

UNIVERSITY OF CALICUT

(Abstract)

BCA programme under Choice based Credit Semester System - Scheme and Syllabus - implemented with effect from 2009 admission onwards - approved - Orders issued.

GENERAL AND ACADEMIC BRANCH - I 'J' SECTION

No. GA I/J1/2471/06

Dated, Calicut University, P.O., 27.06.2009.

- Read: 1. U.O.No.GAI/J2/3601/08 Vol.II dated 19.06.2009.
2. Minutes of the meeting of the Board of Studies in Computer Science and Applications held on 02.05.2009.
3. Item No.2 (xxii) of the minutes of Faculty of Science held on 05.05.2009.
4. Item Nu.II-A-23 of the minutes of meeting of the Academic Council of 14.05.2009.

ORDER

Choice based Credit Semester System and Grading has been introduced for UG curriculum in all affiliated colleges under this University with effect from 2009 admission onwards and the Regulations for the same implemented vide paper cited 1st above.

As per paper read as (2) above, the Board of Studies has resolved to approve the scheme and Syllabus of BCA Programme under Choice based Credit Semester System.

As per paper read as (3) & (4) above, the Faculty of Science at its meeting held on 05.05.2009 endorsed the minutes of Board of Studies and the Academic Council held on 14.05.2009 approved the same.

Sanction has therefore been accorded to implement the Scheme and Syllabus of BCA Programme under Choice based Credit Semester System in this University with effect from 2009 admission onwards.

Orders are issued accordingly. Scheme and Syllabus appended.

Sd/-

**DEPUTY REGISTRAR (G&A I)
For REGISTRAR.**

To

The Principals of all affiliated Colleges
offering BCA Programme.

Copy to: C.E, EX Sn, EGI, DR, B.Sc
System Administrator (with a request to
upload in University website), Tabulation Sn.,
Enquiry/G&A-I F.Sn./SF/DF/FC.

Forwarded/By Order


SECTION OFFICER

UNIVERSITY OF CALICUT

Curriculum for BCA Programme Syllabi for Core/Open/Complementary Courses

Semester	Course No	Course Code	Course Title	Contact Hours			Credits
				Theory	Lab	Total	
I Semester	1	CA1A01	Communication Skills in English	4	0	4	3
	2	CA1A02	Critical Reasoning, Writing and Presentation	5	0	5	3
	3	CA1A07	Communication Skills in Languages other than English	5	0	5	4
	4	CA1B01	Computer Fundamentals & Programming in C	3	0	3	4
	5	CA1C01	Mathematical Foundation For Computer Applications	4	0	4	3
	6	CA1C02	Discrete Mathematics	4	0	4	3
	Total (6 courses)						25

Semester	Course No	Course Code	Course Title	Contact Hours			Credits
				Theory	Lab	Total	
II Semester	7	CA2A03	Reading literature in English	4	0	4	4
	8	CA2A04	Reading on Indian constitution secularism and sustainable environment	5	0	5	4
	9	CA2A09	literature in languages other than English	5	0	5	4
	10	CA2B02	Programming in C++ & Data Structures	3	0	3	3
	11	CA2C03	Computer Oriented Statistical Methods	4	0	4	3
	12	CA2C04	Numerical Methods in C	2	2	4	3
	Total (6 courses)						25

Semester	Course No	Course Code	Course Title	Contact Hours			Credits
				Theory	Lab	Total	
III Semester	13	CA3A06	History & Philosophy of Science	5	0	5	4
	14	CA3A12	General Informatics	5	0	5	4
	15	CA3B03	Database Design & RDBMS	3	1	4	3
	16	CA3B04	Operating Systems	4	0	4	3
	17	CA3C05	Financial & Management Accounting	3	0	3	3
	18	CA3C06	Operations Research	4	0	4	3
	Total (6 courses)						25

Semester	Course No	Course Code	Course Title	Contact Hours			Credits
				Theory	Lab	Total	
IV Semester	19	CA4A13	Basic Numerical Skills	4	0	4	4
	20	CA4A14	Entrepreneurship Development	4	0	4	4
	21	CA4B05	Programming in Java	3	2	5	4
	22	CA4B06	Programming Laboratory I (C++ & Data Structures using C++)	4	0	4	3
	23	CA4C07	E-Commerce	4	0	4	3
	24	CA4C08	Management Information Systems	4	0	4	3
	Total (6 courses)						25

Semester	Course No	Course Code	Course Title	Contact Hours			Credits
				Theory	Lab	Total	
V Semester	25	CA5B07	Data Communication & Mobile Computing	4	0	4	3
	26	CA5B08	Microprocessor	3	0	3	3
	27	CA5B09	Computer Networks	4	0	4	3
	28	CA5B10	Software Engineering	3	0	3	3
	29	CA5B11	Visual Programming using C#.Net	3	2	5	3
	30	CA5D01	Choose one course from open course I (Other Streams)	4	0	4	3
	31	CA5B12	Mini Project	0	2	2	1
	Total (7 courses)						25

Semester	Course No	Course Code	Course Title	Contact Hours			Credits
				Theory	Lab	Total	
VI Semester	32	CA6B13	Web Programming using PHP	4	0	4	3
	33	CA6B14	Computer Graphics & Multimedia	4	0	4	3
	34	CA6B15	Programming Laboratory- II (Programming in Java, PHP)	5	0	5	3
	35	CA6B16	Programming Laboratory- II (RDBMS & VB.Net)	5	0	5	3
	36	CA6B17E1	Choose one course from open course II	4	0	4	3
	37	CA6B17	Project		3	3	2
	Total (6 courses)						25
Total Courses : 37							
Total Credit : 120							

Course Number: 4
Contact Hours: 3 T
Number of Credits: 2
Number of Contact Hours: 50 Hrs

Aim of the Course

To equip the students with fundamental principles of operations of various units of computer and to impart them with the basic principles and concepts of computer programming.

Objectives of the Course

- To learn the basics of computer hardware components
- To learn the basics of computer hardware units and how they work together
- To learn the concepts of programming.
- To study C language

Prerequisites

Background of the basic science at +2 level

Course Outline

UNIT I : Introduction (10Hrs)

Evolution of Computers, Generations, Characteristics, Applications, Types, Functional Components & their Interconnections, Computer Languages:- Machine Language, Assembly language, High Level Language, Assembler, Compilers, Interpreters. Hardware, Software Classification:- System Software, Application Software, Utility Software. Number System:- Binary, Decimal, Octal, Hexadecimal, Conversion from one number system to another, Binary Arithmetic:- Addition, Subtraction, Multiplication & Division, Complement Addition.

UNIT II : Memory, Peripheral Devices and CPU (10 Hrs)

Memory: Characteristics of memory systems, Memory hierarchy, Primary Memory, RAM:- Static & Dynamic memory types, ROM, Various types of ROM. Secondary Memory:- Magnetic tape, Magnetic disk, Floppy disk, CD ROM, DVD, Hard disk, Cache Memory. I/O Organization: Peripheral Devices, Input/Output Interface, Asynchronous data transfer, Modes of transfer, Direct Memory Access.

CPU: Functions, Components, Organization, System Buses, Common Registers, Instruction Codes, Instruction formats, addressing modes.

UNIT III : C Fundamentals (10 Hrs)

Introduction to tools for Program Design: Algorithm, Flowchart. Introduction to C, Structure of C Programs, C Tokens, Keywords, Identifiers, Operators, Strings, Constants, Specified symbols, Data types: Primary, User-defined, Derived, Empty. Data type Qualifiers, Data Input functions: getchar(), scanf(), gets(). Data Output functions: putchar(), printf(), puts(). Formatted scanf() and printf(). Precedence and Associativity. Control Statements:- Branching:- if, switch, Looping: Entry controlled

– while, for ; Exit controlled – do while, Jumping:- goto label. Forward jump & Backward jump, break and continue.

UNIT IV : Structured Data Types and Functions (10 Hrs)

Arrays:- One dimensional , Two dimensional and Multidimensional. Character arrays. Structure and Union. Functions:- System defined or Library functions, User defined functions, Prototype declaration, Definition, Calling by value, Calling by Reference, Arguments- formal & actual, return statement, recursion function, scope of variables, Local & Global variables, Storage class. Automatic, external, Static & Register variables. Passing arrays (1 dimensional, 2 dimensional & character arrays) to functions, Passing structures to functions, Pointers:- declaration, initialization, operations, Dynamic memory allocation.

UNIT V : Data Files (10 Hrs)

Introduction to data files, opening & closing a file, file types, fopen, fgets, fputs, fscanf, fprintf, fclose functions, C pre-processor & other features, Macro expansion, file inclusion, conditional compilation, Miscellaneous directives, Command line arguments.

Main References :-

1. “ Computer System Architecture”, M Morris Mano(Third Edition onwards)
2. “ Computer Organization & Architecture”, William Stallings, PHI, Fourth Edition
3. “ Programming in Ansi C” , E Balagurusamy, Tata McGraw Hill
4. “ Programming with C”, Byran Gotfried
5. “ Fundamentals of Computer”, V. Rajaraman
6. “ Programming in C”, Kezningham & Ritchie

Additional References :-

1. Hayes J P, “ Computer Organization & Architecture”, Second Edition, McGraw Hill
2. : Let us C”, Yashvant Kanetkar, BPB publications
3. “ The spirit of C”, Mullish Cooper, Jasco books
4. “The Complete reference C”, Herbert Schildt, Tata Mc Graw Hill

Contact Hours: 2L

Number of Credits: 2

Number of Contact Hours: 30 Hrs

Aim of the Course

To equip the students with fundamental programming principles

Objectives of the Course

- To learn the concept of programming
- To study C language

Prerequisites

Basic programming concepts

Course Outline

Module I – 30 Hrs

Programming in C

1. Programs involving no transfer of control
2. Programs involving if, if...else, else if ladder, switch, ?: and goto statement
3. Programs involving while, do...while, for, break and continue statements
4. Programs involving one and two dimensional arrays
5. Programs involving functions, recursions, arguments as arrays, strings
6. Programs involving structures, arrays of structures, structure within structure
7. Programs involving pointers, pointers and arrays, pointers and strings, pointer arguments to functions, return value as pointer, pointers and structures
8. Programs involving files, command line arguments

CA1C01 - Mathematical Foundation for Computer Applications

Course Number: 5

Contact Hours: 4 T

Number of Credits: 3

Number of Contact Hours: 60 Hrs

Aim of the Course

To equip the students with basic principles of integration and differentiation and matrix operations.

Objectives of the Course

- To learn the set operations.
- To learn the basics of limits
- To learn the basics of Differentiation & Integration
- To study the matrix operations.

Course Outline

Unit I (12 Hrs)

Sets & Binary Operations: Definition of set, finite set, infinite set, null set, singleton set, equal sets, equivalent sets, Universal set

Operations on a set: Union, Intersection, difference, disjoint sets

Relations: Inverse, Reflexive, Symmetric, Transitive, Equivalence (No Proof Required)

Unit II (12 Hrs)

Functions, Limits & Continuity: - Function: Definition, Value of a function, domain, range, Real functions: Types, Even & Odd functions, one-one and onto functions.

Operations: Sum, Difference, Product, Quotient, Scalar multiple, Composition, Inverse.

Limits: Definition (basic properties only).

Unit III (12 Hrs)

Differentiation: Derivative at a point Derivative of a Function, Differentiation from first principle, Differentiation of important functions, Product rule, Quotient rule, Differentiation of a function of a function (problem based), Higher order derivatives (Definition only)

Unit IV (12 Hrs)

Integration: Integral as Anti derivative, Indefinite integral & constant of integration, Fundamental theorems, Elementary Standard results, Methods of Integration, Integration through Partial Functions, Integration by parts.

Definite Integral: Evaluation by Substitution, Properties of definite integrals (Problem Based)

Unit V (12 Hrs)

Matrices : Matrix Definition, Order of a Matrix, Types of Matrices, Addition of Matrices , Multiplication of Matrices , Various Kinds of Matrices , Transpose of a Matrix , Inverse of a Matrix.

Reference :

“Skills in Mathematics :Algebra”,S.K.Goyal

CA1C02 – Discrete Mathematics

Course Number: 6
Contact Hours: 4 T
Number of Credits: 3
Number of Contact Hours: 60 Hrs

Aim of the Course

To equip the students with basic principles of Discrete Mathematics

Objectives of the Course

- To learn the mathematical logic & Boolean Algebra
- To learn the basics of Groups & Rings

Course Outline

Unit 1: (12 Hrs)

Mathematical Logic – Propositions-Predicates and quantifiers, Logical operators- Logical inference- Methods of proof.

Unit II: (12 Hrs)

Counting Techniques:

Basic counting techniques-permutations and combinations, asymptotic behaviour of functions.

Unit III: (12 Hrs)

Discrete Numeric functions and generating functions- Introduction- Manipulation of Numeric functions- Asymptotic behavior of numeric functions- Generating functions.

Unit IV: (12 Hrs)

Recurrence relations: Linear recurrence relations with constants coefficients – solution by the method of generating functions.

Unit V: (12 Hrs)

Groups and Rings – Groups- Subgroups – Generation and evaluation of process- Rings, Integral domains and fields (definitions and simple properties only)

Main References

1. Elements of Discrete Mathematics
TATA MCGRAW – HILL Edition
2. J.K. Tremblay and R Manohar, Discrete Mathematical Structures with applications to
Computer Science- MCGRAW HILL INTERNATIONAL Edition
3. Discrete mathematical Structures – Kolman, Busby, Ross – Pearson Education

CA2B02 – Programming in C++ & Data Structures

Course Number: 10

Contact Hours: 3 T

Number of Credits: 2

Number of Contact Hours: 50 Hrs

Aim of the Course

To equip the students with principles and concepts of object oriented design

Objectives of the Course

- To learn the basic concepts and principles of object oriented design
- To study C++ language

Prerequisites

Basic background skills

Course Outline

Unit I: (10 Hrs)

Oop concepts: Introduction-Difference between procedure oriented and object oriented programming-Characteristics of Oop - abstraction, inheritance, polymorphism, and encapsulation Class and Object ,C++ data types, operators-insertion, extraction operators-pointers-references-enumeration-functions in c++, prototype, argument passing, return type, default argument

Unit II: (10 Hrs)

Classes: Member and member function- inline function-constructor and destructor-new and delete operators-friend function –function overloading with example-operator overloading

Unit III: (10 Hrs)

Inheritance: derived classes-single inheritance, multiple inheritance, multilevel inheritance, hierarchical inheritance, hybrid inheritance-virtual functions, virtual base classes-Nesting of classes and containership-Exception handling-Templates and template functions

Unit IV: (10 Hrs)

Arrays; representation of arrays, insertion and deletion operation, multidimensional arrays-Search - Linear and binary search methods- Sorting-insertion, bubble and quick sort methods and comparisons.

Unit V: (10 Hrs)

Linked list- Representation, insertions, deletion-stack using linked list-queue using linked list, and doubly linked list with header nodes.

Main References

1. Sartaj Shani “Data structures, Algorithms and applications in C++
2. Bjarne Stroustrup “the C++ programming language” Addison Wesley.1999
3. Robert Lafore “Object oriented programming in c++” Galgotia
4. E. Balagurusamy: Object Oriented Programming with C++, TMH Pub., 1998.
5. Dinesh Mehta “Fundamentals of Data Structures in C++”

Course Number:10

Contact Hours: 3 L

Number of Credits: 2
Number of Contact Hours: 30 Hrs

Aim of the Course

To develop the basic programming skills

Objectives of the Course

- To learn the basic programming skill in OOPS
- To learn the implementation of various data structures

Prerequisites

Basic programming skills in C & knowledge in OOPS

Course Outline

Programs involving OOP features
Programs involving data structures using c++

CA2C03 – Computer Oriented Statistical Methods

Course Number: 11
Contact Hours: 2 4
Number of Credits: 2
Number of Contact Hours: 60 Hrs

Aim of the Course

To train the students with basic statistical methods.

Objectives of the Course

- To learn the basics of statistics
- To learn probability theory
- To learn the sampling distributions

Course Outline

Unit I

Basics statistics: Measures of central tendencies – Mean, Median, Mode, Geometric mean and Harmonic mean. Measures of dispersion – Range, quartile deviation, Lorenz curve. Mean deviation and standard deviation. Curve fitting- Principles of least squares, fitting of straight lines. Correlation (Bivariate case only) Pearson’s coefficient of correlation. Rank correlation and Regression analysis

Unit II

Probability theory :Random experiment . Sample point, sample space, events, union, intersection and compliment of events. Different approaches of probability, frequency approach to probability, statistical regularity. Classical definition, numerical examples

Unit III

Random variables and probability distribution, Discrete and continuous random variables- density function- distribution- density function- change of variable in univariate case. Bivariate distributions- definition of bivariate distribution, marginal and conditional distributions, independence of two variables. Mathematical expectation- elementary properties, raw and central moments, moment generating functions, standard distributions- Binomial, Poisson, Normal

Unit IV

Sampling distributions, the distribution of mean samples from a Normal population, Definition and statement of the form of the distributions- Chisquare and F and use of their tables

Unit V

Estimation of parameters, Desirable properties of point estimates, Maximum likelihood estimator, Interval estimation, Interval estimates of mean and variance of Normal population and proportion of Binomial population, Testing of hypothesis, General principles of testing, Two types of errors, Neyman- Pearson approach

Main References

1. Hogg R V Craig A T – “ Introduction to Mathematical Statistics”, Macmillan Publishing Co.Int
2. Freund J E, Waple R E – “ Mathematical Statistics”, Prentice Hall of India Pvt.Ltd.
3. Miller I Freund J E – “ Probability and Statistics for Engineers”, Prentice Hall of India Pvt. Ltd.
4. Levin R I, “ Statistics for Management”, Prentice Hall of India Pvt. Ltd

CA2C04 – Numerical Methods in C

Course Number: 12
Contact Hours: 2 T
Number of Credits: 2
Number of Contact Hours: 50 Hrs

Aim of the Course

To train the students with basic Numerical Methods

Objectives of the Course

- To learn the floating point arithmetic
- To learn how to solve linear equations
- To learn the numerical differentiation and integration

Prerequisites

Background of the basic Mathematics at +2 level

Course Outline

Unit 1 (10 hrs)

Floating Point Arithmetic- Errors, Significant digits and Numerical Instability

Unit 2 (10 hrs)

Roots of Algebraic and Transcendental Equations – The Increment Search Method – Bisection Method – Method of False Position – Newton Raphson Method

Unit 3 ((10 hrs)

Solution to Simultaneous Linear Equations – Direct Method – Cramer’s Rule – Gauss Elimination Method – Gauss Jordan Elimination Method – Triangularization Method

Unit 4 ((10 hrs)

Interpolation and Approximation – Lagrange & Newton Interpolations – Finite Difference Operators – Interpolating Polynomials using finite differences – Hermite Interpolation – Least Square Polynomial Approximation of a data

Unit 5 ((10 hrs)

Numerical Differentiation and Integration - Numerical Differentiation – Methods based on finite differences – Extrapolation Methods – Numerical Integration – Methods based on Interpolation – Composite Rule – Trapezoidal and Simpson’s Rule – Romberg Integration – Gauss Quadrature Formulas , Numerical Solution of Ordinary differential equations – Single Step Method – Taylor’s Series Method – Euler’s Method – Modified Euler’s Method – Runge Kutta Methods

Main References

1. Salvadori & Baron , “Numerical Methods in Engineering “ , Prentice Hall of India
2. M.K.Jain , SRK, Iyengar , R.K.Jain , “Numerical Methods for Scientific and Engineering Computation”, Wley Eastern

Course Number: 12

Contact Hours: 2 P

Number of Credits: 1

Number of Contact Hours: 30 Hrs

Aim of the Course

To train the students in programming Numerical Methods

Objectives of the Course

- To learn the floating point arithmetic
- To learn how to solve linear equations
- To learn the numerical differentiation and integration

Prerequisites

Background of the basic Mathematics at +2 level & knowledge in C programming

Course Outline

C Programs to solve numerical method problems

CA3B03 – Database Design & RDBMS

Course Number: 15

Contact Hours: 3 T

Number of Credits: 2

Number of Contact Hours: 50 Hrs

Aim of the Course :

To equip the students with principles and concepts of relational database design

Objectives of the Course

- To learn the basic principles of database and database design
- To learn the basics of RDBMS
- To learn the concepts of database manipulation SQL
- To study PL/SQL language

Prerequisites

Basic knowledge of the computer functional units and their functioning and basic programming knowledge

Course Outline

Module I (12 Hours)

Introduction : Purpose of database systems , View of data – Data abstraction , Instances and Schemas , Data models , Database languages , Database administrator , Database users , Database architecture .
The Entity –Relationship model: Entity sets , Relationship sets , Attributes , Constraints , Mapping Cardinalities , Keys , ER diagrams , Weak entity sets , Strong entity sets.

Module II (12 Hours)

Relational Database Design : First , Second, Third , BCNF , Fourth and Fifth Normal forms .
Transactions : ACID properties , States , Concurrent executions .

Module III (12 Hours)

Data Definition in SQL : Data types , Creation , Insertion , Viewing , Updation , Deletion of tables , Modifying the structure of the tables , Renaming , Dropping of tables . Data Constraints – I/O constraints , Primary key , Foreign key , Unique key constraints , ALTER TABLE command.

Module IV (12 Hours)

Database Manipulation in SQL : Computations done on table data : Select command , Logical operators , Range searching , Pattern matching , Grouping data from tables in SQL , GROUP BY , HAVING clauses , Joins – Joining multiple tables , Joining a table to itself .Views : Creation, Renaming the column of a view , destroys view , Granting and revoking permissions : Granting privileges , Object privileges , Revoking privileges .

Module V (12 Hours)

Program with SQL : Data types : Using set and select commands , procedural flow , if, if /else , while, goto , global variables , Security : Locks , types of locks , levels of locks . Cursors : Working with cursors , Error Handling , Developing stored procedures ,create,alter and drop , passing and returning data to stored procedures , using stored procedures within queries , building user defined functions , creating and calling a scalar function , implementing triggers , creating triggers , multiple trigger interaction.

Main References :

1. Abraham Silberschatz , Henry F Korth , S.Sudharshan “ Database System Concepts” , 5th Edition
2. Ivan Bayross, “SQL,PL/SQL: The Programming Language of Oracle”
3. Alex Krigel and Boris M.Trukhnov, “SQL Bible”,Wiley pubs
4. Paul Nielsen , “Microsoft SQL Server 2000 Bible” , Wiley Dreamtech India Pubs.

Course Number: 15

Contact Hours: 2L

Number of Credits: 1

Number of Contact Hours: 30 Hrs

Aim of the Course :

To equip the students with fundamental programming principles

Objectives of the Course

- To study PL/SQL language
- To study SQL commands and procedures

Prerequisites

Basic knowledge of the computer functional units and their functioning and basic programming knowledge

Course Outline

CA3B04 – Operating Systems

Course Number: 16

Contact Hours: 4 T

Number of Credits:3

Number of Contact Hours: 60 Hrs

Aim of the Course

To equip the students with basic concepts of Operating Systems

Objectives of the Course

- . To learn the basic concepts and functions of operating system

Prerequisites

Basic knowledge of computer functional units

Course Outline

Unit I (12 hrs)

What is an OS , Functions, Structure, Types : Batch , Multiprogramming , Timesharing , Real time , Multiprocessor system , Distributed system , OS as Resource manager , Booting process, POST.

Unit II (12 hrs)

Processor Management: Functions, Process, Process states, State transition, PCB, Events related to process, Process scheduling, Scheduling objectives , Scheduling levels , Preemptive and non-preemptive scheduling algorithms , Concurrent processes , Process synchronization , Mutual exclusion and critical section , Solution to mutual exclusion problem : Software , Hardware & Semaphore Solutions , Classical problems of mutual exclusion , Deadlock :Handling deadlock , Prevention , Avoidance , Detection and Recovery.

Unit III (12 hrs)

Memory Management : Functions , Contiguous : State and Dynamic , Non-contiguous: Segmentation and Paging , Virtual memory , Demand paging , Page replacement policies , Working set principle .

Unit IV (12 hrs)

File Management : Information management : File system , Functions , File directory , File system structure , File system design : Symbolic , Basic , Logical and Physical file system layers , File organization , File allocation , Free space management , File protection and security.

Unit V (12 hrs)

Device Management : Disk scheduling , Disk scheduling policies , Device management : Functions , Techniques for device management : Dedicated , Shared , Virtual , Spooling , Channels and Control unit.

Main References:

1. Dietel , “An Introduction to Operating System “ , Addison Wesley
2. Madnick S.E. , Donovan J.J. , “Operating System” , McGraw Hill
3. William Stallings , “Operating System” , PHI
4. D.M.Dhamdhare , “System Programming and Operating Systems” , Tata McGraw Hill , 1996
5. Tanenbaum A.S. , “Modern Operating Systems” , Prentice Hall

Additional References :

- 1.Silberschatz , Galvin & Gagne , “Operating System Concepts” , John Wiley & Sons
- 2.Charles Crowley , “Operating Systems- A design Oriented Approach” , Tata McGraw Hill , 1997

CA3C05- Financial & Management Accounting

Course Number: 17

Contact Hours: 4 T

Number of Credits:3

Number of Contact Hours: 60 Hrs

Aim of the Course

To equip the students with fundamental principles of financial & management accounting

Objectives of the Course

- To get a general introduction on accounting and its general application.
- To get a general understanding on various tools for financial statement analysis.
- To get a general understanding on accounting procedures up to the preparation of various financial statements.
- To get a general understanding and important tools for managerial decision making.

Prerequisites

Basic Accounting knowledge

Course Outline

UNIT-I (12 hrs)

Principles of accounting – Some fundamentals concepts and conventions – Systems of accounting double entry principles – Advantages of Double entry system – personal, real, nominal accounts. Cash book-forms of cash books- subdivisions of Journal- Ledgers –limitations of financial accounting-Trial balance – Final accounts - Trading P/L A/c- Balance sheet

UNIT-II (12 hrs)

Invitation to management accounting: Analysis and interpretation of trading accounts and financial statements – Horizontal Vertical analysis – Common size Balance sheet –common size income statement – comparative income and balance sheet –trend analysis.

UNIT-III (12 hrs)

Ratio analysis: uses of ratios in interpreting trading accounts and financial statements –different types of ratios – Liquidity ratios –turnover ratios-activity ratios –solvency ratios

UNIT-IV (12 hrs)

Fund flow statement –schedule of changes in working capital –fund from operation- cash flow statement- cash from operating activities –cash from financing activities –cash from investing activities

UNIT-V (12 hrs)

Marginal costing- Break even point – cost volume profit analysis- margin of safety –standard costing- analysis of variance-material-labour-O/H-sales variables-Budget and Budgetary control- different types of budgets- master budget- sales budget-production budget-flexible budget-cash budget- advantages-preparation

Main References

1. Pandey I.M “Financial Management” Vikas publishing house
2. Kellock.J “elements of Accounting” Heinmann
3. S.N Maheshwari “advanced Accountancy” Vikas publishing house
4. A.Vinod “cost and Management accounting”-Calicut University central co-operative stores

CA3C06 – Operations Research

Course Number: 18

Contact Hours: 4 T

Number of Credits:3

Number of Contact Hours: 60 Hrs

Aim of the Course

To impart an interdisciplinary approach in mathematical formulation of different models.

Objectives of the Course

- To get a general introduction in solving linear programming problems.
- To get a general understanding of network analysis technique.
- To get a general understanding of different mathematical models.

Prerequisites

Basic Mathematical knowledge.

Course Outline

Unit 1: (12 hrs)

Operation research and LPP:Operation Research and Decision making, Advantages of O.R approach in decision making, Application of O.R, uses and limitation of O.R. LPP: Introduction, mathematical formulation the problem, canonical and standard forms of LPP. Simplex method, artificial variable technique-Big M and two phase method-problem of degeneracy-concept of duality-dual simplex method.

Unit II: (12 hrs)

Transportation model-North west corner rule, Least cost method, Vogel’s approximation method- loops in transportation table- Degeneracy in transportation table- Transshipment problem. Assignment model: Mathematical formulation of the problem-assignment algorithm- impossible algorithms-travelling salesman problem

Unit III: (12 hrs)

Network scheduling: concept of network, basic components, PERT and CPM, Rules of network construction, maximal flow problem, project scheduling critical path calculations, advantages

of network (PERT/CPM). Sequencing models: processing n jobs through two machines, n jobs through three machines, two jobs through m machines

Unit IV: (12 hrs)

Replacement model: Replacement of items with gradual deteriorates-items deteriorates with value of money, items that fail completely and suddenly, staff replacement problem.

Unit V: (12 hrs)

Inventory model: Deterministic inventory problem- EOQ problem with no shortages, EOQ problem with no shortage and several production runs of unequal length, EOQ production problem with no shortages, EOQ problem with shortages, EOQ problem with one and two price break- ABC analysis.

Main References

1. Kanti Swarup, Gupta P.K Man Mohan "Operation Research", Sultan Chand & Sons.
2. Taha H.A "Operation Research : an Introduction", McMillan 1982

Additional References

1. Arrow K.J Karlin. S and Scarf "Studies in the mathematical theory of inventory and production" Stanford University Press
2. Macrile Sasiani, Arthur Yospon and Lawrence Friedman- "Operation Research methods and problems" John Wiley & Sons. Inc. New York

CA4B05 – Programming in Java

Course Number: 21
Contact Hours: 3 T
Number of Credits:2
Number of Contact Hours: 55 Hrs

Aim of the Course

To equip the students with basic programming skill in Java

Objectives of the Course

To learn the core Java language

Prerequisites

Basic Knowledge of OOPS concepts

Course Outline

Unit I : (11 Hours)

Fundamentals of Object Oriented programming, Evolution, Features, Environment, JFC, Constants, Variables & Data Types.

Unit II : (12 Hours)

Operators and Expressions, Decision making, Branching and Looping

Unit III : (12 Hours)

Classes, Objects and Methods, Arrays, Strings and Vectors, Interfaces, Packages, Multithreaded programming , Exceptions.

Unit IV : (10 Hours)

Applet Programming, Graphic Programming

Unit V : (10 Hours)

Managing Input/Output files, Java Collection, JDBC, Concepts of J2EE

References

- E Balaguruswami, “ Programming With Java - a Primer”, Third Edition, Tata Mc Graw Hill,2008
- Andy Harris, “ Java 2- Fast and easy Web development”, Prentice Ha;;
- Peter Rossbach & Hendrisk Schereliber, “ Java – Server and Servlets”, Person Education
- Vivek Sharma & Rajiv Sharma, “ Developing E Commerce Sites”, Person Education
- Matt J Crouch, “ Web Programming with ASP”, Person education

Course Number: 21

Contact Hours: 2L

Number of Credits: 1

Number of Contact Hours: 30 Hrs

Aim of the Course:

To equip the students with programming principles of core Java

Objectives of the Course

- To study the features of Java
- To study two tier architecture
- To study the event driven programming

Prerequisites

Basic knowledge of Object Oriented Concepts

Course Outline

Programs involving arrays, strings, packages, interfaces, exception handling, frames, applets.

CA4B06 – Programming Laboratory I (C++ & Data Structures)

Course Number:22

Contact Hours: 4 L

Number of Credits: 3

Number of Contact Hours: 50 Hrs

Aim of the Course

To develop the programming skills in C++

Objectives of the Course

- To learn the basic programming in OOPS
- To learn the implementation of various data structures

Prerequisites

Basic programming skills in C & knowledge in OOPS

Course Outline

Programs involving OOPS features

Programs involving Data Structures

CA4C07 – E - Commerce

Course Number: 23
Contact Hours: 4 T
Number of Credits:3
Number of Contact Hours: 60 Hrs

Aim of the Course

To provide the students with the basic knowledge in E-Commerce

Objectives of the Course

- To get a general introduction Electronic Commerce framework
- To get a general understanding on various electronic payment system
- To get a general understanding on Internal information systems
- To get a general understanding on the new age of Information.

Prerequisites

Basic knowledge in Commerce

Course Outline

UNIT I: (12 hrs)

Electronic Commerce framework – Electronic Commerce of Media convergence- The Anatomy of E-commerce applications – Electronic Commerce Applications – Electronic Commerce Organization Applications – Market Forces Influencing the I-way – Components of the I-way

UNIT II: (12 hrs)

Architectural framework for electronic commerce – World Wide web (WWW) – Web background: Hypertext publishing – Technology behind the web – security and the web – Consumer-oriented applications – Mercantile models from the consumer's perspective – Mercantile models from the Merchant's Perspective

UNIT III : (12 hrs)

Types of Electronic payment systems – Digital Token-Based Electronic Payment Systems – Smart cards and Electronic Payment Systems – Credit Card based Electronic Payment systems – Risk and Electronic Payment Systems – Designing electronic payment systems -Electronic data interchange – EOI Applications in Business – EDI: Legal, Security, and Privacy issues – EDI and Electronic Commerce.

UNIT IV: (12 hrs)

Internal Information systems – Macro forces and Internal Commerce – Work Flow Automation and Coordination Customization and Internal commerce – Supply chain commerce systems – making a business case for a document Library – Types of digital documents – Issues behind Document Infrastructure.

UNIT V: (12 hrs)

The New Age of Information-Based Marketing – Advertising on the Internet- charting the Online Marketing process –Information search and Retrieval – Electronic commerce Catalogs or Directories – Information Filtering

Main References

1. Ravi Kalakota, Andrew B. Whinston, “ FRONTIERS OF ELECTRONIC COMMERCE”, Pearson Education Asia, 2003
2. Jeffery F. Rayport, Bernard J. Jaworski, “E- COMMERCE”, TMCH, 2002
3. P.T. Joseph, “E- COMMERCE – A MANAGERIAL PERSPECTIVE”, PHI, 2003

CA4C08 – Management Information Systems

Course Number: 24
Contact Hours: 4 T
Number of Credits:3
Number of Contact Hours: 60 Hrs

Aim of the Course

To provide the students with the basic knowledge in Management Information Systems

Objectives of the Course

- To get a general introduction to Information Systems
- To get a general understanding on the conceptual foundations
- To get a general understanding on organizational & management concepts
- To get a general understanding on developing & implementing application systems.

Prerequisites

Basic knowledge in Information Systems

Course Outline

Unit I (12 hrs) Introduction to information Systems: Definition of a management information system, MIS as an evolving concept, MIS & other academic disciplines, Subsystems of an MIS, Operating elements of an information system, Management information system support for decision making, MIS structure based on management activity, MIS structure based on organizational function, synthesis of MIS system structure, some issues of MIS.

Unit II (12 hrs) Conceptual Foundations: Phases in decision Making Process, Concepts of decision Making, Behavioral models of the decision Maker, Behavioral Model of organizational decision making, decision making under psychological stress, Methods for decision among alternatives, relevance of decision making concepts for information system design, Definition of information,

quality of information in decision making, value of information other than in decision, General model of the human as an information processor, The Newwell-Simon model, tentative limits on human information processing, Concepts of human cognition & learning, Characteristics of human information processing performance.

Unit III (12 hrs) System Concepts: Definition of a System, General model of a system, Types of systems, Subsystems, System concepts & Organizations, System concepts applied to MIS, Concepts of organizational Planning, Planning Process and Characteristics of control process.

Unit IV (12 hrs) Organizational structure & management concepts: The basic model of Organizational Structure, Modifications of basic organizational structure, Information processing model of organization structure, Organizational culture & Power, Organizational change, Management theories, organizations as sociotechnical systems, implications of organizational structure & management theory of MIS.

Unit V (12 hrs) Developing & implementing application systems: A Contingency approach to choosing an application development strategy, Prototyping approach to application system development, Life cycle approach to application system development, Life cycle definition stage, Life cycle installation & operation stage, Implementation of IS as an organizational change process, Quality in IS, Organizational functions for control & quality assurance, Quality assurance for applications, Quality assurance with user developed systems, Post audit evaluation of Is Applications, Evaluation of existing Hardware & Software, Evaluation of Proposed Hardware & Software, Auditing of IS.

Main Reference:

Gordon B Davis, Margrethe H Olson, Management information systems conceptual foundations, Structure and development, TATA McGraw Hill

CA5B07 – Data Communication & Mobile Computing

Course Number: 25

Contact Hours: 4 T

Number of Credits:3

Number of Contact Hours: 60 Hrs

Aim of the Course

To provide the students with the basic knowledge in Data Communication & Mobile Computing

Objectives of the Course

- To get a general introduction to data & mobile communication concepts
- To get a general understanding on wireless networking

Prerequisites

Basic knowledge in Communication Systems

Course Outline

UNIT I (12 hrs)

Introduction: Communication model – Data communication and networking – Digital vs Analog Communications- Serial and Parallel Transmissions-Synchronous and Asynchronous Transmissions- Simplex, Half -Duplex and Full- Duplex modes of transmissions. Noise- different types of noise, Channel capacity - Shannon's Theorem, Error Detection and Correction: parity, checksum, CRC, Hamming code.

UNIT II (12 hrs)

Communication concepts :Analog modulation – Various schemes – AM, PM, FM –Sampling theorem - Analog pulse modulation – PAM, PWM, PPM –Digital Pulse modulation (PCM). Key Techniques - ASK, FSK, PSK, QPSK

UNIT III (12 hrs)

Transmission Media: Guided Media: Twisted Pair Cable, Coaxial Cable, optical fiber Cable
Unguided (wireless): Terrestrial microwave – satellite microwave –wireless propagation,
Multiplexing - Frequency Division Multiplexing (FDM) – Time Division Multiplexing (TDM),
Synchronous Time Division Multiplexing –Statistical time Division multiplexing –

UNIT IV (12 hrs)

Introduction to wireless networking-Mobile and Wireless Devices –Need for Mobile Computing –3
tier Architecture- Mobile computing through internet- Mobile computing through telephone: IVR-
Voice XML-TAPI. GSM: GSM history-GSM architecture-GSM Entities- GSM Channel types-
GSM addresses and identifiers-Network aspects in GSM-Authentication and security in GSM.
CDMA: Introduction-Spread-spectrum technology- IS-95-CDMA versus GSM-Wireless Data.

UNIT V (12 hrs)

GPRS: Introduction-GPRS and Packet data Network-GPRS Network architecture-GPRS Network
operation-Data service in GPRS-Application for GPRS-limitation of GPRS, WAP: The Mobile
Internet Standard: Overview of WAP

Text Books:

1. Data and Computer Communications-William Stallings, VIIth Edition, Pearson Education
2. Electronic communication system - Kennedy, Mc Graw Hill.

Reference Books:

1. Introduction to Data Communications & Networking - Behrouz & Forozan Mc Graw Hill.
2. Principles of Communication System - Tanenbaum & Schilling Mc Graw Hill.

CA5B08 – Microprocessor

Course Number: 26
Contact Hours: 3 T
Number of Credits:3
Number of Contact Hours: 50 Hrs

Aim of the Course

To equip the students with the architecture and instruction sets of different microprocessors and to design systems using microprocessors

Objectives of the Course

- To study the architecture of microprocessors like 8085, 8086 and higher versions
- To understand the instruction set of the above.
- To know the methods of connecting them to the peripheral devices. To learn the basic concepts and functions of operating system

Prerequisites

Basic knowledge in computer hardware

Course Outline

Unit I (10 hrs)

Introduction to the microprocessor and computer: Internal processor architecture, Functional block diagram, Bus, Clock signals, addressing modes

Unit II (10 hrs)

Programming 8086: Data movement instructions, Arithmetic and logic instructions, program control instructions, string instructions, programming techniques, examples, Modular programming: stacks, subroutines, Macros.

Unit III (10 hrs)

Assembler Directives: Data Definition and Storage Allocation, Program Organization, Alignment, Program End, Value Returning Attribute, Procedure Definition, Macro Definition, Data Control, Branch Displacement, Header File, Inclusion, Target Machine Code Generation Control Directives

Unit IV (10 hrs)

Interrupts and interrupt routines, I/O interface and programming: Fundamental I/O considerations, Data transfer schemes-Programmed I/O, Interrupt I/O, DMA, System bus structure, Min.Max Modes, Application of 8259, 8255,8251,8257,8253

Unit V (10 hrs)

Introduction to other 16 bit 32 bit processors: 80286, 386, 486, Pentium and Pentium ProProcessor

References:

1. K.R Venugopal, Microprocessor X6 Programming, BPB
2. Peter Abel, IBM PC Assembly Language and programming, Prentice Hall
3. Interfacing, S/W application, Prentice Hall
4. Mohammed Rafiqussaman, Microprocessor and microcomputer based system design
5. Yu-Chang Liu & Glenn A Gibson, "Microcomputer systems: the 8086\8088 Family: Architecture, Programming and design", PHI
6. Badri Ram,"Advanced Microprocessors and interfacing", TMH

CA5B09 – Computer Networks

Course Number: 27
Contact Hours: 4 T
Number of Credits:3
Number of Contact Hours: 60 Hrs

Aim of the Course

To provide the students with the basic knowledge in Networking

Objectives of the Course

- To get a general introduction to Computer Networks
- To get a general understanding on different OSI layers

Prerequisites

Basic knowledge in Communication Systems

Course Outline

UNIT I (12 Hrs)

Introduction to Computer Networks: Network Topologies-Types of Network-OSI Model, Switching-The Physical Layer: Modem-RS232 Interface

UNIT II ((12 Hrs)

Data Link Layer: [LAN](#) - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 – FDDI - SONET – Bridges-Sliding window protocol-ALOHA-CSMA/CD

UNIT III (12 Hrs)

Network layer: Repeaters-Bridges-Gateways- Routers - Routing algorithms - Congestion Control algorithms – Internetworking . Transport Layer: Elements of Transport protocol – A simple transport protocol – The Internet transport Protocols : TCP-UDP -Performance issues

UNIT IV (12 Hrs)

Session layer: Synchronization – Presentation layer: Encryption-Decryption-Application layer : HTTP-FTP-SMTP-DNS

UNIT V (12 Hrs)

Network Security: Common threats-Firewalls- Advantages and Disadvantages of firewalls- Cryptography- Ciphers-Public/Private key encryption-DES-RSA-MD5-Kerberos-PGP-MIME

References:

1. Introduction to Data Communications & Networking - Behrouz & Forozan, TMH
2. Computer Networks - Andrew S. Tanenbaum, IVth Edition, PHI
3. Data and Computer Communications - William Stallings, VIIth Edition, Pearson Education
4. Cryptography And Network Security – Principles and Practices - William Stallings, Prentice Hall of India, IIIrd Edition, 2003.

CA5B10 – Software Engineering

Course Number: 28
Contact Hours: 3 T
Number of Credits:3
Number of Contact Hours: 60 Hrs

Aim of the Course

To provide the students with the basic knowledge in Software Engineering

Objectives of the Course

- To equip the students with basic system development skills
- To get a general understanding on Software Life Cycles

Prerequisites

Basic knowledge in Programming

Course Outline

Unit I: Introduction (12 hrs)

Introduction to software Engineering, Software Components, Software Characteristics, Software Applications, Software engineering processes, Similarity and differences from conventional engineering processes

Software Development Life Cycle (SDLC) Models: Water Fall Model, Prototype Model, Spiral Model, Component based Development Model, Evolutionary development models, Iterative Enhancement Models.

Unit II: Software Requirement Specification (SRS) (12 hrs)

Requirement Engineering Process: Elicitation, Analysis, Documentation, Review and Management of User Needs, Feasibility Study, Information Modeling, Data flow Diagrams, Entity Relationship Diagrams, Decision Tables, SRS Document, IEEE Standards for SRS.

Software Quality Assurance (SQA): Verification and Validation, SQA Plans, software quality frameworks, ISO 9000 models

UNIT III: Software Design (12 hrs)

Basic Concept of Software Design, Architectural Design: Software Architecture, Data Design, Architectural Styles, Mapping Requirements into Software Architecture

Low Level Design: Modularization, Design Structure, Charts, Pseudo Codes, flow Charts, Coupling and Cohesion Measures

Design strategies: Function Oriented Design, Object oriented Design, Top –Down and Bottom-UP design

UNIT IV: Software Testing and Maintenance (12 hrs)

Top-Down and Bottom-Up Testing Strategies: Test Drivers and Test Stubs, White Box Testing, Black Box Testing, Test Data Preparation

Software as an entity, Need for Maintenance, Categories of maintenance: Preventive, Corrective and perfective maintenance, cost of maintenance, Software Re-Engineering, Reverse Engineering.

UNIT V: Software Project Management (12 hrs)

Software configuration management Activities: Change control Process, Software Version Control, An Overview of CASE Tools

Estimation: Cost, Efforts, Schedule/Duration, Constructive cost Models, Resource Allocation Models, Software Risk Analysis and Management

Reference Books:

1. R.S Pressman “Software Engineering: A Practitioners Approach”, McGraw Hill.
2. James Peter, “Software Engineering, an Engineering Approach” John Wiley.
3. Rajib Mall, Fundamentals of Software Engineering, PHI Publication.
4. K.K Agarwal and Yogesh Singh, Software Engineering, New Age International Publishers.
5. Carlo Ghezzi, M Jarayeri, D Manodrioli, Fundamentals of Software Engineering, PHI Publication.
6. Pankaj Jalote, Software Engineering, Narosa Publication.

CA5B11 – Visual programming Using C#.Net

Course Number: 29
Contact Hours: 3 T
Number of Credits: 2
Number of Contact Hours: 60 Hrs

Aim of the Course

To provide the students with the basic knowledge in Visual programming

Objectives of the Course

- To get a general understanding on .Net Frame Work
- To get a general understanding on .ADO .Net

Prerequisites

Basic knowledge in OOPS

Course Outline

UNIT – I (10 hrs)

the origins of the .NET technology .net framework, features of .net, architectures of C#.net. Introduction to visual studio,.net IDE interface and event driven programming. the common language runtime, The Just-In-Time Compiler visual studio, . NET Framework class library introduction.NET languages, benefits of the .NET approach, C# and .NET.

UNIT – II (12 hrs)

Basic classes, declarations, conditionals, loops, arrays, strings, enumerations, Windows Forms, Text Boxes, Buttons, Labels, Check Boxes, and Radio Buttons. List Boxes, Combo Boxes , Menus ,Image List, Tree Views, List Views, Toolbars, Status Bar and Progress bars.

UNIT –III (14 hrs)

Object Oriented Programming in c# .NET , Class and Object, Properties, methods and events. Constructors and Destructors
Method overloading
Inheritance

UNIT IV (14 hrs)

Database :Connected and disconnected mechanism, Connection Objects, Command Objects, Data Adapters, Dataset Class, Data binding with controls like Text Boxes, List Boxes, Data grid

UNIT –V (10 hrs)

Exception, structured exception handling using try, catch and final statements, and user defined exception.

References

- 1 .Net Framework Essentials .3rd Edition (O'Reilly)
2. Beginning with C#.Net , Wroax publications

Course Number:29

Contact Hours: 2 L

Number of Credits: 1

Number of Contact Hours: 30 Hrs

Aim of the Course

To develop the programming skills in C#.Net

Objectives of the Course

- To learn the basic programming skills in .Net

Prerequisites

Basic programming skills in C++ & knowledge in OOPS

Course Outline

1. Create and populate Windows Forms.
2. Create and use user controls in a Windows Forms application
3. Create menus in a Windows Forms application
4. Add code to form and control event procedures in a Windows Forms application
5. Validate user input in a Windows Forms application
6. Bind Windows Forms applications to various data sources by using Microsoft ADO.NET
7. Debug a Windows Form Application (try/catch)

Open course Offered to other Programmes

CA5D01 – Internet Programming

Course Number: 30

Contact Hours: 2 T + 2 P

Number of Credits: 2

Number of Contact Hours: 50 Hrs (T) +30 Hrs (P)

Aim of the Course

To provide the students with the basic knowledge in Internet Programming

Objectives of the Course

- To get a general understanding on HTML
- To get a general understanding on ASP

Prerequisites

Basic knowledge of Internet

Course Outline

UNIT I (10 hrs)

Introduction to Internet: What is Internet –Services provided by internet, HTTP-FTP-Email(POP,IMAP,SMTP)-TELNET-USENET-GOPHER-Search Engine- HTML - URL- Domain Names- Browsers- WWW.

UNIT II (10 hrs)

HTML: Introduction to HTML-Essential Tags-Adding Images-Color and Background of Web Pages-Lists and their Types- Linking to External Documents- Creating Table-Frames-Forms-Introduction to DHTML: CSS

UNIT III (10 hrs)

JavaScript: Introduction to JavaScript –Basics-Writing JavaScript – Running JavaScript-Alert boxes-Accepting input from user-Creating Dynamic webpages using JavaScript-Relating JavaScript to DHTML

UNIT IV (10 hrs)

Active Server Pages (ASP): Introduction –How ASP work- client –side scripting versus – server side scripting –using personnel web page server or internet information server- file system objects

UNIT V (10 hrs)

Front Page: Front Page Basics- Phases of Planning and Building Web Sites- Front Page Views-Adding Pictures-Backgrounds-Links

References

1. HTML Black Book – Steven Holzner – Dreamtech Press
2. HTML, Java Script, DHTML, PERL, CGI – Evan Bayross – BPB
3. Internet and Word wide Web How to Program- Deitel & Nieto, Pearson Education Asia , 2003
4. Web Technologies – TCP/IP to internet application architectures- Achyut s. Godbole & Atul Kahate, Tata McGraw Hill, 2003.

CA5B12 – Mini Project

Course Number: 31
Contact Hours: 2 P
Number of Credits: 1
Number of Contact Hours: 30 Hrs

Aim of the Course

To equip the students with Computer Application

Objectives of the Course

To develop the software development skill

Prerequisites

Basic programming knowledge

Course Outline

Mini Project in any platform using any language of student's choice

CA6B13 – Web Programming Using PHP

Course Number: 32
Contact Hours: 4 T
Number of Credits: 3
Number of Contact Hours: 60 Hrs

Aim of the Course

To equip the students with basic programming skill in Web Designing

Objectives of the Course

To learn the Web Designing

Prerequisites

Basic knowledge in HTML

Course Outline

Unit I (10 Hrs)

HTML: Introduction to HTML, Basic formatting tags: heading, paragraph, underline break, bold, italic, underline, superecript, subscript, font and image. Different attributes like align, color, bgcolor, font face, border, size. Navigation Links using anchor tag: internal, external, mail and image links. Lists: ordered, unordered and definition, Table tag, HTML Form controls: form, text, password, textarea, button, checkbox, radio button, select box, hidden controls, Frameset and frames

Unit II (10 Hrs)

Javascript: Introduction, Client side programming, script tag, comments, variables, Document Methods: write and writeln methods, alert, Operators: Arithmetic, Assignment, Relational, Logical, Javascript Functions, Conditional Statements, Loops, break and continue. Events Familiarization: onLoad, onClick, onBlur, onSubmit, onChange

Unit III (10 Hrs)

PHP: Introduction to PHP, Server side scripting, Role of Web Server software, including files, comments, variables and scope, echo and print, Operators: Logical, Comparison and Conditional operators, Branching statements, Loops, break and continue, PHP functions,

Unit IV (10 Hrs)

Working with PHP: Passing information between pages, HTTP GET and POST method, String functions: strlen, strpos, strstr, strcmp, substr, str_replace, string case, Array constructs: array(), list() and foreach(), PHP advanced functions: Header, Session, Cookie Object Oriented Programming using PHP: class, object, constructor, destructor and inheritance

Unit V (10 Hrs)

PHP & MySQL: Features of MySQL, data types, Introduction to SQL commands-SELECT, DELETE, UPDATE, INSERT, PHP functions for MySQL operations: mysql_connect, mysql_select_db, mysql_query, mysql_fetch_row, mysql_fetch_array, mysql_fetch_object, mysql_result, Insertion and Deletion of data using PHP, Displaying data from MYSQL in webpage

Reference:

1. Jon Duckett, *Web Programming with HTML,XHTML, CSS*, Wrox Beginning
2. Jim Converse & Joyce Park, *PHP & MySQL Bible*, Wiley

Reference Books

1. HTML 4.0 IN SIMPLE STEPS Author : Kogent Solutions Publishers : Wiley
2. HTML 4 FOR DUMMIES Author : ED TITTEL & MARY BURMEISTER Publishers: Wiley
3. Beginning PHP D W Mercer,A Kent,S D Nowicki Publisher:Wrox
4. PHP & MYSQL FOR DUMMIES, 3RD ED Author : JANET VALADE Publishers: Wiley

CA6B14 – Computer Graphics & Multimedia

Course Number: 33
Contact Hours: 4 T
Number of Credits: 3
Number of Contact Hours: 60 Hrs

Aim of the Course

To impart knowledge in computer graphics and multimedia

Objectives of the Course

- To Learn the basics & applications of computer graphics
- To learn multimedia applications

Prerequisites

Basic knowledge in graphics and multimedia

Course Outline

UNIT I (12 Hrs)

Origin of computer graphics-Application of computer graphics – Random scan & Raster scan systems- Display devices- CRT, LCD, plasma panel. LED devices-input & output devices .
Raster scan algorithms – DDA - Bresenham's line & circle drawing algorithms

UNIT II (12 Hrs)

Geometrical transformations- Basic 2D transformations-2D composite transformations
Homogeneous coordinate systems and matrix representation of transformations-window to viewport transformation- clipping-line & polygon clipping-Basic interaction tasks & interaction hardware-user interaction software

UNIT III (12 Hrs)

Multimedia applications- Media and Data streams- Properties of multimedia systems- Data stream characteristics- Audio: Music –MIDI-audio file formats- Speech

UNIT IV (12 Hrs)

Images- computer image processing-Video –video file formats-video and animation – animation techniques-multimedia software tools-multimedia authoring tools

UNIT V (12 Hrs)

Data Compression : Storage Space – Coding Requirements –source, entropy and hybrid compressing techniques JPEG –MPEG – DVI , Optical Storage Media

Main References

1. Hern D and Maker “Computer Graphics” Prentice Hall India
2. Judith Jeffcoate “Multimedia in Practice” Prntice Hall India
3. Ralf Steinmetz & Klara Nahrstedt – “Multimedia Computing ,
Communication & Applications “ Pearson Education

CA6B15 – Programming Laboratory II (Programming in Java, PHP)

Course Number: 34
Contact Hours: 5 L
Number of Credits: 3
Number of Contact Hours: 80 Hrs

Aim of the Course

To equip the students with basic programming skill in Web Designing

Objectives of the Course

To learn the Web Designing

Prerequisites

Basic knowledge in HTML

Course Outline

Programs implementing features of java
Programs implementing features of PHP

CA6B16 – Programming Laboratory III (Programming in RDBMS, VB.Net)

Course Number: 35
Contact Hours: 5 L
Number of Credits: 3
Number of Contact Hours: 80 Hrs

Aim of the Course

To equip the students with basic programming skill in Database designing and manipulations

Objectives of the Course

To learn the database manipulations and .Net applications

Prerequisites

Knowledge in SQL and VB.Net

Course Outline

Programs involving SQL manipulations
Programs involving VB.Net applications

Open course 2

CA6D02 – Software Testing

Course Number: 36
Contact Hours: 4 T
Number of Credits: 3
Number of Contact Hours: 60 Hrs

UNIT I

Phases of Software project – Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing Challenges in White-Box Testing.

UNIT II

Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing – Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash.

UNIT III

System and Acceptance Testing: system Testing Overview – Why System testing is done?– Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

UNIT-IV

Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT-V

Test Planning, Management, Execution and Reporting: Test Planning – Test Management– Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics –Progress Metrics – Productivity Metrics – Release Metrics.

Main References

1. Srinivasan Desikan & Gopalswamy, “Software Testing Principles and Practices” Ramesh, 2006, Pearson Education.

Additional References

1. William E. Perry, “Effective methods of software testing” Wiley India.
2. Renu Rajani, Pradeep Oak, “Software Testing” 2007, TMH

CA6D02 – Introduction to System Administration

Unit I: Introduction to NOS and Administration

Overview of Network Operating System: What they are, how they differ from other operating systems, How they work, Network Components, Protocols & Topologies, File Systems & Disk Storage, Server Hardware, Admin Roles & Responsibilities
DNS Operation, Multi Level DNS, DHCP Operation

Unit II: Managing Windows 2000 or Windows 2003 Part I

Installation of Windows OS, Active Directory Concepts, Managing and creating User Accounts, Managing Groups, Managing Security Policies, The System Policy Editors.
Creating and Managing Directories: Creating Shared Directory, Access Control Lists, File and Directory Permissions, User Profiles

Unit III: Managing Windows 2000 or Windows 2003 Part II

Managing Printing Services: Adding A Printer, Connecting to Shared Printer, Controlling and monitoring access to the printer
Manage resources and security by using windows Explorer, Group Policy Management tools and the security configuration and analysis tool
Managing DNS, Managing Servers, Managing Terminal Services
Managing IIS: Install IIS, Configure authentication, Implement Web Applications, Manage the IIS metabase, Manage an IIS server in a Remote Location, Monitor and Optimize IIS.
Managing Disaster Recovery: use Automatic System Recovery (ASR) to back up and restore server.

Unit IV: Managing Linux Part I

Overview, Installing and configuring Linux NFS, Responsibilities, The Super user account, System Administration tools, System Logs
Managing Users: The Password and group Files, The Passed Command
Processes: Overview, Listing with ps, killing with kill, System Start-up, Run Levels, The inittab and rc files, checking tools, System Shut down

Unit V: Managing Linux Part II

Managing Printing Services: Overview, Adding and Managing Printers, Local and Remote Printers
Disks and File Systems: Partitioning, mounting, Linux file systems, structure, Checking with fsck, df, quot, backing up, Package movement
Network Services, Samba: ftp, sftp, DHCP, DNS, Apache, Security

CA6B17 –Project

Course Number: 37

Contact Hours: 3 P

Number of Credits: 2

Number of Contact Hours: 50 Hrs

Aim of the Course

To equip the students with Computer Applications

Objectives of the Course

To develop the software development skill

Prerequisites

Advanced programming knowledge

Course Outline

Software Projects in any platform using any language of student's choice

