data Structures and Program Design (Third Edition) – Robert L. Kruse (Prentice Hall of India Pvt. Ltd.)

15CSA203 JAVA PROGRAMMING 3 0 0 3

Objectives: *The main objective of this course is to understand the basic concepts and techniques which form the object oriented programming paradigm using Java Language.*

Unit 1

Introduction and Features of Java - Byte Code, Multithreading, Program Translation, JVM.

Unit 2

Program Structure, Data types, Java Statements, Type casting in Java programs - Types of Operators.

Unit 3

Decision Making statements, Looping statements-Arrays, Strings, Vectors, Wrapper classes - Class, methods, Inheritance, Visibility control, Final Classes, methods and Variables.

Unit 4

Interfaces - Interfaces in Java Library - Packages - System Packages, User defined packages – Multithreading - Threads, Runnable Interface, Thread Priorities - Exception Handling - try, catch, throw, throws, finally.

Unit 5

File handling and I/O in java - Stream Classes, Random access Files. Event handling - GUI Programming - AWT, Windows Fundamentals - Applets - Life cycle of an applet.

TEXTBOOK:

E Balagurusamy, Programming with Java – A Primer, Fourth Edition, Tata McGraw Hill Education Private Limited.

REFERENCE:

Java 2 - The Complete Reference – McGraw Hill publication.

15CSA204 OPERATING SYSTEM 3 0 0 3

Objectives: *Fundamental concepts and algorithms will be covered along with the practical aspects that pertain to the most popular operating systems such as Unix/Linux and Windows, and some instructional operating systems will be studied as well.*

Unit 1

Introduction to Operating Systems: Mainframe systems - Desktop systems - Multiprocessor systems - Distributed systems - Clustered systems - Real-time systems - Handheld systems.

Operating System Structures: System components - Operating System services - System calls - System Programs - System Structures - System Design and Implementation - System Generation.

Unit 2

Process Management: Process Concept - Process Scheduling - Operations on processes - Cooperating processes – InterProcess Communication.

Unit 3

CPU Scheduling: Basic concepts - Scheduling criteria - Scheduling Algorithms - First Come First served Scheduling, Shortest job First Scheduling, Round Robin Scheduling, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling.

Unit 4

Deadlocks: System Model - Deadlock Characterization - Methods for handling Deadlocks - Deadlock Prevention - Deadlock Avoidance - Deadlock detection - Recovery from deadlock.

Unit 5

Memory Management: Background – Swapping - Contiguous Memory allocation – Paging – Segmentation - Segmentation with Paging. Virtual Memory: Background - Demand paging - Process creation - Page replacement - Allocation of Frames - Thrashing.

TEXTBOOK:

Abraham Silber Schartz - peter B Galvin - Greg Gagne, Operating system Concepts. Sixth Edition, Addison-Wesley (2003)

REFERENCES:

1. *S.Godbole - Operating Systems - Tata McGraw-Hill Publications*
2. *H.M Deitel - Operating Systems - Second Edition - Pearson Edition Asia*

15CSA211 ADVANCED JAVA PROGRAMMING 3 0 0 3

(Prerequisite: 15CSA203 Java Programming)

Objectives: *The main objective of the course is to enable students to understand the concepts underlying technologies in JAVA Enterprise edition with Swings and multithreading, configuring Apache tomcat server, Java beans and Enterprise Java Beans.*

Unit 1

Networking: Classes to be covered Socket, ServerSocket, IPAddress, URL connections – Swing controls – JDBC - Writing JDBC applications using select, insert, delete, update.

Unit 2

JAVA SERVER PAGES: Configuring Tomcat JSP/Servlet server. Brief Introduction to J2EE Architecture. Advantage of JSP technology. JSP Architecture, JSP Access Model. JSP Syntax Basic (Directions, Declarations, Expression, Scriplets, Comments) JSP Implicit Object (Out, HttpServlet Request, Http Servlet Respose, Exception Handling, Session Management.-

Unit 3

SERVLETS: Introduction to Servlets (Life cycle of servlets, Java Servlets Development Kit, creating, Compiling and running servlet). The servlet API: javax. servlet package. Reading the servlet Parameters, Reading Initialization parameter. The javax.servlet.http.

Unit 4

Package Handling HTTP Request and Response (GET / POST Request), Using Cookies, Session Tracking. Exception Handling.

Unit 5

Introduction to Beans and Bean Development Kit (BDK). Advantages of Java Beans (Bean concepts - Events in bean box - Bean customization - Persistence – Application) Using the Java Beans API Session beans - Entity beans - Programming and deploying enterprise Java Beans.

TEXTBOOKS:

1. *Deitel & Deitel, "Java How to program", Prentice Hall, 4th Edition, 2000.*
2. *Gary Cornell and Cay S. Horstmann, "Core Java Vol 1 and Vol 2", Sun Microsystems Press, 1999.*
3. *Stephen Asbury, Scott R. Weiner, Wiley, "Developing Java Enterprise Applications", 1998.*

15CSA212 INTRODUCTION TO NETWORK SECURITY 2 0 0 2

Objectives: *This course covers the fundamentals of network security and covers topics such as active and passive attacks on networks, encryption, symmetric and asymmetric key systems, authentication using certification authorities, and access control using passwords and firewalls.*

Unit 1

Introduction to Network Security – Vulnerability, Threat and Attack - Computer criminals Methods of defense - Importance of Effective Network Security Strategies.

Unit 2

Typical Network Security When using Your Computer - Terminology about Data Storage, Processing or Transmission - Passive Attacks and Active Attacks - Potential Network Vulnerabilities - Tapping into Transmission Media Secure programs.

Unit 3

Need of cryptography – introduction to symmetric and public key crypto systems.

Unit 4

Non malicious program errors - Viruses and malicious code - Targeted malicious code - Controls against program threats and controls.

Unit 5

Network Concepts - Threats in networks - Network Security Controls – Firewalls – IDS - Secure Email.

TEXTBOOKS:

1. *Security in Computing - Charles P. Pfleeger - Pearson Education; Fourth edition (2009)*
2. *Network Security: Private Communication in a Public World - by Kaufman Charlie (Author), Perlman Radia (Author), Prentice-Hall; 2 edition (2002)*

15CSA213 MANAGEMENT INFORMATION SYSTEMS 2 0 0 2

Objectives: *The objective of this course is to introduce the students to the Management Information Systems and its application in organizations.*

Unit 1

Introduction to Information System Concepts - Definition to MIS, Role and Impact-Role of Computers in MIS.

Unit 2

Management Practices - Strategic Management of Business - The Concept of Corporate Planning - Essentiality of Strategic Planning - Development of Business Strategies and Types of Strategies.

Unit 3

Decision Making - Information Concepts - Systems – Concepts – Controls – Types of System.

Unit 4

Business Process Re-engineering – Introduction – Business Process – Process Model of the Organization.

Unit 5

Decision Support System – Concepts and Philosophy – DSS Deterministic System – MIS and Role of DSS.

TEXTBOOK:

Management Information System Second Edition: W.S. Jawadekar, Tata McGraw-Hill

REFERENCE:

Management Information System: Ashok Arora, Akshaya Bhatiya, Excel Books

15CSA214 .NET FRAMEWORK 2 0 0 2

Objectives: *This course helps to effectively use visual studio .NET and provides an understanding of the goals and objectives of the .NET Framework.*

Unit 1
Introduction to .NET framework: Managed Code and the CLR - Intermediate Language, Metadata and JIT Compilation - Automatic Memory Management.

Unit 2
Language Concepts and the CLR: Visual Studio .NET - Using the .NET Framework.

Unit 3
Base Class Library, Common Type System (CTS), Common Language Specification, Intermediate Language, Namespaces, Installation of Visual Studio.

Unit 4
Various features of IDE, Different type of applications. Metadata – Interoperability.

Unit 5
Assemblies - The Framework Class Library: .NET objects.

TEXTBOOK:
Robert Powel, Richard Weeks, C# and the .NET Framework, Techmedia

15CSA215 SOFTWARE ENGINEERING 3 0 0 3

Objectives: *Software Engineering presents a broad perspective on software systems engineering, concentrating on widely used techniques for developing large-scale software systems. This course covers a wide spectrum of software processes from initial requirements elicitation through design and development to system evolution.*

Unit 1
Introduction – Software - Software Crisis - Software myths - Computer based systems - Hardware considerations - System Analysis – Checklist - System specification.

Unit 2
Software requirements specification - System modeling - Software prototyping - Developing simple formal specification - error specification - model based specification - object oriented design.

Unit 3
Design process considerations - Transform analysis - design heuristics – Design optimization - Data structure versus data flow techniques - Jackson system development - Warnier – orr diagrams - Data structures system development.

Unit 4
Real Time system - data flow oriented design method - programming function

reliability - software reuse – CASE - software development environments. Software quality assurance - quality metrics - software testing - path testing - control structure testing - black box testing - integration - validation and system testing.

Unit 5
Software maintenance - reverse engineering and reengineering – Information System Auditing.

TEXTBOOK:
Roger S. Pressman, "Software Engineering", Tata McGraw-Hill Publishing Company Pvt Ltd, Sixth Edition.

REFERENCE:
Shooman, "Software Engineering", Tata McGraw-Hill Publishing Company, Pvt Ltd, 1987

15CSA216 WEB PROGRAMMING 3 0 0 3

(Prerequisite: 15CSA103 Fundamentals of Web Technology)

Objectives: *This course allows the students to create web sites with client side scripting and dynamic content that interacts with databases. Also discuss major tools, techniques, and methods of dynamic web application development.*

Unit 1
Scripting Basics - Introduction to JavaScript - Creating Simple JavaScript - using and Storing Values - Strings and Arrays.

Unit 2
Testing & Comparing Values - Repeating yourself: Using Loops - Using Built-in Objects - Working with Browser Objects - Creating Custom Objects - Using JavaScript for form.

Unit 3
PHP basics, string processing & regular expressions, Components of strings, Form processing and Business Logic, Creating sessions, Using Cookies, dynamic contents.

Unit 4
Introduction to MySql, Creating connection with MySql, Connecting to database, Insert, Update, delete records from database using PHP interface.

Unit 5
Introduction to XML – DTD – Schemas - Simple API for XML – Xpath – XSL – XSLT - Web Servers - Website Uploading and Hosting - Website Management.

TEXTBOOKS:

1. Ajax, Rich Internet Applications and web development for Programmers Deitel Developer Series. First Impression - 2009

2. Dietel, Nieto, Lin, Sadhu - XML How to Program- Pearson Education – 2001

15CSA281 DATA STRUCTURES LAB. 0 0 3 1

1. Write and test a Boolean function that determines whether a given positive integer is prime.
2. Write function prototypes for the following :
   (i) a function which receives an int and a float and retuns a double.
   (ii) a function that receives an int pointer and float reference and returns an int pointer
   (iii) a function which doesn't receive anything and doesn't return anything.
3. Write and test a function that reverse the digits of a positive integer (for eg: reverse (5026) would return 6205).
4. Write and test a program that develops a matrix class which can handle integer matrices of different dimensions. Within matrix class overload operators to carry out the
   (i) addition
   (ii) multiplication and
   (iii) mcomparison of two matrices.
5. Write a program that prints Pascal's triangle of binomial coefficient like this

```
                1
            1       1
        1       2       1
    1       3       3       1
1       4       6       4       1
```

6. Write and test a function that transposes a square matrix.
7. Write and test a recursive function that prints all the permutations of the first n characters of a string.
8. Write and test a recursive function that returns the power xn
9. Write a program to implement a stack of strings (illustrate the operations push (), pop(), size(), empty() and top()).
10. Write a program to show the linked implementation of the Stack class.
11. Write a program to covert infix to postfix.
12. Write a program to implement Towers of Hanoi using Stack.
13. Write a program to implement a linear list and perform the operation such as insert(), search() and delete().
14. Write a program to implement a queue by adding the functions such as
    (i) Determine the size
    (ii) input queue

    (iii) output a queue
    (iv) split a queue into two queues
15. Write a program to search a circular linked list with a header node.
16. Write a program to create a binary tree and find the height of a binary tree.
17. Write a program to perform the binary tree traversals.
18. Write a program to perform a deletion from a Binary Tree (using a delete () function).
19. Write a program to implement Bubble Sort.
20. Write a program to implement Quick Sort.
21. Write a program to implement Heap Sort.
22. Write a program to implement Radix Sort.
23. Write a program to implement Binary Search.
24. Write a program to implement Binary Search Tree.

15CSA282 JAVA PROGRAMMING LAB. 0 0 3 1

1. Write a program to print the following triangle of numbers
   1
   1 2
   1 2 3
   1 2 3 4
   1 2 3 4 5
2. Write a simple java application, to print the message, "Welcome to java"
3. Write a program to display the month of a year. Months of the year should be held in an array.
4. Write a program to assign two integer values to X and Y. Using the 'if' statement the output of the program should display a message whether X is greater than Y.
5. Write a program to find the area of rectangle.
6. Write a program to list the factorial of the numbers 1 to 10. To calculate the factorial value, use while loop. (Hint Fact of 4 = 4*3*2*1)
7. Write a java program to add two integers and two float numbers. When no arguments are supplied, give a default value to calculate the sum. Use function overloading.
8. Write a program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MulDiv that extends from AddSub class to use the member data of the super class. MulDiv should have methods to multiply and divide A main function should access the methods and perform the mathematical operations.
9. Write a program with class variable that is available for all instances of a class .Use static variable declaration. Observe the changes that occur in the object's member variable values.
10. Write a java program
    a. To find the area and circumference of the circle by accepting the radius from the user.

b. To accept a number and find whether the number is Prime or not

11. Write a java program to create a Student class with following attributes
Enrolment No:, Name, Mark of sub1, Mark of sub2, mark of sub3, Total Marks. Total of the three marks must be calculated only when the student passes in all three subjects. The pass mark for each subject is 50. If a candidate fails in any one of the subjects his total mark must be declared as zero. Using this condition write a constructor for this class. Write separate functions for accepting and displaying student details. In the main method create an array of three student objects and display the details.
12. In a college first year class are having the following attributes
Name of the class (BCA, BCom, MHA), Name of the staff
No of the students in the class, Array of students in the class
Define a class called first year with above attributes and define a suitable constructor. Also write a method called best Student() which process a first year object and return the student with the highest total mark. In the main method define a first year object and find the best student of this class
13. Write a Java program to define a class called employee with the name and date of appointment. Create ten employee objects as an array and sort them as per their date of appointment. ie, print them as per their seniority.
14. Create a package 'student.fulltime .BCA' in your current working directory
a. Create a default class student in the above package with the following attributes: Name, age, sex.
b. Have methods for storing as well as displaying
15. Write a program to demonstrate a division by zero exception
16. Write a program to create an user defined exception say Pay Out Of Bounds.
17. Write a small program to catch Negative Array Size Exception. This exception is caused when the array is initialized to negative values.
18. Write a program to handle Null Pointer Exception and use the "finally" method to display a message to the user.
19. Write a program which create and displays a message on the window
20. Write a program to draw several shapes in the created window
21. Write a program to create an applet and draw grid lines
22. Write a Java program which create a frame with two buttons father and mother. When we click the father button the name of the father, his age and designation must appear. When we click mother similar details of mother also appear.
23. Create a frame which displays your personal details with respect to a button click
24. Create a simple applet which reveals the personal information of yours.
25. Write a program to move different shapes according to the arrow key pressed.
26. Write a java Program to create a window when we press
M or m the window displays Good Morning
A or a the window displays Good After Noon
E or e the window displays Good Evening
N or n the window displays Good Night
27. Demonstrate the various mouse handling events using suitable example.

28. Write a program to create menu bar and pull down menus.
29. Write a program to explain the multithreading with the use of multiplication table. Three threads must be defined. Each one must create one multiplication table.
30. Write a program to illustrate thread priority.
31. Create a GUI program in java with the following components.
a. A frame with flow layout.
b. Add the following components on to the frame.
i. Two Text Field ii. A button with the label display
c. Allow the user to enter data into the textfield
d. When the button is clicked paint the frame by displaying the data entered in the textfield
e. Allow the user to properly close the frame

15CSA284 .NET FRAMEWORK LAB. 0 0 3 1

1) Write a program using delegates to sort two numbers in ascending and descending order.
2) Write a program with a base class Student and sub class marks to accept and display the Name and Marks of 2 students. The name should be a Base class variable and marks should be sub class variables. Create Object for sub class only.
3) Accept the string 'bca' (all in small letter) and Change the first and second letters to capital and accept the string 'semester', combine and display the string with the user given semester name in between. Eg (Bca second semester, here second is user given).
4) Overload the operators '+' and '-' Use these operators on objects in Main and display the results. Class should have two members real and complex of integer type.
5) Write a program using static constructor to show the current date through the main function.
6) Create an MSIL program to print "Hello World"
7) Create a Windows application to show a message box "Hello World"

15CSA285 WEB PROGRAMMING LAB. 0 0 3 1

1. Create a personal Blog. Add personal information.
2. Create a simple web page, which reveals the personal Information of yours.
3. Design a web page with an interface for creating an e-mail Id.
4. Develop a web site for a University, which offers different UG and PG Courses. (Hint: Using Frames, Framesets, Images Menus and Hyperlinks)
5. Create a web page with advanced layouts and positioning with CSS and HTML.
6. Design a website with different methods of embedding CSS in a web page.
7. Create a static web page which displays your personal details.
8. Create a web page through which the user can register for an email account.

9. Create a web site for a Computer Hardware shop.
10. Create a web site for Amrita School of Arts and Sciences.
11. Create a web page that shows different methods of embedding JavaScript.
12. Create a web page with rollover menus. Rollover menus should be created using JavaScript.
13. Create a simple calculator, which can perform the basic arithmetic operations.
14. Validate the registration for with the following criteria:
15. Name and Age should be Mandatory Fields.
16. Password and Re-enter Password fields should contain same value.
17. Name field should accept only character values.
18. Create a student registration form using php and store data in database.

15CSA287 ADVANCED JAVA PROGRAMMING LAB. 0 0 3 1

1. Program to demonstrate Swing components.
2. Program to implement Address Book using Swing components.
3. Program to demonstrate loading of file in a Swing Component.
4. Multithreading program, one of the threads print a ….z and other thread print 1…26.
5. Example: 1a2b3c…. 26z.
6. Multithreading program to schedule two jobs.
7. Client Server Socket Programming.
8. Server Socket which receives data from a java client program.
9. Program to fetch a particular Website tags when an URL is specified.
10. Implement stack, queue, hashmap, hashtable, enumeration, ArrayList.
11. Create a table from a java program.
12. Update a table from a java program.
13. Load a table data in Swing components.
14. Dele a record from a table, drop table from a java file.
15. Program which shows use of Statement, Prepared Statement and Callable Statement.
16. Configure Apache Tomcat and write a hello world jsp page.
17. Configure Apache Tomcat server to deploy Servlets.
18. Exceptional handling in a JSP page.
19. Create a login page and authenticate a user in a JSP page using database.
20. Write a program to implement a simple servlet which writes a Welcome HTML page in the web browser.
21. A servlet should receive a parameter from JSP page and process it.
22. Servlet program to implement parameter handling.
23. Servlet program to handle GET and POST request.
24. A website hit counter data which has to be saved in a cookie.
25. Implement a Java Beans to set and get values.
26. Program to illustrate the procedure of handling session and print a Hello world using Java Bean.

27. Enterprise Session Beans, deploy, and run a simple Java EE application which does add, subtract, multiply and division using stateless session bean.
28. An application named account using stateful session bean. The purpose of account is to perform transaction operations (deposit and withdraw) for the customer.
29. The account application consists of an enterprise bean, which performs the transactions, and two types of clients: an application client and a web client.

15CSA301 FUNDAMENTALS OF CRYPTOGRAPHY 3 0 0 3

Objectives: *The main objective of this course is to introduce the working of various cryptographic methods and how to apply this knowledge to real-world applications.*

Unit 1

Classical encryption techniques substitution ciphers and transposition ciphers, cryptanalysis, steganography, Stream and block ciphers - Modern Block Ciphers: Block ciphers principles, Shannon's theory of confusion and diffusion,

Unit 2

Data encryption standard (DES), Strength of DES, Idea of differential cryptanalysis, block cipher modes of operations, Principals of public key crypto systems, RSA algorithm, security of RSA.

Unit 3

Message Authentication Codes: Authentication requirements, authentication functions, message authentication code, hash functions, birthday attacks, security of hash functions,

Unit 4

Digital Signatures: Digital Signatures, Elgamal Digital Signature Techniques, Digital signature standards (DSS), proof of digital signature algorithm.

Unit 5

Key Management and distribution: Symmetric key distribution, Diffie-Hellman Key Exchange, Public key distribution, X.509 Certificates.

TEXTBOOK:

William Stallings, "Cryptography and Network Security: Principals and Practice", Pearson Education, Sixth Edition.

REFERENCE:

Dr T R Padmanabhan N Harini,"Cryptography And Security Paperback", Wiley India

15CSA302 C# PROGRAMMING 3 0 0 3

Objectives: *Upon the completion of this course you will be able to: Understand object-oriented programming concepts and apply them in C# programs, Create C++ console applications, Create C++ Windows Forms applications, understand the Microsoft .NET platform, Utilize .NET components in your C++ programs.*

Unit 1

C++ Fundamentals: Basic classes, declarations, conditionals, loops, arrays, strings, enumerations, structures.

Unit 2

OOP in C++: Encapsulation, inheritance, polymorphism. Exceptions and Object Lifetime: exceptions and the garbage collector. Interfaces, generics and collections - Callback Interfaces, Delegates, and Events.

Unit 3

Advanced C++ Type Construction: Indexers, operator overload, conversions - Windows Forms and WPF: Basic windows programming: forms, component class, control class, control events, menus, status bars, tool bars, interacting with the registry.

Unit 4

Drawing in Windows (GDI+): Paint sessions, the Graphics class, coordinate systems, color, fonts, hit testing.

Unit 5

Input, Output, and Serialization: System.IO, Directory and File Types, StreamReaders and StreamWriters, working with binary data, configuring objects for serialization.

TEXTBOOK:

Latest version or two of Andrew Troelsen's C# text from Apress (Pro C# 5.0 and the .NET Framework 4.5)

15CSA303 MOBILE TECHNOLOGIES AND APPLICATION DEVELOPMENT 2 0 3 3

Objectives: *The purpose of this course is to provide an introduction to modern digital mobile and wireless communication systems. It also provides a comprehensive introduction to the design and implementation of Android applications for handheld systems, such as smart phones and tablets.*

Unit 1

GSM – Mobile services, system architecture, Radio interface, protocols, Localization and calling, Handover, security - 27--31 GPRS, HSCDC.

Unit 2

Wireless LAN: IEEE 802.11, system architecture - IEEE-802.11

Unit 3

Protocol architecture, physical layers, medium access control layers, MAC management 802.11b, 802.11 a, Hiper LAN.

Unit 4

Bluetooth, Adhoc network, sensor network - Mobile IP, DHCP.

Unit 5

Transport and application - TCP over wireless - indirect IP, snooping TCP, Mobile TCP – Fast retransmit/ Fast recovery, Transmission time out, selective retransmission - Wireless Application Protocol.

LAB:

Setting up your Android Development Environment
Working with screen configurations and multiple screen sizes
Working with the all-important Activity Class and its lifecycle - being able implement intents and permissions
Running multiple activities with the Fragment Class
Creating user interfaces to make your apps run smoothly for your users
Notifying users about important events

TEXTBOOKS:

1. *Mobile Communications by Jochen Schiller, Pearson Education 2nd Edition*
2. *Wireless communications & Networks by William stallings.*
3. *Principles of Wireless Networks by Kaveh Pahlavan and Prashanth Krishnamurthy, Prentice Hall 2002*
4. *James F. Kurose et al.,"Computer Networking", Addison Wesley, 2002.*
5. *Android Programming: Pushing the Limits, Wiley By Erik Hellman*
6. *Android Application Development Black Book, Dreamtech Press, Pradeep Kothari, KLSI*

15CSA304 OBJECT-ORIENTED ANALYSIS AND DESIGN 2 0 0 2

Objectives: *This course teaches proven real world techniques to meet the biggest challenge in the software development community – building quality systems which fulfil your requirements, and delivering them on time. The focus of the course is to give you the practical skills that are most critical in building well designed software systems.*

Unit 1

An Overview of Object oriented systems development: Two orthogonal view of the software - Object Oriented Systems development Methodology - Object Basics: Object Oriented Philosophy.

Unit 2

Attributes: Object state and properties - Object Behavior and Methods - Object Respond to Messages - Encapsulation and Information Hiding - Class Hierarchy - Classes and Object - Object Oriented Systems Development Lifecycle.

Unit 3

The Software development process - Building High Quality software - Object Oriented Systems Development: A Use Case Driven Approach; Object Oriented Mythologies - Elements of the Notation – Class Diagrams – Use Case – State Transition Diagrams – Objects Diagrams – Interaction Diagrams – Module Diagrams – Process Diagrams.

Unit 4

Applying the Notation – First Principles – the Micro Development Process – The Macro Development Process - Modeling – Class Modeling: Link and Association concepts – Generalization – Inheritance - A Sample Class model.

Unit 5

Advanced Class Modeling: State Modeling: Events – States - Transition and conditions - State diagram; Interaction Modeling: Use Case Models - Sequence models - activity models - collaboration diagram – Packages - Object Oriented Languages – Introduction, Implementing functionality - Case studies.

TEXTBOOK:

1. *Grady Booch – Object- Oriented Analysis and Design with Applications – Addison Wesley - Second Edition*
2. *Ali Bahrami – Object Oriented Systems Development McGraw Hill, August 2008*

REFERENCES:

1. *James Rumbaugh Michael Blaha – Object Oriented Modeling and Design PHI*
2. *E Balaguruswamy – Object Oriented Technology - Tata Mc Graw Hill*

15CSA311 COMPUTER GRAPHICS 3 0 0 3

Objectives: *The primary objective of this course is to give the basic principles of 2D and 3D computer graphics, to study the elementary mathematical techniques that allow us to position objects in three dimensional spaces and techniques necessary to produce basic 2D/3D dimensional illustrations.*

Unit 1

Applications of Graphics: CAD, Presentation Graphics, Computer Art, Entertainment, Education and Training, Visualization, Image Processing,

Unit 2

Graphical User Interfaces - Overview of Graphics Systems: Flat Panel Displays,

Three Dimensional Viewing Devices, Virtual Reality systems, Raster-Scan Systems, Random-Scan Systems.

Unit 3

Input Devices: Keyboards, Mouse, Data Glove, Digitizers, Touch Panels; Hard Copy Devices: Printers, Plotters. Output Primitives: Bresenham's Line Algorithm, Midpoint Circle Algorithm; Filled Area Primitives: Boundary-Fill Algorithm, Flood-Fill Algorithm; Character Generation; Homogeneous Coordinates.

Unit 4

Two Dimensional Geometric Transformations; Translation, Rotation, Scaling, Reflection, Shear; Two Dimensional Viewing: Cohen Sutherland Line Clipping Three Dimensional Geometric Transformations; Translation, Rotation, Scaling, Reflection, Shear; Three Dimensional Viewing: Projections, Parallel Projections, Perspective Projections, View Volumes and General Projection Transformations.

Unit 5

Graphics Programming: OpenGL Introduction: Command Syntax, Drawing and filling images, patterns, Filling regular and irregular shapes, Outputting Txt, Justifying Text, Animation. Drawing with mouse, Building mouse cursors, freehand drawing using mouse, menus using mouse.

TEXTBOOKS:

1. *Computer Graphics, C Version, D. Hearn, M.P. Baker, 2nd Edition, Pearson Education*
2. *OpenGL Programming Guide, M. Woo, J. Neider, T. Davis, D. Shreiner, 3rd edition, Pearson Education*

15CSA331 ARTIFICIAL INTELLIGENCE 3 0 0 3

Unit 1

What is Artificial Intelligence? – The AI Problems – The Underlying Assumption – What is an AI technique – Criteria for Success.

Problems, Problem Spaces and Search – Defining Problem as a State Space Search – Production Systems – Problem Characteristics – Production System Characteristics – Issues in the design of Search Programs.

Unit 2

Heuristic Search Techniques - Generate – and – Test – Hill Climbing – Best-First Search – Problem Reduction – Constraint Satisfaction - Means - Ends Analysis. Knowledge Representation issues – Representations and Mapping - Approaches to knowledge Representation – Issues in knowledge Representation – The Frame Problem. Using Predicate Logic – Representing simple facts in Logic – Representing Instance and Isa Relationship – Computable Functions and Predicates – Resolution – Natural Deduction.

Unit 3

Representing Knowledge Using Rules – Procedural versus Declarative knowledge – Logic Programming – Forward versus Backward Reasoning – Matching – Control Knowledge.

Symbolic Reasoning under Uncertainty – Introduction to Nonmonotonic Reasoning – Augmenting a Problem Solver – Implementation: Depth - First Search.

Statistical Reasoning – Probability and Baye's Theorem – Bayesian Networks – Fuzzy Logic.

Unit 4

Game Playing - The Minimax Search Procedure – Adding Alpha-Beta Cutoffs. Understanding – What is Understanding? What makes Understanding hard?

Unit 5

Common Sense – Qualitative Physics – Commonsense ontology – Memory Organization - Expert Systems – Representing and Using Domain knowledge – Expert System Shells – knowledge Acquisition - Components of an AI program.

TEXTBOOKS:

1. *Artificial Intelligence (Second Edition) – Elaine Rich, Kevin knight (Tata McGraw-Hill)*
2. *A Guide to Expert Systems – Donald A. Waterman (Addison-Wesley)*

REFERENCES:

1. *Principles of Artificial Intelligence – Nils J. Nilsson (Narosa Publishing House)*
2. *Introduction to Artificial Intelligence – Eugene Charnaik, Drew McDermott (Pearson Education Asia)*

15CSA332 ARCHITECTURE AND DEPLOYMENT OF SECURE AND SCALABLE WAN 3 0 0 3

Unit 1

Introduction to Scaling Networks, Implementing a Network Design, LAN Redundancy, Spanning Tree Concepts and protocols.

Unit 2

Link Aggregation Concepts and Configuration, Wireless LAN Concepts, operations and Security, Wireless LAN Configuration, Troubleshoot Single-Area OSPF, Multiarea OSPF

Unit 3 .

Operation and configuration. Hierarchical Network Design, WAN Technologies, Spanning Tree Configuration, First-Hop Redundancy Protocols, Point-to-Point Connections.

Unit 4

PPP Operation and Configuration, HDLC protocol, Troubleshoot WAN Connectivity,

Frame Relay concepts and Configurations, NAT Operation & Configuration, Troubleshooting NAT

Unit 5

Tele working, Broadband Solutions, Configuring xDSL Connectivity, Securing Site-to-Site Connectivity, VPNs, Site-to-Site GRE Tunnels, IPsec, Monitoring the Network – Syslog, SNMP, Netflow, Network Troubleshooting with a Systematic Approach.

TEXTBOOKS:

1. *Youlu Zheng and Shakil Akhtar,"Networks for Computer Scientists and Engineers".*
2. *Peterson & Davie, "Computer Networks, A Systems Approach", 5th Edition, Morgan Kaufmann, 2011.*

REFERENCES:

1. *"Scaling Networks - Course Booklet ", Cisco Press.*
2. *"Switched Networks - Course Booklet", Cisco Press.*

15CSA333 INTRODUCTION TO BIOINFORMATICS 3 0 0 3

Unit 1

Introduction to Genes and Proteins, The Organization of DNA and RNA, The Organization of Proteins, Genes, In Tones, Exons, Secondary Structure, Tripplet Coding, Protein Sequences, Genome Sequences, ORFs.

Hashes Data Structures and Algorithms for Biology, The Genetic Code, Concatenating DNA Fragments, Transcription: DNA to RNA, Calculating the Reverse Complement. Translating DNA into Proteins, Reading DNA from Files in FASTA Format, Reading Frames.

Unit 2

Introduction to Sequence Analysis, Sequence Analysis of Biological Data, Finding Motifs, Tools for Sequence Analysis: BLAST, FASTA, GenBank, PDB, Reading Proteins in Files.

Multiple Alignment Tools and its Applications, Introduction to Phylogenetics Tree Analysis, Genomic Analysis for DNA sequence, Genomic Analysis for Proteins Sequence.

Restriction Maps and Regular Expressions, Regular Expressions Restriction Maps and Restriction Enzymes.

Unit 3

Introduction to ASNI and NCBI Data model: Why Data model specialized is required for Biological Sequences, Different Data Types supported by ASNI and how they are used for storage of different types of information, Reading of NCBI data using freely available NCBI tool box.

Unit 4

Structure Prediction Methods for Gene and Protein, Using Pattern to predict Genes, Method of Gene Prediction, Prediction Tools, Protein Structure Databases and Visualization Tools, Protein prediction Tools, Method of Protein Prediction for Known Fold and Unknown Fold, Protein Function Prediction, Accuracy of Prediction.

Unit 5

Searching Scientific information using Search Engines: Google, PUBMED, NCBI EMBL, GENBANK, Entrez, Unigene, PDB, SwissProt, and TrEMBL, Retrieval of data.

TEXTBOOKS:

1. *S.C.Rastogi, Namita Mendirata, Parag Rastogi, Bioinformatics Concepts Skills and Applications, CBS Publisher.*
2. *D.Baxevanis and F. Oulette, Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins, Wiley.*

REFERENCES:

1. *Arthur M Lesk, Introduction to Bioinformatics, Oxford University*
2. *James Tisdall, Beginning Perl for Bioinformatics, O'Reilly and Associates.*
3. *Learning Perl 3rd Edition*

15CSA334 DATA MINING 3 0 0 3

Unit 1

Introduction: Evolution and Importance of Data Mining - Types of Data and Patterns Mined – Technologies – Applications - Major Issues in Data Mining.

Unit 2

Knowing about Data - Data Preprocessing: Cleaning – Integration – Reduction – Data Transformation and Discretization.

Unit 3

Data Warehousing: Basic Concepts - Data Warehouse Modeling - OLAP and OLTP Systems - Data Cube and OLAP Operations –Data Warehouse Design and Usage - Business Analysis Framework for Data Warehouse Design - OLAP to Multidimensional Data Mining.

Unit 4

Mining Frequent Patterns: Basic Concept – Frequent Item Set Mining Methods - Mining Association Rules – Association to Correlation Analysis - Classification and Predication: Issues - Decision Tree Induction - Bayesian Classification – Rule Based Classification – k-Nearest mining Classification. Prediction – Accuracy and Error measures.

Unit 5

Clustering: Overview of Clustering – Types of Data in Cluster Analysis – Major Clustering Methods.

TEXTBOOKS/ REFERENCES:

1. *Jiawei Han, Micheline Kamber and Jian Pei, "Data mining concepts and Techniques", Third Edition, Elsevier Publisher, 2006.*
2. *K.P.Soman, Shyam Diwakar and V.Ajay "Insight into data mining Theory and Practice", Prentice Hall of India, 2006.*
3. *William H Inmon "Building the Data Warehouse", Wiley, Fourth Edition 2005.*

15CSA335 INTRODUCTION TO DISTRIBUTED COMPUTING 3 0 0 3

Objectives: *Client Server Computing Model defines the way successful organizations will use technology during the next decade. As a result knowledge of client server architecture has become an essential part of computer science. The main objective is to provide the basic concepts of client server computing and the new technologies involved in it.*

Unit 1

Client Server System Concepts – Introduction – Concepts - Client Server Architecture - Two-Tier Architecture – Three-Tier Architecture - N-Tier Architecture - N-Tier vs 2-Tier Architecture - Case Study of N-Tier Architecture - Client Server Models - Gartner Classification – Middleware - Characteristics and types of Server - File Server - Database Server - Communication Server - Object Server - Groupware Server - Transaction Server - Characteristics and types of Clients - Thin Client - Fat Client.

Unit 2

Components of Client Server Computing – Client - Role of the Client - Client Services - Request for Service - Components of Client Server Computing – Server - Role of the Server - Server Functionality in detail - Components of Client Server Applications – Connectivity – OSI - Communications Interface Technology.

Unit 3

Client Server System Architecture - Client Server Building Blocks – Hardware - Client Hardware - Server Hardware - Client Server Building Blocks – Software - Client Server Systems Development Methodology - Project Management - Architecture Definition - Systems Development Environment – Middleware - Types of Middleware - DCE, MOM, TP – Monitors – ODBC - Design Overview of ODBC - ODBC Architecture – Components – Applications - Driver Managers - Database Drivers - ODBC Data Sources - Network Operating System - Base Services - External Services.

Unit 4

SQL Database Servers - Server Architecture - Multithread Architecture - Hybrid Architecture - Stored Procedures – Triggers - Client Server Transaction Processing

- Rules of Client Server Transaction Processing - Transaction Models - Chained and Nested Transactions - Transaction Management Standards - Data Warehousing - Warehousing Techniques - Data Mining.

Unit 5

Client Server Protocols – RPC – IPC - Recent Trends – Intranet – Extranet – Internet - CORBA.

TEXTBOOK:

Robert Orfali, Dan Harkey and Jerri Edwards: Essential Client/Server Survival Guide, John Wiley &Sons Inc 1996

REFERENCES:

1. *Alex Berson: Client Server Architecture*
2. *Patrick Smith, Steve Guengerich: Client Server Computing, Second Edition, Prentice Hall Of India Pvt Ltd.*

15CSA336 EMBEDDED SYSTEMS 3 0 0 3

Unit 1

An Overview of Embedded System - What is an Embedded System? – Categories of Embedded Systems – Requirements of Embedded Systems - Challenges and issues in Embedded Software Development – Trends in Embedded Software Development - Applications of Embedded Systems.

Unit 2

Hardware Fundamentals for the Software Engineer - Gates – Timing Diagrams – memory – Microprocessors – Buses – DMA – Interrupts - Other Common Parts – Built-ins on the microprocessor – Interrupts - Microprocessor Architecture – Interrupt Basics – The Shared Data Problem – Interrupt Latency.

Unit 3

Survey of Software Architectures - Round Robin – Round Robin with Interrupts – Function Queue Scheduling Architecture – Use of real time operating system. RTOS, Tasks, Scheduler, Shared data reentrancy - priority inversion, mutex binary semaphore and counting semaphore – Selecting an Architecture - Introduction to Real Time Operating Systems - Tasks and Task states – Tasks and Data – Semaphores and Shared Data – Message Queues mailboxes and pipes – Timer functions – Events – Memory management – interrupt routines in an RTOS environment.

Unit 4

Basic Design Using a Real Time Operating System - Overview – Principles – Encapsulating Semaphores and Queues – Hard Real - Time Scheduling Considerations – Saving memory space – saving power - Embedded Software

Development Tools - Host and Target Machines – inker/Locators for Embedded Software – Getting Embedded software into the target systems.

Unit 5

Debugging Techniques - Testing on Host Machine – Instruction Set simulators – The assert Macro – Using Library Tools - Future Trends in Embedded Systems - System on a chip (SOC) – Smart Cards and the cashless society – Security in Embedded System.

TEXTBOOKS:

1. *Dr.K.V.K.K. Prasad & Vikas Gupta – Programming for Embedded Systems – Wiley 1st edition 2002*
2. *David E. Simon – An Embedded Software Primer- Pearson Education Asia – 1999*

REFERENCES:

1. *Caroline Yao & Quing Li – Real Time Concepts for Embedded Systems*
2. *Kirk Zureli - C Programming for Embedded Systems*

15CSA337 ENTERPRISE RESOURCE PLANNING MANAGEMENT 3 0 0 3

Unit 1

Introduction to ERP

Accommodating Variety – Integrated Management Information – Seamless Integration – Supply Chain Management – Resource Management – Integrated Data Model – Scope – Technology – Benefits of ERP.

Business Engineering and ERP

What is BE? – Significance and Principles of BE – BPR, ERP and IT – BE with IT – ERP and Management Concerns.

Unit 2

Business Modelling for ERP

Building the Business Model.

ERP Implementation

Role of Consultants, Vendors and Users – Customization – Precautions – ERP: Post-implementation Options – ERP Implementation Methodology – Guidelines for ERP Implementation.

Unit 3

ERP and the Competitive Advantage

ERP and the Competitive Strategy.

The ERP Domain

MFG/PRO, IFS/Avalon - Industrial and Financial systems – Baan IV – SAP – SAP R/3 Applications – Example of an Indian ERP Package – The Arrival of ERP III.

Unit 4

Marketing of ERP

Market Dynamics and Competitive Strategy.

Sample Case Studies

Unit 5

Client Server and ERP Architecture

Introduction to Client Server – Advantages and Disadvantages – N tier Architecture – ERP Architecture.

http://ebuild.imtindia.com/erp_software_architecture.html

Open Technology

Background of Open Technology – Introduction – Proprietary v/s Open source – Need for Open Source Solutions – Open Source ERP.

http://elearning.nic.in/mdp/2-open-technology/opentechnology-mdp.pdf

Commercial ERP

Commercial ERP –Open Source ERP v/s Commercial ERP.

http://www.erpwire.com/erp-articles/commercial-and-open-source-erp.htm

TEXTBOOK:

"Enterprise Resource Planning – Concepts and Practice", Vinod Kumar Garg, N.K. Venkitakrishnan, Second Edition, Eastern Economy Edition, Prentice-Hall of India Pvt., Ltd., 2008.

15CSA338 KNOWLEDGE MANAGEMENT 3 0 0 3

Unit 1

Introduction – Applied Knowledge Management – Web Warehousing and Knowledge Management – Value Chains and Killer Applications.

Unit 2

Web Warehousing in Action – Traditional Warehousing – Web Based Graphical Geographic Information System.

Unit 3

An Introduction to Text Information Management System – Architecture of Text Information Management System – Text Mining Systems.

Unit 4

Knowledge Management Principles – Knowledge Management at work in Organization.

Unit 5

Technology Foundations – The Internet and Internet Services – Web Components and Communications.

TEXTBOOKS:

Web Warehousing and Knowledge Management: Mattison 1999, Tata McGraw-Hill

Measuring and Managing Knowledge: Tom Housel and Arthur Bell 2001, International Edition, Tata McGraw-Hill

REFERENCE:

Knowledge Management: Ganesh Natarajan, President & CEO Aptech

15CSA339 LAN SWITCHING AND ADVANCED ROUTING 3 0 0 3

Unit 1

IPv4 4 & IP V6 Network Addresses, IPv6 Network Addresses, Subnetting IP Networks, Network Design & trouble shooting for IPv4 & IPv6. Introduction to Switched Networks, LAN Design.

Unit 2

Basic Switching Concepts and Configuration, Switch Security: Management and Implementation, VLANs.

Unit 3

Routing Concepts & operations, Configuration of a Router, Media Access Control, Inter-VLAN Routing, Layer 3 Switching, Static Routing Implementation, Configure Static and Default Routes, CIDR and VLSM.

Unit 4

Network security, Dynamic Routing Protocols, Distance Vector Routing Protocols, RIP(IPv4) and RIPng(IPv6) Routing, Link-State Dynamic Routing, The Routing Table, Single-Area OSPF, Configuring Single-Area OSPFv2 (IPv4) & v3(IPv6).

Unit 5

Access Control Lists and operations, Configuring and Troubleshooting Standard & extended IPv4 ACLs, IPv6 ACLs, DHCPv4 (IPV4) DHCPv6(IPv6).

TEXTBOOKS:

1. *James F. Kurose and Keith W. Ross "Computer Networking: A Top-Down Approach", 4th Edition, Addison-Wesley, 2008.*
2. *Andrew S.Tanenbaum, "Computer Networks", 3rd Edition, PHI, 2004.*

REFERENCES:

1. *Introduction to Networks - Course Booklet ",Cisco Press*
2. *Routing and Switching Essentials – Course Booklet", Cisco Press*

15CSA340 MICROPROCESSOR SYSTEM 3 0 0 3

Unit 1

Combinational circuit implementations – Introduction – NAND & NOR implementations – Arithmetic circuits – Flip-flops - counters – Ripple counters – Synchronous counters.

Unit 2

Introduction to Microprocessor and microcomputers – General architecture of a micro computer system – 8086/88 microprocessor - Architecture – software model of 8086/88 – Memory address space – Data organization – Data types – Registers in 8086/88 – Addressing modes – instruction formats – I/O Address space.

Unit 3

8086/88 Microprocessor programming – Instruction set – Data transfer instructions – arithmetic – Logic – shift – rotate – Flag control – compare – jump – subroutines – loops – string handling instructions.

Unit 4

8086/88 microprocessor and their memory interfaces – Introduction – system clock – bus cycle – Hardware organization of the memory address space – read/ write bus cycles – memory interface circuits.

Unit 5

I/O interfacing with 8086/88 microprocessor – Types of I/O – I/O data transfer – I/ OP instructions – bus cycles – 8255 PPI – 8237A DMA controller Interrupt handling – types – Interrupt address pointer table – Interrupt instructions – enabling and disabling interrupts – 8259A Programmable Interrupt Controller.

TEXTBOOK:

The 8086 and 8088 microprocessors – Programming, Interfacing, Software, Hardware and Applications – Walter A tribbel, Avtar Shing – PHI

REFERENCE BOOKS:

1. *Digital Logic Design – Langholz, Kandel, Mott - 1988 Wm C. Brown publishers*
2. *Microcomputer systems: 8086/88 family architecture, programming and design – Yu-ching Liu, Glenn A Gibson – PHI*
3. *The 8086/88 family – John Uffenbeck – PHI*

15CSA341 MULTIMEDIA AND GRAPHICS 3 0 0 3

Unit 1

Introduction: What is Multimedia? – Introduction to making Multimedia- Media Skills – Macintosh and Windows Platforms – Basic software tools.

Unit 2

Making instant Multimedia – Multimedia Authoring tools.

Unit 3

Multimedia Building Blocks: Text – Sound – Images.

Unit 4

Multimedia Building Blocks: Animation – Video.

Unit 5

Multimedia and the Internet: The Internet and how it works – Tools for World Wide Web – Designing for the World Wide Web.

TEXTBOOK:

Tay Vaughan – Multimedia (Making it work) - Tata Mc Graw-hill – ISBN-0-07-047276-9

REFERENCES:

Nigel Chapman – Digital Multimedia – Wiley – ISBN – 81-265-0489-7

John F. Koegel Buford – Multimedia Systems – PEARSON – ISBN – 81-78-08-162-8

15CSA342 PROJECT MANAGEMENT AND TECHNICAL DOCUMENTATION 3 0 0 3

Unit 1

Introduction – What is a project? - Software Project versus other types of project - Activities covered by Software Project Management - The project as a system - What is management - Problem with Software projects - Management Control – Stakeholders - Requirement Specification - Information and Control in Organizations - Introduction to Step Wise Project Planning - Select Project - Identify Project scope and objectives, Infrastructure - Analyze project characteristics - Identify project products and activities - Estimate effort for each activity - Allocate resources – Review/ publicize plan.

Unit 2

Select of appropriate project approach – Introduction - Choosing technologies - Technical plan contents list - Choice of process models - Structured methods - The water fall model - The V-Process model - Software prototyping - Other ways of categorizing prototypes – Tools - Software Effort Estimation – Introduction - Problems with over and under estimates - Software effort estimation techniques - Expert judgment — A procedural code oriented approach - COCOMO model.

Unit 3

Activity Planning – Introduction - The objectives of activity planning - When to plan - Project schedules - Projects and activities - Network planning model - Formulating a network model - The forward pass - The backward pass - Identifying the critical

path - Shortenings the project duration - Resource Allocation - The nature of resources - Identifying resource requirements - Scheduling requirements - Creating critical paths - Software Quality - Place of software quality in project planning - The importance of software quality - Defining software quality - ISO 9126 - practical software quality measures.

Unit 4

What's a Technical Writer? - Knowledge of technology - Writing ability - Organizational Skills - Strong detective Skills - An overview of technical writing process - Doc plans and Writing doc plans – Outlines - Writing outlines.

Unit 5

Writing task oriented information - Elements of procedure - Introducing the procedure - Breaking down a task into steps - Displaying information from your computer screen - Mac Screen shots - Windows Screen shots.

TEXTBOOK:

Bob Hughes and Mike Cotterell; Software Project Management Second Edition, Tata Mc-Graw Hill

REFERENCE:

Alan S. Pringle; Technical Writing 101: A Real World Guide To planning and Writing Technical Documentation, Amazon Books

15CSA343 SOCIAL AND PROFESSIONAL ISSUES IN COMPUTING 3 0 0 3

Unit 1

Social Context: Introduction to the social implications of computing, Social implications of networked communication, Growth of, Control of, and access to the Internet, Gender – Related issues, Cultural issues, International Issues, Accessibility Issues (e.g. underrepresentation of minorities, Women and disabled in the computing profession), Public policy issues (e.g. electronic voting).

Unit 2

Analytical Tools: Making and evaluating ethical arguments, Identifying and evaluating ethical choices, Understanding the social context of design, Identifying assumptions and values.

Professional Ethics: Community values and the laws by which we live, The nature of professionalism (Including care, attention and discipline, fiduciary responsibility, and mentoring).

Keeping up-to-date as a professional (in terms of knowledge, tools, skills, legal and professional framework as well as the ability to self-assess and computer

fluency), Various forms of professional credentialing and the advantages and disadvantages, The role of the professional in public policy, Maintaining awareness of consequences, Ethical dissent and whistle-blowing.

Codes of ethics, conduct, and practice (IEEE, ACM, SE, AITP, and so forth), Dealing with harassment and discrimination, "Acceptable use" policies for computing in the work place.
Healthy Computing environment (ergonomics)

Unit 3

Risks: Historical examples of software risks (such as the Therac-25 case), Implications of software complexity, Risk assessment and Risk Management; Risk removal, risk reduction and risk control.

Security Operations: Physical security, Physical access controls, Personnel access controls, Operational security, Security polices for systems/networks, Recovery and Response, Dealing with problems (both technical and human)

Unit 4

Intellectual Property: Foundations of Intellectual Property, Copyrights, patents, and trade secrets, Software Piracy, Software Patents, Transactional issues concerning Intellectual Property.

Privacy and Civil Liberties: Ethical and legal basis for privacy protection, Ethical and legal framework for freedom of information, Privacy implications of database systems (e.g. Data gathering, storage and sharing, massive data collecting, computer surveillance systems)

Technological strategies for privacy protection, Freedom of expression in cyberspace, International and intercultural implications.

Unit 5

Computer Crime: History and examples of computer crime, "Cracking" ("Hacking") and its effects, Viruses, Worms, and Trojan Horses, Identity Theft, Crime Prevention strategies.

TEXTBOOK:

Ethics for Information Age, 3rd Edition, Michael J. Quinn, Pearson/Addison Wesley, 2009

15CSA344 SOFT COMPUTING 3 0 0 3

Unit 1

Basic Concepts - Single Layer Perception - Multilayer Perception - Supervised and Unsupervised Learning - Back Propagation networks - Kohnen's self-organizing networks - Hop field networks - Distance measures.

Unit 2

FUZZY sets, properties, Membership functions Fuzzy operations, Applications.

Unit 3

Classification and Regression Trees - Data Clustering Algorithms - Rule based Structure identification.

Unit 4

Neuro-Fuzzy Systems.

Unit 5

Evolutionary Computation - Survival of the Fittest - Fitness Computation – Crossover – Mutation – Reproduction - Rank space Method. Case Studies: Applications of soft computing.

TEXTBOOK/ REFERENCES:

1. *Laurence Fausett,"Fundamentals of Neural Networks", Seventh Edition, Dorling Kindersley (India) P. Ltd 2006.*
2. *Satish Kumar - "Neural Networks – A Classroom Approach", Tata Mc Graw-Hill, 2004.*
3. *Timothy J.Rose,"Fuzzy Logic with Engineering Applications", Third Edition, John Wiley, 2010.*
4. *J.S.R Jang,C.T Sun and E.Mizutani, "Neuro-Fuzzy and Soft Computing", Second Edition, Prentice Hall of India, 2002.*
5. *D.E.Goldberg "Genetic Algorithms in search, optimization and Machine learning", Second Edition, Addison Wesley, 2007.*

15CSA345 SOFTWARE QUALITY ASSURANCE AND TESTING 3 0 0 3

Unit 1

Software Quality Assurance, Quality Concept, Definition of Quality, QA, SQA, Quality factors, Need for SQA, SQA Activities, Building blocks of SQA, SQA Planning & Standards, Software Quality Metrics, Process Improvement, Process and Product Quality, The SEI Process Capability, Maturity model, ISO, Six-Sigma, Process Classification.

Unit 2

Software Reliability: Reliability Measures, Reliability models, Verification & Validation, Verification & Validation Planning, Software inspections, automated static Analysis, Clean room Software Development.

Unit 3

Software Testing: Software Testing Fundamentals, Testing objectives, How test information flows, Testing lifecycle Test Cases – What it is? Test Case, Designing. Levels of Testing: Unit Testing, Integration Testing, System Testing, Acceptance

Testing, Alpha testing & Beta testing, Static vs. Dynamic testing, Manual vs. Automatic testing,11-steps of testing process (Only steps should be covered).

Unit 4

Different types of Testing: Installation Testing, Usability testing, Regression Testing, Performance Testing, Load Testing, stress testing, Security testing, static & Dynamic Testing, Static Testing Techniques, Review types: Informal Review, Technical or peer review, Walkthrough, Inspection, static analysis, Review Meeting, Review Reporting & Record keeping, Review guidelines & Review checklist, Data flow analysis, Control flow analysis, Cyclometric Analysis.

Unit 5

Black Box & White Box Testing: (Test Case Design Techniques), Functional Testing (Black Box), Equivalence partitioning, BVA, Cause-Effect graphing, Syntax testing (Concept & Test case generation only), Structural Testing (White Box), Coverage testing, Statement coverage, Branch & decision coverage, Path coverage, Domain Testing, Non functional testing techniques, Validation testing Activities, Low level testing, High level testing, Black box vs. White Box.

TEXTBOOKS/ REFERENCES:

Software Engineering, R. Pressmen – 6th Ed
Software Engineering, Sommerville
Introducing Software Testing, Louise Tamres
Effective Methods for software Testing, William Perry
Software Testing in Real World, Edward Kit
Software Testing Techniques, Boris Beizer
Software quality assurance: Principles and Practices by Nina Godbole, Narosa Publishing
An introduction to software quality assurance and its implementation, MGH. 1994.
ISO 9001 and software quality assurance, MGH, 1994

15CSA346 SYSTEMS AND NETWORK ADMINISTRATION 3 0 0 3

Unit 1

Understanding System Administration – Network Operating System - Network File System – Admin User - Administration Tools – Commands - Configuration Files – Log Files - Backup and Restore Files.

Unit 2

User Management - Issues - Registration – Account Policy – Login environment – Setting up and Supporting Users – Disk Quotas.

Unit 3

Network Administration – Topologies – Network Devices - Understanding TCP/IP – Administering TCP/IP - Network Configuration – Static and Dynamic.

Unit 4

Introduction to File Server – Setting Up a File Server – Network File Systems - SAMBA – Web Server.

Unit 5

Understanding Directory Services – Active Directory – Network Security – Importance of Port Number – Tracking Services – Monitoring your System – Network Security Tools.

Network Administration Lab.

Working with User Management Commands – Backup and Restore Utilities and Commands – Setting up NFS server – Setting up SAMBA Server - Setting up Web Servers – Apache – IIS – Working with NS2 - TCP/IP Configuration - Deploying and Configuring Active Directory - Working with Network - Monitoring Tool – Wireshark.

TEXTBOOKS:

1. Red Hat Linux - System Administration

2. Introducing Microsoft Windows Server 2003 – Jerry Homeycutt – PHI

REFERENCE:

Mark Burgess – Principles of Network and System Administration - Second Edition - John Wiley & Sons

15CSA381 C# PROGRAMMING LAB. 0 0 2 1

1. Create an Animation using Timer Control
2. Create a Windows calculator
3. Create a Menu driven Notepad application
4. Create a Web browser with all menu options
5. Create a menu driven application to accept the details of employees, with fields
6. EmpID, Name, Address, Department, Joining Date, and to display them. Give option for edition and deletion of employees and there must be option to navigate through the records. Give required validations.
7. Create a menu driven application for a super stores. Design two forms – Product Master and Purchase. Product master should have fields Product
8. No., Name, Dealer Name, Expiry Date, Min reorder level, Stock. Purchase can be made for as many products u want and display the total amount. Give required validations.
9. Create a menu driven application for School Management System using connected approach frame a form to accept, edit, delete and search data.
10. Give option to display details in given criteria:

i. Students of a given class with a given grade.

ii. Students who are interested in a given hobby.

11. Create a Web site using ASP.NET for a student community. Provide provision for registering the student details

12. Rewrite the above site in XML web service. Provide different client programs for the same

15CSA385 COMPUTER GRAPHICS LAB. 0 0 2 1

1. Write a program for 2D line drawing as Raster Graphics Display.
2. Write a program for circle drawing as Raster Graphics Display.
3. Write a program to draw an ellipse using Mid Point Algorithm.
4. Write a program to draw a circle using Midpoint algorithm. Modify the same for drawing an arc and sector.
5. Write a program to rotate a point about origin.
6. Write a program to rotate a triangle about origin.
7. Write a program to scale the triangle.
8. Write a program to translate a triangle.
9. Write a program to reflect a triangle.
10. Write a program for polygon filling as Raster Graphics Display
11. Write a program for line clipping.
12. Write a program for polygon clipping.
13. Write a program for displaying 3D objects as 2D display using perspective transformation.
14. Write a program for rotation of a 3D object about arbitrary axis.
15. Write a program for Hidden surface removal from a 3D object.

15CSA390 LIVE-IN-LAB. 2 cr

This initiative is to provide opportunities for students to get involved in coming up with solutions for societal problems. The students shall visit villages or rural sites during the vacations (after second semester or fourth semester) and if they identify a worthwhile project, they shall register for a 3-credit Live-in-Lab project, in the fifth semester. The objectives and projected outcome of the project should be reviewed and approved by the Dept. Chairperson and a faculty assigned as the project guide. On completion of the project, the student shall submit a detailed project report. The report shall be evaluated and the students shall appear for a viva-voce test on the project.

15CSA391 MINOR PROJECT 3 cr

To expose the student to the industry-standard project practices, under time and deliverable constraints, applying the knowledge acquired through various courses done in the programme.

15CSA397 COMPREHENSIVE TECHNICAL VIVA-VOCE 2 cr

The viva may be done based on every course covered till the sixth semester. The

objective of this is to enable the students to attend placements and be better performers in their future.

15CSA399 PROJECT 6 cr

To allow students to develop their own ideas and get experienced in industrial and research projects. It provides an opportunity in solving a real life problem by applying the knowledge gained through various courses of study and an exposure on different phases of software /system development life cycle.

15CUL101 CULTURAL EDUCATION I 2 0 0 2

Unit 1

Introduction to Indian Culture - Introduction to Amma's life and Teachings - Symbols of Indian Culture.

Unit 2

Science and Technology in Ancient India - Education in Ancient India - Goals of Life – Purusharthas - Introduction to Vedanta and Bhagavad Gita.

Unit 3

Introduction to Yoga - Nature and Indian Culture - Values from Indian History - Life and work of Great Seers of India.

TEXTBOOKS:

1. *The Glory of India (in-house publication)*
2. *The Mother of Sweet Bliss, (Amma's Life & Teachings)*

15CUL111 CULTURAL EDUCATION II 2 0 0 2

Unit 1

1. Relevance of Sri Rama and Sri Krishna in this Scientific Age
2. Lessons from the Epics of India
3. Ramayana & Mahabharata

Unit 2

4. Who is a Wise Man?
5. A Ruler's Dharma
6. The Story of King Shibi

Unit 3

7. Introduction to the Bhagavad Gita
8. Bhagavad Gita – Action without Desire

Unit 4

9. Role and Position of Women in India
10. The Awakening of Universal Motherhood

Unit 5

11. Patanjali's Astanga - Yoga System for Personality Refinement
12. Examples of Heroism and Patriotism in Modern India

TEXTBOOKS:

Common Resource Material II (in-house publication)

Sanatana Dharma - The Eternal Truth (A compilation of Amma's teachings on Indian Culture)

15ENG101 COMMUNICATIVE ENGLISH 2 0 2 3

Objectives: *To help the student to obtain ability to communicate in English; to impart an aesthetic sense and enhance creativity*

Unit 1

Parts of Speech, Tenses, Prepositions, Determiners - Agreement (Subject – Verb, Pronoun - Antecedent), Phrasal Verbs, Modifiers, Linkers/ Discourse Markers, Question Tags.

Unit 2

Paragraph writing – Cohesion - Development: definition, comparison, classification, contrast, cause and effect - Essay writing: Descriptive and Narrative.

Unit 3

Letter Writing - Personal (congratulation, invitation, felicitation, gratitude, condolence etc.) Official (Principal/ Head of the department/ College authorities, Bank Manager, Editors of newspapers and magazines).

Unit 4

Reading Comprehension – Skimming and scanning - inference and deduction – Reading different kinds of material – Graphical Representation – Speaking: Narration of incidents / stories/ anecdotes - Current News Awareness.

Unit 5

Prose: R. K. Narayan's Fifteen Years - A.P.J. Abdul Kalam's Wings of Fire (Part I - 3)

Short Stories: Katherine Mansfield's A Cup of Tea – Kishori Charan Das's Death of an Indian,

Poems: Maya Angelou's I Know Why the Caged Bird Sings - Sri Aurobindo's The Tiger and the Deer

REFERENCES:

1. *A P J Abdul Kalam, Wings of Fire, Universities Press (India) Ltd., Hyderabad, 2004.*
2. *Khushwant Singh & Neelam Kumar, Our Favourite Indian Short Stories, Seventh Imp., Jaico Publishers, 2007.*
3. *Jatin Mohanty (Ed.), Ten Short Stories, Universities Press (India) Ltd., Hyderabad, 1983.*
4. *Martinet, Thomson, A Practical English Grammar, IV Ed. OUP, 1986.*
5. *Murphy, Raymond, Murphy's English Grammar, CUP, 2004*
6. *R. K. Narayan, A Writer's Nightmare: Selected Essays 1958-1988, Penguin Books India Pvt. Ltd., New Delhi, 1988.*
7. *Seely, John, Writing and Speaking, OUP, 1998*
8. *Sri Aurobindo, Collected Poems, Sri Aurobindo Ashram, Pondicherry.*
9. *Syamala, V. Speak English in Four Easy Steps, Improve English Foundation Trivandrum: 2006*

15ENG121 PROFESSIONAL COMMUNICATION 1 0 2 2

Objectives: *To convey and document information in a formal environment; to acquire the skill of self projection in professional circles; to inculcate critical thinking and to improve aesthetic sense.*

Unit 1

Vocabulary Building: Prefixes and Suffixes; One word substitutes, Modal auxiliaries, Error Analysis: Position of Adverbs, Redundancy, Dangling modifiers – Reported Speech.

Unit 2

Instruction, Suggestion & Recommendation - Graphical Interpretation: Extracting data from charts and graphs - Essay writing: Analytical and Argumentative.

Unit 3

Circulars, Memos – Business Letters - e–mails.

Unit 4

Reports: Trip report, incident report, event report - Sounds of English – Stress, Intonation - Situational Dialogue - Group discussion.

Unit 5

Listening and Reading Practice - Book Review.

REFERENCES:

1. *Felixa Eskey Tech Talk, University of Michigan. 2005*
2. *Michael Swan. Practical English Usage, Oxford University Press. 2005*
3. *Anderson, Paul. Technical Communication: A Reader Centered Approach, V Edition, Hercourt, 2003.*

4. *Raymond V. Lesikar and Marie E. Flatley. Basic Business Communication, Tata McGraw Hill Pub. Co. New Delhi 2005. Tenth Edition.*

15ENV300 ENVIRONMENTAL SCIENCE AND SUSTAINABILITY 3 0 0 3

Unit 1

State of Environment and Unsustainability, Need for Sustainable Development, Traditional conservation systems in India, People in Environment, Need for an attitudinal change and ethics, Need for Environmental Education, Overview of International Treaties and Conventions, Overview of Legal and Regulatory Frameworks.

Environment: Abiotic and biotic factors, Segments of the Environment, Biogeochemical Cycles, Ecosystems (associations, community adaptations, ecological succession, Food webs, Food chain, ecological pyramids), Types of Ecosystems – Terrestrial ecosystems, Ecosystem Services, Economic value of ecosystem services, Threats to ecosystems and conservation strategies.

Biodiversity: Species, Genetic & Ecosystem Diversity, Origin of life and significance of biodiversity, Value of Biodiversity, Biodiversity at Global, National and Local Levels, India as a Mega-Diversity Nation (Hotspots) & Protected Area Network, Community Biodiversity Registers. Threats to Biodiversity, Red Data book, Rare, Endangered and Endemic Species of India. Conservation of Biodiversity. People's action.

Impacts, causes, effects, control measures, international, legal and regulatory frameworks of: Climate Change, Ozone depletion, Air pollution, Water pollution, Noise pollution, Soil/ land degradation/ pollution

Unit 2

Linear vs. cyclical resource management systems, need for systems thinking and design of cyclical systems, circular economy, industrial ecology, green technology. Specifically apply these concepts to: Water Resources, Energy Resources, Food Resources, Land & Forests, Waste management.

Discuss the interrelation of environmental issues with social issues such as: Population, Illiteracy, Poverty, Gender equality, Class discrimination, Social impacts of development on the poor and tribal communities, Conservation movements: people's movements and activism, Indigenous knowledge systems and traditions of conservation.

Unit 3

Common goods and public goods, natural capital/ tragedy of commons, Cost benefit analysis of development projects, Environment Impact Assessment (EIA), Environment Management Plan (EMP), Green business, Eco-labeling, Problems and solutions with case studies.

Global and national state of housing and shelter, Urbanization, Effects of unplanned development case studies, Impacts of the building and road construction industry on the environment, Eco-homes/ Green buildings, Sustainable communities, Sustainable Cities.

Ethical issues related to resource consumption, Intergenerational ethics, Need for investigation and resolution of the root cause of unsustainability, Traditional value systems of India, Significance of holistic value-based education for true sustainability.

TEXTBOOKS/ REFERENCES:

1. *R. Rajagopalan, Environmental Studies: From Crisis to Cure. Oxford University Press, 2011, 358 pages. ISBN: 9780198072089.*
2. *Daniel D. Chiras, Environmental Science. Jones & Bartlett Publishers, 01-Feb-2012, 669 pages. ISBN: 9781449645311.*
3. *Andy Jones, Michel Pimbert and Janice Jiggins, 2011. Virtuous Circles: Values, Systems, Sustainability. IIED and IUCN CEESP, London. URL:http://pubs.iied.org/pdfs/G03177.pdf*
4. *Annenberg Learner, The Habitable Planet, Annenberg Foundation 2015. URL: http://www.learner.org/courses/envsci/unit/pdfs/textbook.pdf.*

15HIN101 HINDI I 1 0 2 2

Objectives: *To teach Hindi for effective communication in different spheres of life: Social context, Education, governance, Media, Business, Profession and Mass communication.*

Unit 1

Introduction to Hindi Language - National Language, Official Language, link Language etc. Introduction to Hindi language, Devanagari script and Hindi alphabet.

Shabda Bhed, Roopanthar ki Drishti se - Bhasha – Paribhasha aur Bhed - Sangya - Paribhasha Aur Bhed - Sangya ke Roopanthar - kriya.

Unit 2

Common errors and error corrections in Parts of Speech with emphasis on use of pronouns, Adjective and verb in different tenses – Special usage of adverbs, changing voice and conjunctions in sentences, gender & number - General vocabulary for conversations in given context – understanding proper pronunciation – Conversations, Interviews, Short speeches.

Unit 3

Poems – Kabir Ist 8 Dohas, Surdas 1st 1 Pada; Tulsidas 1st 1 Pada; Meera 1st 1 Pada.

Unit 4

Letter writing – personal and Formal – Translation from English to Hindi.

Unit 5

Kahani – Premchand: Kafan, Abhilasha, Vidroh, Poos ki rath, Juloos.

TEXTBOOKS:

1. *Prem Chand Ki Srvashrestha Kahaniyam: Prem Chand; Diamond Pub Ltd. New Delhi*
2. *Vyavaharik Hindi Vyakaran, Anuvad thaha Rachana: Dr. H. Parameswaran, Radhakrishna publishing House, New Delhi*
3. *Kamtha Prasad Guru: Hindi Vyakaran, Best Book pub House, New Delhi*
4. *Poetry: Kavya Ras - Ed: T. V. Basker - Pachouri Press; Mathura*

15HIN111 HINDI II 1 0 2 2

Objectives: *Appreciation and assimilation of Hindi Literature both drisya & shravya using the best specimens provided as anthology.*

Unit 1

Kavya Tarang; Dhumil ke Anthim Kavitha [Poet - Dhumil], Dhabba [Poet - Kedarnath Singh], Proxy [Poet - Venugopal] Vakth [Poet - Arun Kamal], Maachis [Poet - Suneeta Jain].

Unit 2

Communicative Hindi - Moukhik Abhivyakthi.

Unit 3

Audio-Visual – Media in Hindi – Movies like Tare Zameen par, Paa, Black etc., appreciation and evaluation. News reading and presentations in Radio and TV channels in Hindi.

Unit 4

Gadya Manjusha – Budhapa, Kheesa, Sadachar ka Thavis.

Unit 5

Translation: Theory and Practice - Letter writing: Formal and Personal – Introduction to Hindi Software.

TEXTBOOKS:

Kavay Tarang: Dr. Niranjan, Jawahar Pusthakalay, Mathura.
Gadya Manjusha: Editor: Govind, Jawahar Pusthakalay, Mathura

15KAN101 KANNADA I 1 0 2 2

Objectives: *To enable the students to acquire basic skills in functional language; to develop independent reading skills and reading for appreciating literary works; to analyse language in context to gain an understanding of vocabulary, spelling, punctuation and speech.*

Unit 1
Adalitha Kannada: bhashe, swaroopa, belavanigeya kiru parichaya
Paaribhaashika padagalu
Vocabulary Building

Unit 2
Prabhandha – Vyaaghra Geethe - A. N. Murthy Rao
Prabhandha – Baredidi...baredidi, Baduku mugiyuvudilla allige... - Nemi Chandra
Paragraph writing – Development: comparison, definition, cause & effect
Essay – Descriptive & Narrative

Unit 3
Mochi – Bharateepriya
Mosarina Mangamma – Maasti Venkatesh Iyengar
Kamalaapurada Hotelnalli – Panje Mangesh Rao
Kaanike – B. M. Shree
Geleyanobbanige bareda Kaagada – Dr. G. S. Shivarudrappa
Moodala Mane – Da. Ra. Bendre
Swathantryada Hanate – K. S. Nissaar Ahmed

Unit 4
Letter Writing - Personal: Congratulation, thanks giving, invitation, condolence

Unit 5
Reading Comprehension; nudigattu, gaadegalu

Speaking Skills: Prepared speech, pick and speak

REFERENCES:

1. *H. S. Krishna Swami Iyangar – Adalitha Kannada – Chetana Publication, Mysuru*
2. *A. N. Murthy Rao – Aleyuva Mana – Kuvempu Kannada Adyayana Samste*
3. *Nemi Chandra – Badhuku Badalisabahudu – Navakarnataka Publication*
4. *Sanna Kathegalu - Prasaranga, Mysuru University , Mysuru*
5. *B. M. Shree – Kannadada Bavuta – Kannada Sahitya Parishattu*
6. *K. S. Nissar Ahmed – 75 Bhaavageetegalu – Sapna Book House (P) Ltd.*
7. *Dr. G. S. Shivarudrappa – Samagra Kavya – Kamadhenu Pustaka Bhavana*

15KAN111 KANNADA II 1 0 2 2

Objectives: *To enable the students to acquire basic skills in functional language; to develop independent reading skills and reading for appreciating literary works; to develop functional and creative skills in language; to enable the students to plan, draft, edit & present a piece of writing.*

Unit 1
Official Correspondence: Adhikrutha patra, prakatane, manavi patra, vanijya patra

Unit 2
Nanna Hanate - Dr. G. S. Shivarudrappa
Mankuthimmana Kaggada Ayda bhagagalu – D. V. Gundappa (Padya Sankhye 5, 20, 22, 23, 25, 44, 344, 345, 346, 601)
Ella Marethiruvaga - K. S. Nissaar Ahmed
Saviraru Nadigalu – S Siddalingayya

Unit 3
Sayo Aata – Da. Ra. Bendre

Unit 4
Sarva Sollegala turtu Maha Samelana - Beechi
Swarthakkaagi Tyaga - Beechi

Unit 5
Essay writing: Argumentative & Analytical
Précis writing

REFERENCES:

1. *H. S. Krishnaswami Iyangar – Adalitha Kannada – Chetan Publication, Mysuru*
2. *Dr. G. S. Shivarudrappa – Samagra Kavya. - Kamadhenu Pustaka Bhavana*
3. *Shrikanth - Mankuthimmana Kagga – Taatparya – Sri Ranga Printers & Binders*
4. *K. S. Nissar Ahmed – 75 Bhaavageetegalu – Sapna book house*
5. *Dr. Da. Ra. Bendre – Saayo Aata – Shri Maata Publication*
6. *Beechi – Sahukara Subbamma – Sahitya Prakashana*

15MAL101 MALAYALAM I 1 0 2 2

Objectives: *To appreciate the aesthetics & cultural implications; to enhance creative thinking in mother-tongue; to learn our culture & values; to equip students read & write correct Malayalam; to correct the mistakes in pronunciation; to create awareness that good language is the sign of complete personality.*

Unit 1
Ancient poet trio: Adhyatmaramayanam,
Lakshmana Swanthanam (valsa soumitre... mungikidakayal), Ezhuthachan - Medieval period classics – Jnanappana (kalaminnu... vilasangalingane), Poonthanam.

Unit 2
Modern Poet trio: Ente Gurunathan, Vallathol Narayana Menon - Critical analysis of the poem.

Unit 3

Short stories from period 1/2/3, Poovanpazham - Vaikaom Muhammed Basheer - Literary & Cultural figures of Kerala and about their literary contributions.

Unit 4

Literary Criticism: Ithihasa studies - Bharatha Paryadanam - Vyasante Chiri - Kuttikrishna Mararu - Outline of literary Criticism in Malayalam Literature - Introduction to Kutti Krishna Mararu & his outlook towards literature & life.

Unit 5

Error-free Malayalam: 1. Language; 2. Clarity of expression; 3. Punctuation.

Thettillatha Malayalam – Writing - a. Expansion of ideas; b. Precis Writing; c. Essay Writing; d. Letter writing; e. Radio Speech; f. Script/ Feature/ Script Writing; g. News Editing; h. Advertising; i. Editing; j. Editorial Writing; k. Critical appreciation of literary works (Any one or two as an assignment).

REFERENCES:

1. *P. K. Balakrishnanan, Thunjan padhanangal, D. C. Books, 2007.*
2. *G. Balakrishnan Nair,.Jnanappanayum Harinama Keerthanavum, N.B.S, 2005.*
3. *M. N. Karasseri, Basheerinte Poonkavanam, D. C. Books, 2008.*
4. *M. N. Vijayan, Marubhoomikal Pookkumbol, D. C. Books, 2010.*
5. *M. Thomas Mathew, Lavanyanubhavathinte Yukthisasthram, National Book Stall, 2009.*
6. *M. Leelavathy, Kavitha Sahityacharitram, National Book Stall, 1998.*
7. *Thayattu Sankaran, Vallathol Kavithapadhanam, D. C. Books, 2004.*

15MAL111 MALAYALAM II 1 0 2 2

Objectives: *To appreciate the aesthetics & cultural implications; to enhance creative thinking in mother-tongue; to learn our culture & values; to equip students read & write correct Malayalam; to correct the mistakes in pronunciation; to create awareness that good language is the sign of complete personality.*

Unit 1

Ancient poet trio: Kalayanasougandhikam, (kallum marangalun… namukkennarika vrikodara) Kunjan Nambiar - Critical analysis of his poetry - Ancient Drama: Kerala Sakunthalam (Act 1), Kalidasan (Transilated by Attor Krishna Pisharody).

Unit 2

Modern/ romantic/ contemporary poetry: Manaswini, Changampuzha Krishna Pillai – Romanticism – modernism.

Unit 3

Anthology of short stories from period 3/4/5: Ninte Ormmayku, M. T. Vasudevan Nair - literary contributions of his time.

Unit 4

Part of an autobiography/ travelogue: Kannerum Kinavum, V. T. Bhattathirippadu - Socio-cultural literature - historical importance.

Unit 5

Error-free Malayalam: 1. Language; 2. Clarity of expression; 3. Punctuation.

Thettillatha Malayalam – Writing - a. Expansion of ideas; b. Precis Writing; c. Essay Writing; d. Letter writing; e. Radio Speech; f. Script/ Feature/ Script Writing; g. News Editing; h. Advertising; i. Editing; j. Editorial Writing; k. Critical appreciation of literary works (Any one or two as an assignment).

REFERENCES:

1. *Narayana Pillai. P. K, Sahitya Panchanan. Vimarsanathrayam, Kerala Sahitya Academy, 2000*
2. *Sankunni Nair. M. P, Chathravum Chamaravum, D. C. Books, 2010.*
3. *Gupthan Nair. S, Asthiyude Pookkal, D. C Books.2005*
4. *Panmana Ramachandran Nair, Thettillatha Malayalam, Sariyum thettum etc., D. C. Book, 2006.*
5. *M. Achuthan, Cherukatha-Innale, innu, National Book Stall, 1998.*
6. *N. Krishna Pillai, Kairaliyude Katha, National Book Stall, 2001.*

15MAT103 MATHEMATICAL FOUNDATIONS 2 1 0 3

Unit 1

Set theory – basic concepts of set theory – operations on sets - power set - venn diagram cartesian product - relations types of relations - equivalence relation - relation matrix, graph of a relation – functions - composition of functions.

Unit 2

Matrix algebra – Introduction - Types of matrices - matrix operation - transpose of a matrix - determinants of matrix Cramer's rule - inverse of a matrix.

Unit 3

Matrix - finding rank of a matrix - normal form - echelon form - Cayley Hamilton theorem - eigen values.

Unit 4

Statistics – Introduction - Collection of data - Classification and tabulation - diagrammatic representation.

Unit 5

Measures of average – AM – Median - Mode, Measures of dispersion and its coefficients – Range – QD – SD – MD.

TEXTBOOK:

P. R. Vittal - Business Mathematics and Statistics, Margham Publications, Chennai,

REFERENCE:

S. P. Gupta – Statistical Methods - Sultan Chand and Sons - Educational Publishers, New Delhi

15MAT115 STATISTICAL AND NUMERICAL METHODS 3 1 0 4

Statistical Methods

Unit 1

Correlation - karl pearson's and Spearman's rank correlation, Regression - regression equations, regression coefficients,

Unit 2

Interpolation - Newton's forward & backward method - Lagrange's Method, Curve fitting - fitting a straight line.

Unit 3

Permutations – combinatioons – Probability - addition theorem, multiplication theorem, independent events, conditional probability, Baye's theorem, Probability distribution - Binomial, Poisson, normal.

Numerical methods

Unit 4

Differential calculus - Functions and limits, Differentiation - successive differentiation, partial differentiation, maxima and minima, points of inflexion. Theory of Numbers – divisibility - prime numbers - Eucledian algorithm - unique factorization theorem - congruence properties.

Unit 5

Solutions of Numerical Algebraic and transcendental methods - bisection method, Newton Raphson method, Simultaneous linear equations -Gauss elimination, Gauss Seidal method.

TEXTBOOK:

H. S. Hall and S. R. Knight - Higher Algebra – AITBS Publishers India

REFERENCE:

M. K. Venkataraman - Numerical methods in Science and Engineering - National Publishing Company, Chennai

15MAT223 DISCRETE MATHEMATICS 2 1 0 3

Unit 1

Propositional Logic, Equivalences, Predicates and Quantiflers, Sets, Functions and growth of functions.

Unit 2

Basic Counting Principles, Generating Functions, Recurrence Relations, Inclusion exclusion Principles, Euler's phi-function and its Application to Cryptography.

Unit 3

Relations and their properties, n-ary relations, Equivalence relations.

Unit 4

Advanced Counting Techniques: Recurrence relations, Solving Linear Recurrence relations, Divide and Conquer Algorithms and Recurrence relations, Generating Functions, Inclusion and Exclusion and their Applications.

Unit 5

Introduction to Graph Theory: Graphs, Bipartite Graphs, Eulerian and Hamiltonian Graphs, Graph Connectivity, Shortest path algorithm, Planar Graphs, Vertex coloring.

TEXTBOOK:

Kenneth H. Rosen, Discrete Mathematics and its Applications, McGraw Hill.

REFERENCES

1. *R. P. Grimaldi, "Discrete and Combinatorial Mathematics", Pearson Education, Fifth Edition, 2007.*
2. *Thomas Koshy, "Discrete Mathematics with Applications", Academic Press, 2005.*

15OEL231 - 2xx OPEN ELECTIVES 3 0 0 3

Open electives syllabi - see at the end of the booklet.

15SAN101 SANSKRIT I 1 0 2 2

Objectives: *To familiarize students with Sanskrit language and literature; to enable them to read and understand Sanskrit verses and sentences; to help them acquire expertise for self-study of Sanskrit texts and communication in Sanskrit; to help the students imbibe values of life and Indian culture as propounded in scriptures.*

Unit 1

Introduction to Sanskrit language, Devanagari script - Vowels and consonants, pronunciation, classification of consonants, conjunct consonants, words – nouns and verbs, cases – introduction, numbers, Pronouns, communicating time in Sanskrit. Practical classes in spoken Sanskrit.

Unit 2

Verbs - Singular, Dual and plural – First person, Second person, Third person.

Tenses – Past, Present and Future – Atmanepadi and Parasmaipadi - kartharipprayoga.

Unit 3

Words for communication, slokas, moral stories, subhashithas, riddles (from the books prescribed).

Unit 4

Selected slokas from Valmiki Ramayana, Kalidasa's works and Bhagavad Gita.

Ramayana – chapter VIII - verse 5; Mahabharata - chapter 174, verse 16; Bhagavad Gita – chapter IV - verse 8; Kalidasa's Sakuntalam - Act IV – verse 4.

Unit 5

Translation of simple sentences from Sanskrit to English and vice-versa.

ESSENTIAL READINGS:

1. *Praveshaha; Publisher: Samskrita bharati, Aksharam, 8th cross, 2nd phase, girinagar, Bangalore-560 085*
2. *Sanskrit Reader I, II and III, R. S. Vadhyar and Sons, Kalpathi, Palakkad*
3. *Prakriya Bhashyam written and published by Fr. John Kunnappally*
4. *Sanskrit Primer by Edward Delavan Perry, published by Ginn and Company Boston*
5. *Sabdamanjari, R. S. Vadyar and Sons, Kalpathi, Palakkad*
6. *Namalinganusasanam by Amarasimha published by Travancore Sanskrit series*
7. *Subhashita Ratna Bhandakara by Kashinath Sharma, published by Nirnayasagar press.*

15SAN111 SANSKRIT II 1 0 2 2

Objectives: *To familiarize students with Sanskrit language and literature; to enable them to read and understand Sanskrit verses and sentences; to help them acquire expertise for self-study of Sanskrit texts and communication in Sanskrit; to help the students imbibe values of life and Indian culture as propounded in scriptures.*

Unit 1

Seven cases, indeclinables, sentence making with indeclinables, Saptha karakas.

Unit 2

Ktavatu Pratyaya, Upasargas, Ktvanta, Tumunnanta, Lyabanta.

Three Lakaras – brief introduction, Lot lakara.

Unit 3

Words and sentences for advanced communication. Slokas, moral stories (Panchatantra) Subhashitas, riddles.

Unit 4

Introduction to classical literature, classification of Kavyas, classification of Dramas - The five Mahakavyas, selected slokas from devotional kavyas - Bhagavad Gita – chapter II verse 47, chapter IV verse 7, chapter VI verse 5, chapter VIII verse 6, chapter XVI verse 21, Kalidasa's Sakuntala act IV verse 4, Isavasyopanishat 1st Mantra, Mahabharata chapter 149 verses 14 - 120, Neetisara chapter – III.

Unit 5

Translation of paragraphs from Sanskrit to English and vice-versa.

ESSENTIAL READINGS:

1. *Praveshaha; Publisher: Samskrita bharati, Aksharam, 8th cross, 2nd phase, girinagar, Bangalore-560 085*
2. *Sanskrit Reader I, II and III, R. S. Vadhyar and Sons, Kalpathi, Palakkad*
3. *Prakriya Bhashyam written and published by Fr. John Kunnappally*
4. *Sanskrit Primer by Edward Delavan Perry, published by Ginn and Company Boston*
5. *Sabdamanjari, R. S. Vadyar and Sons, Kalpathi, Palakkad*
6. *Namalinganusasanam by Amarasimha published by Travancore Sanskrit series*
7. *Subhashita Ratna Bhandakara by Kashinath Sharma, published by Nirnayasagar Press.*

15SSK201 LIFE SKILLS I 1 0 2 2

Soft skills and its importance: Pleasure and pains of transition from an academic environment to work-environment. Need for change. Fears, stress and competition in the professional world. Importance of positive attitude, self motivation and continuous knowledge upgradation.

Self Confidence: Characteristics of the person perceived, characteristics of the situation, Characteristics of the Perceiver. Attitude, Values, Motivation, Emotion Management, Steps to like yourself, Positive Mental Attitude, Assertiveness.

Presentations: Preparations, Outlining, Hints for efficient practice, Last minute tasks, means of effective presentation, language, Gestures, Posture, Facial expressions, Professional attire.

Vocabulary building: A brief introduction into the methods and practices of learning vocabulary. Learning how to face questions on antonyms, synonyms, spelling error, analogy etc. Faulty comparison, wrong form of words and confused words like understanding the nuances of spelling changes and wrong use of words.

Listening Skills: The importance of listening in communication and how to listen actively.

Prepositions and Articles: An experiential method of learning the uses of articles and prepositions in sentences is provided.

Problem solving; Number System; LCM &HCF; Divisibility Test; Surds and Indices; Logarithms; Ratio, Proportions and Variations; Partnership; Time speed and distance; work time problems;

Data Interpretation: Numerical Data Tables; Line Graphs; Bar Charts and Pie charts; Caselet Forms; Mix Diagrams; Geometrical Diagrams and other forms of Data Representation.

Logical Reasoning: Family Tree; Linear Arrangements; Circular and Complex Arrangement; Conditionalities and Grouping; Sequencing and Scheduling; Selections; Networks; Codes; Cubes; Venn Diagram in Logical Reasoning.

TEXTBOOKS:

1. *A Communicative Grammar of English: Geoffrey Leech and Jan Svartvik. Longman, London.*
2. *Adair J (1986) - "Effective Team Building: How to make a winning team", London, U.K: Pan Books.*
3. *Gulati S (2006) - "Corporate Soft Skills", New Delhi, India: Rupa & Co.*
4. *The Hard Truth about Soft Skills, by Amazone Publication.*

REFERENCES:

1. *Quantitative Aptitude, by R S Aggarwal, S Chand Publ.*
2. *Verbal and Non-verbal Reasoning, R S Aggarwal, S Chand Publ.*
3. *Data Interpretation, R S Aggarwal, S Chand Publ.*
4. *Nova GRE, KAPAL GRE, Barrons GRE books;*
5. *Quantitative Aptitude, The Institute of Chartered Accountants of India.*
6. *More Games Teams Play, by Leslie Bendaly, McGraw-Hill Ryerson.*
7. *The BBC and British Council online resources*
8. *Owl Purdue University online teaching resources*
9. *www.thegrammarbook.com online teaching resources*
10. *www.englishpage.com online teaching resources and other useful websites.*

15SSK211 LIFE SKILLS II 1 0 2 2

Professional Grooming and Practices: Basics of Corporate culture, Key pillars of Business Etiquette. Basics of Etiquette: Etiquette – Socially acceptable ways of behaviour, Personal hygiene, Professional attire, Cultural Adaptability. Introductions and Greetings: Rules of the handshake, Earning respect, Business manners. Telephone Etiquette: activities during the conversation, Conclude the call, To take a message. Body Language: Components, Undesirable body language, Desirable body language. Adapting to Corporate life: Dealing with people.

Group Discussions: Advantages of Group Discussions, Structured GD – Roles, Negative roles to be avoided, Personality traits to do well in a GD, Initiation techniques, How to perform in a group discussion, Summarization techniques.

Listening Comprehension advanced: Exercise on improving listening skills, Grammar basics: Topics like clauses, punctuation, capitalization, number agreement, pronouns, tenses etc.

Reading Comprehension advanced: A course on how to approach middle level reading comprehension passages.

Problem solving – Money Related problems; Mixtures; Symbol Based problems; Clocks and Calendars; Simple, Linear, Quadratic and Polynomial Equations; Special Equations; Inequalities; Functions and Graphs; Sequence and Series; Set Theory; Permutations and Combinations; Probability; Statistics.

Data Sufficiency: Concepts and Problem Solving.

Non-Verbal Reasoning and Simple Engineering Aptitude: Mirror Image; Water Image; Paper Folding; Paper Cutting; Grouping Of Figures; Figure Formation and Analysis; Completion of Incomplete Pattern; Figure Matrix; Miscellaneous.

Special Aptitude: Cloth, Leather, 2D and 3D Objects, Coin, Match Sticks, Stubs, Chalk, Chess Board, Land and geodesic problems etc., Related Problems

TEXTBOOKS:

1. *A Communicative Grammar of English: Geoffrey Leech and Jan Svartvik. Longman, London.*
2. *Adair J (1986) - "Effective Team Building: How to make a winning team", London, U.K: Pan Books.*
3. *Gulati S (2006) - "Corporate Soft Skills", New Delhi, India: Rupa & Co.*
4. *The Hard Truth about Soft Skills, by Amazone Publication.*

REFERENCES:

1. *Quantitative Aptitude, by R S Aggarwal, S Chand Publ.*
2. *Verbal and Non-verbal Reasoning, R S Aggarwal, S Chand Publ.*
3. *Quantitative Aptitude by Abjith Guha, Tata McGraw hill Publ.*
4. *More Games Teams Play, by Leslie Bendaly, McGraw-Hill Ryerson.*
5. *The BBC and British Council online resources*
6. *Owl Purdue University online teaching resources*
7. *www.thegrammarbook.com online teaching resources*
8. *www.englishpage.com online teaching resources and other useful websites.*

15SSK301 LIFE SKILLS III 1 0 2 2

Team Work: Value of Team work in organisations, Definition of a Team, Why Team, Elements of leadership, Disadvantages of a team, Stages of Team formation. Group

Development Activities: Orientation, Internal Problem Solving, Growth and Productivity, Evaluation and Control. Effective Team Building: Basics of Team Building, Teamwork Parameters, Roles, Empowerment, Communication, Effective Team working, Team Effectiveness Criteria, Common characteristics of Effective Teams, Factors affecting Team Effectiveness, Personal characteristics of members, Team Structure, Team Process, Team Outcomes.

Facing an Interview: Foundation in core subject, Industry Orientation/ Knowledge about the company, Professional Personality, Communication Skills, activities before interview, upon entering interview room, during the interview and at the end. Mock interviews.

Advanced Grammar: Topics like parallel construction, dangling modifiers, active and passive voices, etc.

Syllogisms, Critical reasoning: A course on verbal reasoning. Listening Comprehension advanced: An exercise on improving listening skills.

Reading Comprehension advanced: A course on how to approach advanced level of reading, comprehension passages. Exercises on competitive exam questions.

Specific Training: Solving campus recruitment papers, National level and state level competitive examination papers; Speed mathematics; Tackling aptitude problems asked in interview; Techniques to remember (In Mathematics). Lateral Thinking problems. Quick checking of answers techniques; Techniques on elimination of options, Estimating and predicting correct answer; Time management in aptitude tests; Test taking strategies.

TEXTBOOKS:

1. *A Communicative Grammar of English: Geoffrey Leech and Jan Svartvik. Longman, London.*
2. *Adair J (1986) - "Effective Team Building: How to make a winning team", London, U.K: Pan Books.*
3. *Gulati S (2006) - "Corporate Soft Skills", New Delhi, India: Rupa & Co.*
4. *The Hard Truth about Soft Skills, by Amazon Publication.*

REFERENCES:

1. *Speed Mathematics, Secrets of Lightning Mental Calculations, by Bill Handley, Master Mind books;*
2. *The Trachtenberg Speed System of Basic Mathematics, Rupa & Co., Publishers;*
3. *Vedic Mathematics, by Jagadguru Swami Sri Bharati Krsna Tirthayi Maharaja, Motilal Banarsidass Publ.;*
4. *How to Ace the Brainteaser Interview, by John Kador, Mc Graw Hill Publishers.*
5. *Quick Arithmetics, by Ashish Agarwal, S Chand Publ.;*
6. *Quicker Maths, by M tyra & K Kundan, BSC Publishing Co. Pvt. Ltd., Delhi;*
7. *More Games Teams Play, by Leslie Bendaly, McGraw-Hill Ryerson.*
8. *The BBC and British Council online resources*
9. *Owl Purdue University online teaching resources*

10. *www.thegrammarbook.com online teaching resources*
11. *www.englishpage.com online teaching resources and other useful websites.*

15TAM101 TAMIL I 1 0 2 2

Objectives: *To introduce the students to different literature - Sangam literature, Epics, Bhakthi literature and modern literature; to improve their ability to communicate with creative concepts, and also to introduce them to the usefulness of basic grammatical components in Tamil.*

Unit 1

Sangam literature: Kuṟuntokai; (2, 6, 8, 40 pāṭalkaḷ) – puṟanāṉūṟu (74, 112, 184, 192 pāṭalkaḷ) – tirukkuṟaḷ (iṟaimāṭci, amaiccu).

Unit 2

Epic literature: cilappatikāram maturaik kāṇṭam (vaḷakkuṟaikkātai 50-55).

Spiritual Literature: tiruppāvai (3,4) – tēvāram (mācilvīṇaiyum)

Medieval Literature: bāratiyar kaṇṇaṉ pāṭṭu (eṉ viḷaiyāṭṭu piḷḷai) – bāratitacaṉ kuṭumpaviḷakku (tāyiṉ tālāṭṭu).

Unit 3

Novel: Jeyakāntaṉ “kuru pīṭam”

Essay: Aṇṇā “ē tāḻnta tamiḻakamē”

Unit 4

Tiruñāṉa campantar – tirunāvukkaracar – cuntarar – māṇikka vācakar – āṇṭāḷ – tirumūlar – kulacēkara āḻvār – cīttalaic cāttaṉār toṭarpāṉa ceytikaḷ, mēṟkōḷkaḷ marṟum ciṟappup peyarkaḷ.

Unit 5

Tamil Grammar: Col vakaikaḷ - vēṟṟumai urupukaḷ - valliṉam mikumiṭam mikāyiṭam - canti(puṇarcci) - ilakkaṇakkuṟippu.

Practical skills: Listening, speaking, writing and reading.

TEXTBOOKS:

Aṇṇā “ē tāḻnta tamiḻakamē” nakkīraṉ papḷikēṣaṉs.

Caktitācaṉ cupramaṇiyaṉ “nalla kuṟuntokai mūlamum uraiyum” mullai patippakam, 2008.

http:/Www.Tamilvu.Org/libirary/libindex.Htm.

jeyakāntaṉ “kuru pīṭam” mīṉāṭci puttaka nilaiyam, 1971.

Nā. Pārttacārati “puṟanāṉūṟṟuc ciṟukataikaḷ” tamiḻp puttakālayam, 1978, 2001

Poṉ maṇimāṟaṉ “aṭōṉ tamiḻ ilakkaṇam “aṭōṉ papḷiṣiṅ kurūp, vañciyūr, tiruvaṉantapuram, 2007.

puliyūrk kēcikaṉ “kuṟuntokai mūlamum uraiyum” cārāta patippakam, 2010.

Puliyūrk kēcikaṉ “puṟanāṉūṟu” srīceṇpakā patippakam, 2010

15TAM111 **TAMIL II** **1 0 2 2**

***Objectives**: To learn the history of Tamil literature; to analyze different styles, language training, to strengthen the creativity in communication, Tamil basic grammar, Computer and its use in Tamil language.*

Unit 1

The history of Tamil literature: Nāṭṭupuṟap pāṭalkaḷ, kataikkaḷ, paḻamoḻikaḷ - ciṟukataikaḷ tōṟṟamum vaḷarcciyum, ciṟṟilakkiyaṅkaḷ: Kaliṅkattup paraṇi (pōrpāṭiyatu) - mukkūṭaṟ paḷḷu 35.

Kāppiyaṅkaḷ: Cilappatikāram – maṇimēkalai naṭaiyiyal āyvu marṟum aimperum – aiñciṟuṅ kāppiyaṅkaḷ toṭarpāṉa ceytikaḷ.

Unit 2

tiṇai ilakkiyamum nītiyilakkiyamum - patiṉeṇkīḻkkaṇakku nūlkaḷ toṭarpāṉa piṟa ceytikaḷ - tirukkuṟaḷ (aṉpu, paṇpu, kalvi, oḻukkam, naṭpu, vāymai, kēḷvi, ceynaṉṟi, periyāraittuṇakkōṭal, viḻippuṇarvu pēṉṟa atikārattil uḷḷa ceytikaḷ.

Aṟanūlkaḷ: Ulakanīti (1-5) – ēlāti (1,3,6) - Cittarkaḷ: Kaṭuveḷi cittar pāṭalkaḷ (āṉantak kaḷippu – 1,4,6,7,8), marṟum akappēy cittar pāṭalkaḷ (1-5).

Unit 3

tamiḻ ilakkaṇam: Vākkiya vakaikaḷ – taṉviṇai piṟaviṇai – nērkkūṟṟu ayaṟkūṟṟu.

Unit 4

tamiḻaka aṟiñarkaḷiṉ tamiḻ toṇṭum camutāya toṇṭum: Pāratiyār, pāratitācaṉ, paṭṭukkōṭṭai kalyāṇacuntaram, curatā, cujātā, ciṟpi, mēttā, aptul rakumāṉ, na.Piccaimūrtti, akilaṉ, kalki, jī.Yū.Pōp, vīramāmuṉivar, aṇṇā, paritimāṟ kalaiñar, maṟaimalaiyaṭikaḷ.

Unit 5

tamiḻ moḻi āyvil kaṇiṇi payaṉpāṭu - Karuttu parimārṟam - viḷampara moḻiyamaippu - pēccu - nāṭakam paṭaippu - ciṟukatai, katai, putiṉam paṭaippu.

TEXTBOOKS:

http:/Www.tamilvu.trg/libirary/libindex.htm.

http:/Www.tunathamizh.tom/2013/07/blog0post_24.html

Mu. Varatarācaṉ "tamiḻ ilakkiya varalāṟu" cāhitya akaṭemi papḷikēṣaṉs, 2012

nā. Vāṉamāmalai "paḻaṅkataikaḷum, paḻamoḻikaḷum" niyū ceñcuri puttaka veḷiyīṭṭakam, 1980, 2008

nā. Vāṉamāmalai, "tamiḻar nāṭṭuppāṭalkaḷ" niyū ceñcuri puttaka veḷiyīṭṭakam 1964, 2006

poṉ maṇimāṟaṉ "aṭōṉ tamiḻ ilakkaṇam "aṭōṉ papḷíṣiṅ kurūp, vañciyūr, tiruvaṉantapuram, 2007.