

Master of Computer Applications (Integrated)

Programme Code: MCA Integrated

Duration – 5 Years Full Time

**Programme Structure
and
Curriculum & Scheme of Examination**

2017

**AMITY UNIVERSITY
RAJASTHAN**

Programme Structure: UBC Integrated

FIRST SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|--|--|----------|---|---|------|--------------|
| UBC101 | Mathematics - I | CC | 2 | 1 | - | 3 |
| UBC102 | Discrete Mathematical Structures with Applications to CS | CC | 2 | 1 | - | 3 |
| UBC103 | Computer Fundamentals & Programming in _C' Language | CC | 2 | 1 | - | 3 |
| UBC104 | Digital Electronics | CC | 2 | 1 | - | 3 |
| UBC105 | Introduction to IT | CC | 3 | 1 | - | 4 |
| UBC106 | Data Communication & Networking | CC | 2 | 1 | - | 3 |
| UBC120 | Computer Fundamentals & Programming in _C' Language Lab | CC | - | - | 2 | 1 |
| Domain Elective-I : Choose any one from the following courses | | | | | | |
| UBC130 | Cyber Security | DE | 2 | 1 | - | 3 |
| UBC131 | Financial Accounting | DE | | | | |
| UBC132 | Principles of Management | DE | | | | |
| OPEN ELECTIVE | | | | | | |
| | OPEN ELECTIVE | OE | 2 | 1 | - | 3 |
| VALUE ADDED COURSES | | | | | | |
| BCS 101 | English | VA | 1 | - | - | 1 |
| BSS 101 | Behavioural Science - I | VA | 1 | - | - | 1 |
| FLF 101 | Foreign Language - I | VA | 2 | - | - | 2 |
| FLG 101 | French | | | | | |
| FLS 101 | German | | | | | |
| FLC 101 | Spanish | | | | | |
| FLC 101 | Chinese | | | | | |
| | TOTAL | | | | | 30 |

SECOND SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|---|---|----------|---|---|------|--------------|
| UBC201 | Mathematics - II | CC | 2 | 1 | - | 3 |
| UBC202 | Data & File Structures using C | CC | 2 | 1 | - | 3 |
| UBC203 | Computer Architecture & Assembly Language | CC | 2 | 1 | - | 3 |
| UBC204 | Systems Analysis & Design | CC | 2 | 1 | - | 3 |
| UBC206 | Management Information System | CC | 3 | 1 | - | 4 |
| UBC220 | Data & File Structures using C LAB | CC | - | - | 2 | 1 |
| Domain Elective-II : Choose any one from the following courses | | | | | | |
| UBC230 | Networking for Home & Small Business | DE | 2 | 1 | - | 3 |
| UBC231 | Web Technologies | DE | | | | |
| UBC232 | Organization Behaviour | DE | | | | |
| UBC233 | Advanced Computer Architecture | DE | | | | |
| UBC234 | Internet Fundamentals | DE | | | | |
| UBC235 | Production & Operations Management | DE | | | | |
| OPEN ELECTIVE | | | | | | |
| | OPEN ELECTIVE | OE | 2 | 1 | - | 3 |
| VALUE ADDED COURSES | | | | | | |
| BCS 201 | English | VA | 1 | - | - | 1 |
| BSS 201 | Behavioural Science - II | VA | 1 | - | - | 1 |
| FLF 201 | Foreign Language - II | VA | 2 | - | - | 2 |
| FLG 201 | French | | | | | |
| FLS 201 | German | | | | | |
| FLC 201 | Spanish | | | | | |
| FLC 201 | Chinese | | | | | |
| | TOTAL | | | | | 27 |

SUMMER PROJECT – I

THIRD SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|--|--|----------|---|---|------|--------------|
| UBC301 | Computer Oriented Statistical & Optimization Methods | CC | 2 | 1 | - | 3 |
| UBC302 | Object Oriented Programming Concepts Using C++ | CC | 2 | 1 | - | 3 |
| UBC303 | Database Management Systems | CC | 2 | 1 | - | 3 |
| UBC304 | Working at a Small-to-Medium Business or ISPs | CC | 2 | 1 | - | 3 |
| UBC360 | Summer Project – I (Evaluation) | CC | - | - | - | 6 |
| UBC320 | Object Oriented Programming Concepts Using C++ LAB | CC | - | - | 2 | 1 |
| UBC321 | Database Management Systems LAB | CC | - | - | 2 | 1 |
| Domain Elective-III : Choose any one from the following courses | | | | | | |
| UBC330 | Web Designing | DE | 2 | 1 | - | 3 |
| UBC331 | Accounting & Financial Management | DE | | | | |
| UBC332 | Advance Technologies in Computer Science | DE | | | | |
| UBC333 | Marketing Management | DE | | | | |
| OPEN ELECTIVE | | | | | | |
| | OPEN ELECTIVE | OE | 2 | 1 | - | 3 |
| VALUE ADDED COURSES (OPEN ELECTIVE) | | | | | | |
| EVS001 | Environmental Studies | VA | 4 | - | - | 4 |
| BCS 301 | Communication Skills - I | VA | 1 | - | - | 1 |
| BSS 301 | Behavioural Science - III | VA | 1 | - | - | 1 |
| | Foreign Language - III | VA | 2 | - | - | 2 |
| FLF 301 | French | | | | | |
| FLG 301 | German | | | | | |
| FLS 301 | Spanish | | | | | |
| FLC 301 | Chinese | | | | | |
| | TOTAL | | | | | 34 |

FOURTH SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|---|---|----------|---|---|------|--------------|
| UBC401 | Computer Oriented Numerical Methods | CC | 2 | 1 | - | 3 |
| UBC402 | Software Engineering | CC | 2 | 1 | - | 3 |
| UBC403 | Computer Graphics | CC | 2 | 1 | - | 3 |
| UBC404 | Design & Analysis of Algorithms | CC | 2 | 1 | - | 3 |
| UBC405 | Operating Systems | CC | 2 | 1 | - | 3 |
| UBC406 | Optimization Techniques | CC | 3 | 1 | - | 4 |
| UBC420 | Computer Graphics LAB | CC | - | - | 2 | 1 |
| Domain Elective-IV : Choose any one from the following courses | | | | | | |
| UBC430 | Introducing Routing & Switching in the Enterprise | DE | 2 | 1 | - | 3 |
| UBC431 | Introduction to Open Source Technologies (PHP, MySql) | DE | | | | |
| UBC432 | Programming in Visual Basic | DE | | | | |
| UBC421 | Introducing Routing & Switching in the Enterprise LAB | DE | - | - | 2 | 1 |
| UBC422 | Introduction to Open Source Technologies (PHP, MySql) LAB | DE | | | | |
| UBC423 | Programming in Visual Basic LAB | DE | | | | |
| OPEN ELECTIVE | | | | | | |
| | OPEN ELECTIVE | OE | 2 | 1 | - | 3 |
| VALUE ADDED COURSES (OPEN ELECTIVE) | | | | | | |
| BCS 401 | Communication Skills - II | VA | 1 | - | - | 1 |
| BSS 401 | Behavioural Science - IV | VA | 1 | - | - | 1 |
| | Foreign Language - IV | VA | 2 | - | - | 2 |
| FLF 401 | French | | | | | |
| FLG 401 | German | | | | | |
| FLS 401 | Spanish | | | | | |
| FLC 401 | Chinese | | | | | |
| | TOTAL | | | | | 31 |

SUMMER PROJECT – II

FIFTH SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|--|---|----------|---|---|------|--------------|
| UBC501 | Java Programming | CC | 2 | 1 | - | 3 |
| UBC502 | Systems Software | CC | 2 | 1 | - | 3 |
| UBC503 | Graph Theory & Combinatorics | CC | 2 | 1 | - | 3 |
| UBC504 | Mathematical Foundation to Computer Science | CC | 2 | 1 | - | 3 |
| UBC560 | Summer Project – II (Evaluation) | CC | - | - | - | 6 |
| UBC520 | Java Programming LAB | CC | - | - | 2 | 1 |
| Domain Elective-V : Choose any one from the following courses | | | | | | |
| UBC530 | Designing & Supporting Computer Network | DE | 2 | 1 | 2 | 4 |
| UBC531 | Web Programming | DE | | | | |
| UBC532 | Data warehousing & Data Mining | DE | | | | |
| UBC521 | Designing & Supporting Computer Network LAB | DE | 2 | 1 | 2 | 4 |
| UBC522 | Web Programming LAB | DE | | | | |
| UBC523 | Data warehousing & Data Mining LAB | DE | | | | |
| OPEN ELECTIVE | | | | | | |
| | OPEN ELECTIVE | OE | 2 | 1 | - | 3 |
| VALUE ADDED COURSES (OPEN ELECTIVE) | | | | | | |
| BCS 501 | Communication Skills - III | VA | 1 | - | - | 1 |
| BSS 501 | Behavioural Science - V | VA | 1 | - | - | 1 |
| | Foreign Language - V | VA | 2 | - | - | 2 |
| FLF 501 | French | | | | | |
| FLG 501 | German | | | | | |
| FLS 501 | Spanish | | | | | |
| FLC 501 | Chinese | | | | | |
| | TOTAL | | | | | 30 |

SUMMER PROJECT-III
SIXTH SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|---|-----------------------------------|----------|---|---|------|--------------|
| UBC601 | Multimedia & its Applications | CC | 3 | 1 | - | 4 |
| UBC603 | Fundamentals of E-Commerce | CC | 2 | 1 | - | 3 |
| UBC660 | Project work/Dissertation | CC | - | - | - | 12 |
| UBC620 | Multimedia & its Applications LAB | CC | - | - | 2 | 1 |
| Domain Elective-VI : Choose any one from the following courses | | | | | | |
| UBC630 | Network Security | DE | 2 | 1 | - | 3 |
| UBC631 | Web Technologies | DE | | | | |
| UBC632 | Mobile Computing | DE | | | | |
| UBC633 | Embedded System | DE | | | | |
| OPEN ELECTIVE | | | | | | |
| | OPEN ELECTIVE | OE | 2 | 1 | - | 3 |
| VALUE ADDED COURSES | | | | | | |
| BCS 601 | Communication Skills – IV | VA | 1 | - | - | 1 |
| BSS 601 | Behavioural Science - VI | VA | - | - | 1 | 1 |
| | Foreign Language - VI | VA | 2 | - | - | 2 |
| FLF 601 | French | | | | | |
| FLG 601 | German | | | | | |
| FLS 601 | Spanish | | | | | |
| FLC 601 | Chinese | | | | | |
| | TOTAL | | | | | 30 |

SEVENTH SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|--|--|----------|---|---|------|--------------|
| UBC701 | Computer Graphics | CC | 2 | 1 | - | 3 |
| UBC702 | Object Oriented Programming with C++ | CC | 2 | 1 | - | 3 |
| UBC703 | Core Java | CC | 2 | 1 | - | 3 |
| UBC760 | Summer Project – I (Evaluation) | CC | - | - | - | 6 |
| UBC720 | Computer Graphics lab | CC | - | - | 2 | 1 |
| UBC721 | Object Oriented Programming with C++ lab | CC | - | - | 2 | 1 |
| UBC722 | Core Java lab | CC | - | - | 2 | 1 |
| DE Electives: Student has to select 1 course each from the list of following DE elective I & II | | | | | | |
| Elective-I | Select any ONE (Without Lab) | | | | | |
| UBC710 | Fundamentals of E-Commerce | DE | 2 | 1 | - | 3 |
| UBC711 | Accounting & Financial Management | DE | | | | |
| UBC712 | Parallel Processing | DE | | | | |
| UBC713 | Advanced Database Concepts | DE | | | | |
| UBC714 | Theory of Computation | DE | | | | |
| Elective-II | Select any ONE (With Lab) | | | | | |
| UBC730 | C# (C Sharp) with GUI | DE | 2 | 1 | - | 3 |
| UBC731 | Photoshop | DE | | | | |
| UBC732 | Data Ware Housing and Mining | DE | | | | |
| UBC733 | Network Fundamentals | DE | | | | |
| UBC723 | C# (C Sharp) with GUI LAB | DE | - | - | 2 | 1 |
| UBC724 | Photoshop LAB | DE | | | | |
| UBC725 | Data Ware Housing and Mining LAB | DE | | | | |
| UBC726 | Network Fundamentals LAB | DE | | | | |
| OPEN ELECTIVES | | | | | | |
| | Open Elective | OE | 2 | 1 | - | 3 |
| VALUE ADDED COURSES | | | | | | |
| BCS 701 | Communication Skills - V | VA | | | | 1 |
| BSS 701 | Behavioural Science - VII | VA | | | | 1 |
| FLF 701 | Foreign Language - VII | VA | | | | 2 |
| FLG 701 | French | | | | | |
| FLS 701 | German | | | | | |
| FLC 701 | Spanish | | | | | |
| | Chinese | | | | | |
| TOTAL | | | | | | 32 |

EIGHTH SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|--|--|----------|---|---|------|--------------|
| UBC801 | Software Engineering | CC | 2 | 1 | - | 3 |
| UBC802 | Unix & Shell Programming | CC | 2 | 1 | - | 3 |
| UBC803 | Open Source Technologies | CC | 2 | 1 | - | 3 |
| UBC804 | Distributed Operating System | CC | 2 | 1 | - | 3 |
| UBC820 | Software Engineering LAB | CC | - | - | 2 | 1 |
| UBC821 | Unix & Shell Programming LAB | CC | - | - | 2 | 1 |
| UBC822 | Open Source Technologies LAB | CC | - | - | 2 | 1 |
| DE Electives: Student has to select 1 course each from the list of following DE elective I & II | | | | | | |
| Elective-I | Select any ONE (Without Lab) | | | | | |
| UBC810 | Enterprise Resource Planning | DE | 2 | 1 | - | 3 |
| UBC811 | Software Project Management | DE | | | | |
| UBC812 | Business Intelligence and its Applications | DE | | | | |
| UBC813 | Windows Programming using VC++ | DE | | | | |
| UBC814 | Real Time Systems | DE | | | | |
| Elective-II | Select any ONE (With Lab) | | | | | |
| UBC830 | ASP.NET | DE | 2 | 1 | - | 3 |
| UBC831 | Flash | DE | | | | |
| UBC832 | Advance JAVA | DE | | | | |
| UBC833 | Advanced DBMS | DE | | | | |
| UBC834 | Routing Protocols and Concepts | DE | | | | |

| | | | | | | |
|----------------------------|--------------------------------------|----|---|---|---|-----------|
| UBC835 | Game Programming using Greenfoot | DE | | | | |
| UBC823 | ASP.NET LAB | DE | - | - | 2 | 1 |
| UBC824 | Flash LAB | DE | | | | |
| UBC825 | Advance JAVA LAB | DE | | | | |
| UBC826 | Advanced DBMS LAB | DE | | | | |
| UBC827 | Routing Protocols and Concepts LAB | DE | | | | |
| UBC828 | Game Programming using Greenfoot LAB | DE | | | | |
| OPEN ELECTIVE | | | | | | |
| | Open Elective | OE | 2 | 1 | - | 3 |
| VALUE ADDED COURSES | | | | | | |
| BCS 801 | Communication Skills - VI | VA | | | | 1 |
| BSS 801 | Behavioural Science - VIII | VA | | | | 1 |
| FLF 801 | Foreign Language - VIII | VA | | | | 2 |
| FLG 801 | French | | | | | |
| FLS 801 | German | | | | | |
| FLC 801 | Spanish | | | | | |
| | Chinese | | | | | |
| | TOTAL | | | | | 29 |

NINTH SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|--|--|----------|---|---|------|--------------|
| UBC901 | Artificial Intelligence | CC | 2 | 1 | - | 3 |
| UBC902 | Information Storage Management (EMC ²) | CC | 2 | 1 | - | 3 |
| UBC960 | Summer Project – II (Evaluation) | CC | - | - | - | 6 |
| UBC961 | Minor Project | CC | - | - | - | 5 |
| DE Electives: Student has to select 1 course each from the list of following DE elective I & II | | | | | | |
| Elective-I (Without Lab) | Select any ONE | | | | | |
| UBC910 | Big data Analytics | DE | 2 | 1 | - | 3 |
| UBC911 | Accessing the WAN | DE | | | | |
| UBC912 | Cloud Computing | DE | | | | |
| UBC913 | PHP | DE | | | | |
| UBC914 | Post RDBMS with CACHE | DE | | | | |
| UBC915 | Software Testing & Quality Assurance | DE | | | | |
| Elective-II (With Lab) | Select any ONE | | | | | |
| UBC930 | Digital Image Processing | DE | 2 | 1 | - | 3 |
| UBC931 | Dreamweaver | DE | | | | |
| UBC932 | Oracle | DE | | | | |
| UBC933 | LAN Switching and Wireless | DE | | | | |
| UBC934 | Android Programming | DE | | | | |
| UBC920 | Digital Image Processing | DE | - | - | 2 | 1 |
| UBC921 | Dreamweaver | DE | | | | |
| UBC922 | Oracle | DE | | | | |
| UBC923 | LAN Switching and Wireless | DE | | | | |
| UBC924 | Android Programming | DE | | | | |
| OPEN ELECTIVE | | | | | | |
| | Open elective | OE | 2 | 1 | - | 3 |
| VALUE ADDED COURSES | | | | | | |
| BCS 901 | Communication Skills – VII | VA | | | | 1 |
| BSS 901 | Behavioural Science – IX | VA | | | | 1 |
| FLF 901 | Foreign Language - IX | VA | | | | 2 |
| FLG 901 | French | | | | | |
| FLS 901 | German | | | | | |
| FLC 901 | Spanish | | | | | |
| | Chinese | | | | | |
| | TOTAL | | | | | 31 |

TENTH SEMESTER

| CODE | COURSE | CATEGORY | L | T | P/FW | CREDIT UNITS |
|-------------|---------------------------|-----------------|----------|----------|-------------|---------------------|
| UBC1062 | Dissertation/Project Work | CC | - | - | - | 30 |
| | TOTAL | | | | | 30 |

MATHEMATICS – I

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC101 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this course is to provide an introduction to the fundamentals and concepts of basic mathematics covering sets, functions, differentiation, integration, differential equations, vectors and matrices. This course aims to assist the students to develop confidence in handling mathematical concepts and techniques and to understand the principles and uses of differential and integral calculus.

Course Contents:

Module I: Sets

Sets and subsets, finite and infinite sets. Algebra of sets: Union, Intersection, complementation, Demorgan laws, Common applications of algebra of sets.

Functions: Interval and sub-intervals. Definition of function and examples, polynomial, rational, exponential, logarithmic and trigonometric functions. Graph of some simple functions like polynomial (upto 3rd deg), rational, trigonometric functions, modulus, function, step functions, rational functions, composite functions, Limit of a function.

Module II: Differentiation

Differentiation of function, Derivative of some common functions, polynomial, rational, exponential, logarithmic and trigonometric functions.

Successive differentiation, Leibnitz theorem.

Module III: Integration

Integration as inverse process of differentiation, integration of simple functions, method of change of variable and substitution for integrals, definite integrals, simple problems of line integral.

Module IV: Differential equations

Differential equations of first order, Differential equations of second order with constant coefficients

Module V: Vectors

Vector, Vector Algebra: addition, subtraction, Scalar Multiplication. Magnitude, Vector multiplication, Simple application of Vectors.

Matrices: Matrix, Submatrix, types of matrices, such as symmetric, square, diagonal matrices, singular and nonsingular matrices. Addition, Subtraction, multiplication of matrices, Rank of matrix, Matrix equation, Solution by Cramer's rule and Gauss elimination method.

Examination Scheme:

| | | | | |
|---------------|-----|-------|------|----|
| Components | CT1 | A/C/Q | Attd | EE |
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Engineering Mathematics, E. Kreyig

References:

Higher Engineering Mathematics, B. S. Grewal

Differential Calculus, Shanti Narayan

DISCRETE MATHEMATICAL STRUCTURES WITH APPLICATIONS TO CS

| | | | | |
|-------------|---|---|---|--------|
| Course Code | L | T | P | Credit |
| UBC102 | 2 | 1 | 0 | 3 |

Course Objective:

This course is aimed to solve standard topical text book-level problems by analytical means. Apply multiple concepts in the solution of a more sophisticated problem, which may be derived from a scientific application or from basic application. Model a topical problem from math, solve the problem, and report the results in the original problem context.

Module I: Set Theory

Sets, Types of Sets, Basic Operations on Sets, Venn diagram, Cartesian product of two sets, Distributive law, De Morgan's Law

Module II: Mathematical Logic and circuits

Basic Concepts, Propositions or Statements, Truth Table, Connectives and Compound Propositions, Implication, Biconditional of Connectives, Converse, Inverse and Contra positive of an Implication, Tautology, Logical Equivalence, Switching Circuits

Module III: Modern Algebra

Binary Operations, Properties of Binary Operations, Semi group, Monoid, Groups, Finite and Infinite Groups, Algebra of Groups, Subgroups and other Groups.

Module IV: Graph Theory

Graph, Multi Graph, Complete Graph, Bi Graph, Degree, Degree Sequence, Matrices of graphs, tree, spanning trees

Module V: Data Analysis

Data and Statistical Data, Frequency Distribution, Graphical Representation, Measure of the Central Tendency, Measures of Dispersion (Mean Deviation and Standard Deviation)

Examination Scheme:

| | | | | |
|---------------|-----|-------|------|----|
| Components | CT1 | A/C/Q | Attd | EE |
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Elements of Discrete Mathematics: C.L. Liu
Graph Theory: Wilson
S.C Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics.

References:

0 Discrete Mathematics: Harikishan&ShivrajPundir
1 Discrete Mathematics: J.K. Sharma

COMPUTER FUNDAMENTALS & PROGRAMMING IN „C“ LANGUAGE

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC103 | 2 | 1 | - | 3 |

Course Objective:

The primary objective of this course is to understand all the components of C, including the C language, the C Preprocessor, and the C Standard Library. An understanding of some advanced practical issues, including memory management, testing and debugging, complex declarations and expression evaluation, building and using libraries, and evaluating tradeoffs, such as size vs. speed and speed vs. complexity. The ability to write C code and create and manipulate linked lists.

Course Contents:

Module I: Introduction to Computer Fundamentals

Basic Computer Organization, Computer Hardware Components, Disk, Primary and Secondary Memory, Keyboard, Mouse, Printer, Monitor, CD etc. Computer Software: Introduction to Application software, System Software, Compilers, Interpreters etc. Basic Operating System Concepts, Functional knowledge of MSDOS and WINDOWS. Number System-Binary, Hexadecimal, Octal, and Decimal. Conversion from one number system to another. Computer Codes - ASCII

Module II: Introduction to 'C' Language

Character set, Variables Identifiers, Data type, Arithmetic operation, Constant, operators, Expression, Assignments, basic input/output statements, Simple 'C. Programs.

Decision making in program, Relational Logical operators, if statements, if -else, nested if-else statements, Switch, case loop, Do-While, While, for loop and nesting of loop.

Module III: Arrays and Functions

One Dimensional Arrays, Arrays Manipulation, Sorting, Searching, Problems solving Top down Approach, Modular Programming and functions, Passing Arguments, call by value and call by references, Recursive function, .Recursion,

Module IV: Pointers

Pointers: Declaration, Pointer assignments, initialization, Pointers and Dynamic Memory Allocation , Discuss Array of Pointers .

Module V: Structure and Union

Structure definition, Declaration, structure Assignments, Arrays in structure, Structure Arrays, Pointer Structure, Nested Structure, Arrays and Arrays of Structure, Union and File Handling

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

- 0 Problem Solving through C language, E. Balagurusamy, TMH publication.
- 1 Peter Nortons, —Introduction to Computers, TMH

References:

- 0 Let us C, YashwantKanetkar, BPB Publication.
- 1 P.K. Sinha, —Computer Fundamentals, BPB Publications
- 2 V. Rajaraman, —Computer Fundamentals, Prentice Hall
- 3 Dromey. G, —How to Solve it by Computer, Prentice Hall
- 4 Peter Nortons, —DOS Guidel , Prentice Hall
- 5 Gottfried, —Programming in C, Schaum, Tata McGraw Hill
- 6 Y. Kanetkar, —Let us C, BPB Publications
- 7 Y. Kanetkar, —Understanding Pointers, BPB Publications
- 8 Schidlt, —The Complete Reference of C, Tata McGraw Hill

DIGITAL ELECTRONICS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC104 | 2 | 1 | 0 | 3 |

Course Objective:

An entry level course in digital electronics covering number systems, binary mathematics, digital codes, logic gates, Boolean algebra, Karnaugh maps, and combinational logic. Emphasis will be on circuit logic analysis and design of digital circuits. The student will explain the operation of digital logic gates and use Boolean algebra and Karnaugh mapping to express logic operations and minimize logic circuits in design. The student will construct, analyze combinational logic circuits & sequential circuits; create a truth table for standard digital logic gates; and add, subtract, multiply and divide using the binary numbering system. Student will also be able to understand about digital to analog conversion and vice versa.

Course Contents:

Module I: Number System

Decimal, Binary, Octal, Hexadecimal Number Systems and Conversion of the bases.

Introduction to logic systems

Positive and negative logic, Logic functions - NOT, AND, OR, NOR, EX-OR, EX NOR

Truth tables Boolean algebra, De Morgan's theorems Standard forms for Logical Expressions - Sum of Products, Product of Sums Specification of Logical functions in terms of Minterms and Maxterms, Karnaugh Maps, Simplification of Logical functions, Introduction of "don't care" states.

Module II: Combinational Building Blocks

Multiplexers, Decoders, Encoders

Arithmetic circuits

Half Adders and Full Adders, Half Subtractor and Full Subtractor, Representation of negative numbers, revisited

Module III: Flip-flops

The RS latch, the clocked RS flip-flop, JK Flip Flop, the Master-Slave JK flip-flop, Delay and Toggle flip-flops

Flip-flops in counter circuits

Asynchronous (ripple) Counters (UP/DOWN), Synchronous Counter design (UP/DOWN), Non Sequential Counting

Module IV: Shift Registers

Shift registers in general, Ring Counters, Johnson Counter

Introduction to Memory

Primary: RAM, Static RAM, Dynamic RAM, ROM, PROM, EPROM, Secondary: Floppy Disk, Hard Disk, CDROM

Module V: DACs and ADCs

Binary weighted resistor DAC, Resolution, linearity and settling time of DACs, Successive approximation ADC

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 R.P Jain, Modern Digital Electronics

References:

5888 Malvino & Leach, Digital Electronics

5889 Floyd, Digital Fundamentals

5890 M.M Mano, Digital Logic and Computer Design

5891 Gothman, Digital Electronics

INTRODUCTION TO IT

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC105 | 3 | 1 | 0 | 4 |

Course Objective:

This course is aimed to provide a fundamental understanding of computer science for the students in their early stages of academic career. Various computer nomenclatures regarding to hardware and software will be introduced for students to develop an in-depth realization of several subjects and their significant roles in the field. The syllabus includes the basic concepts of memory, processing units, Operating System, Computer Networks and Data Communications.

Course Contents:

Module I: Introduction to computers

Computer Basics

Algorithms, A Simple Model of a Computer, Characteristic of a Computer, Problem Solving Using a Computer, Generations of Computer Systems, Analog, Digital, Types of Computers (Micro, Mini, Main Frame) Systems, data representation.

Input output units , Computer Memory and processor

Description of Computer Input Units, Other Input Methods, Computer Output Units , Memory cells, Memory Organizations, Read only Memory, Physical devices used to construct Physical Memory, Hard Disks, Floppy Disks, CDROM, structure of Instruction, description of a processor, A machine language program, an algorithm to simulate the hypothetical computer.

Module II: Primary Arithmetic

Addition, Subtraction, Signed Numbers, Two's Compliment, Addition & Subtraction using 2's Compliment Method, Multiple & Division of Binary Numbers. Floating point Representation, Arithmetic Operations with Normalized Floating Point Numbers.

Module III: Introduction to Computer languages and Software

Introduction to Operating Systems

Why do we need Operating System. Batch Operating System, Multi Programming Operating System, Time Sharing Operating System. Personal Computer Operating System, The UNIX operating systems, Microkernel based operating system, Online and Real Time Systems, overview of Linux.

Computer languages

Why programming language? , Assembly language, higher level programming languages, Compiling high level language program, Some high level languages.

Module IV: Introduction to Networking Fundamentals

Voice and data communications

Type of Communication among Computers, Characteristics of communication Channel, Physical Communication Media, Public switched telephone networks, cellular communication system, Establishing Channel for communications, ATM networks

Computer networks

Need of computer Communication Network, Internet and World Wide Web, communication protocols, Local area networks, token ring local area network, Interconnecting networks, the future of internet technology.

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text Book:

- 23 Fundamentals of IT, Satish Jain, BPB Publication
- 24 Fundamentals of Information Technology, D S Yadav, New Age Publication
- 25 Computer Fundamentals, VRaja Raman

References Books:

- 5888 Computer Today, S. K. Basandra, Galgotia Publication

DATA COMMUNICATION & NETWORKING

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC106 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of the course is to provide introductory concepts in Communications such as Signaling, Encoding, Modulation, Error Detection & Correction.

The course is also aimed at providing basic understanding of Computer networks starting with OSI Reference Model, Protocols at different layers with special emphasis on IP, TCP & UDP and Routing algorithms.

Course Contents:

Module I

Introduction to Data Communication, Networks-protocols, advantages, disadvantages & applications, Line Configuration, topology, Transmission mode, Classification of networks.

Parallel & Serial Transmissions, Analog & Digital Signals, Periodic & Aperiodic Signals, Modulation---Amplitude Modulation, Frequency Modulation, Phase Modulation, Pulse Amplitude Modulation, Pulse Code Modulation, Sampling.

Module II

Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying, Bit/ Baud Comparison, DTE-DCE Interface, 56 K Modem, Cable Modem.

OSI Model, Transmission Media-Twisted Pair Cable, Coaxial Cable, Fiber-Optics Cable, Radio frequency Allocation, Terrestrial Microwave, Infrared rays, Satellite Communication, Cellular Telephony. Introduction to ISDN.

Module III

Framing, Line Discipline, Types of Errors, Error Detection & Correction (VRC, LRC, CRC, Checksum, Hamming Code), Flow Control (Stop-and-wait & Sliding Window), Error Control (Stop & Wait ARQ, Sliding Window ARQ using Go-back n method and Selective-Reject).

CSMA/CD, Project 802, IEEE Standards-802.3, Token Bus (802.4), Token Ring (802.5), Introduction to Bridges.

Module IV

Internal Organization of Network Layer, Routing Algorithms-Shortest Path Routing, Flooding, Distance Vector Routing, Link State Routing, General Principles of Congestion, Congestion Prevention Policies. Duties of Transport Layer, Connection Establishment & Connection Termination.

Module V

Introduction to TCP/IP, Data Link Layer in Internet-SLIP & PPP, Network Layer in Internet-IP protocol, IP addressing, Subnetting & Internet Control Protocols, Transport Layer in Internet-TCP & UDP.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

- 23 Behrouz ., Forouzan., —Data Communication and Networking, TMH
- 24 W. Stallings, "Data and Computer Communication" PHI
- 25 A.S. Tanenbaum, "Computer Networks" , PHI
- 26 Kennedy, —Electronics Communication System, TMH

Computer Fundamentals & Programming in „C“ Language LAB

| | | | | |
|-------------|---|---|---|--------|
| Course Code | L | T | P | Credit |
| UBC120 | 0 | 0 | 2 | 1 |

- 5888 Write a program to find the area and perimeter of (I) square (ii) rectangle.
- 5889 Write a Program to find the sum of first n natural numbers.
- 5890 Write a program to calculate the average of n numbers.
- 5891 Write a program to check whether the number is even or odd.
- 5892 Write a program to find largest of three numbers.
- 5893 Write a program to swap the values of two given variables.
- 5894 Write a program to find the square of a given number.
- 5895 Write a program to calculate the roots of a quadratic equation.
- 5896 Write a program to compute the sum of squares of n natural numbers.
- 5897 Write a program to reverse a given number and also calculate the number of digits in the number.
- 5898 Write a program to calculate the sum of digits of a given number.
- 5899 Write a program to calculate the factorial of a given positive number.
- 5900 Write a program to generate fibonaaci series upto n terms.
- 5901 Write a program to find the GCD and LCM of two given positive numbers.
- 5902 Write a program to print first n prime numbers.
- 5903 Write a program to print 1 if input character is capital, 2 if input character is a lowercase alphabet, 3 if input character is a digit and 4 if some other special character.
- 5904 Write a C program to check whether a number is an Armstrong number.
- 5905 Write a C program to find the power of a number.
- 5906 Write a C program to find the sum of n terms of the series: $n-n*2/2!+n*3/3!-n*4/4!+.....$
- 5907 Write a C program to find the maximum/minimum number in a given array.
- 5908 Write a C program to search a number in an array using linear search.
- 5909 Write a C program to sort a given array using Bubble sort.
- 5910 Write a C program to concatenate two one-dimensional arrays.
- 5911 Write a C program to add, subtract and multiply two m by n matrices.
- 5912 Write a C program to detect the occurrence of a character in a given string.
- 5913 Write a C program to count the number of characters in a given string with and without using strlen () function,
- 5914 Write a C program to copy the contents of one string to another with and without using strepy () function.
- 5915 Write a C program to determine whether the entered character string is palindrome or not.
- 5916 Write a C program to enter the marks, address of several students and prepare the mark sheet of each student. Use structures.
- 5917 Write a C program to calculate net salary / printing of salary statement of an employee. Use Structures.
- 5918 Write a C program to calculate the factorial of a number using recursion.
- 5919 Write a C program to generate a fibonacci series using recursion.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

CYBER SECURITY

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC130 | 2 | 1 | 0 | 3 |

Course Objective:

The goal of the Cyber Security course is to provide an awareness of cyber threats and vulnerabilities, risk factors present in the cyber world. It will provide the student with basic knowledge of cyber crime dynamics and is aware to the students desiring Security Systems

Course Contents:

Module I: Introduction to Cyber Security

Introduction to Cyber Security, Cyber Crime / Social Theories, Threats to security, Government requirements, Information Protection and Access Controls, Computer security efforts, Standards, Computer Security mandates and legislation, Privacy considerations, International security activity, Intrusion Detection , Malicious Software Use and Detection

Module II: Information Technology Law

The Information Technology Legal Framework in India, Cyber Crime, Digital Evidence, Technological Standards under the Information Technology Law, Liability of companies under the Information Technology Act

Module III: Network Security

Intrusion Detection & Prevention systems, Firewalls and Firewall Policy, Computer Security Log Management, Securing WiMAX Wireless Communications

Module IV: Information security

Fundamentals, Employee responsibilities, information classification, Information handling, Tools of information security, Information processing, secure program, administration.

Module V: Information Technology Act Compliance

IT Act compliance for e-Commerce Sector, Education Sector, Healthcare Sector, Hospitality Sector, Outsourcing Sector, Retail Sector

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 10 | 15 | 5 | 70 |

Text & References:

Text Book:

23 Rick Lehtinen and G.T. Gangemi, Computer Security Basics, 2nd ed. (2006), O'Reilly Media Inc.

Reference Book:

5888 McClure, Stuart & Scambray, Joel, Hacking Exposed 5th ed. et al (2005), McGraw-Hill Osborne Media.

5889 Ortmeier, P. J., Security Management: An Introduction, 2nd ed. (2005), Prentice Hall.

FINANCIAL ACCOUNTING

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC131 | 2 | 1 | 0 | 3 |

Course Objective:

The overall objective of this course is to train students in accounting terminology and methods so that they can interpret, analyze, and evaluate financial statements currently published in corporate annual reports. This course will also discuss the recent developments (and controversies) in accounting valuation and reporting practices. The latest accounting pronouncements, current topics, trends and techniques will be discussed in class.

Course Contents:

Module I: Introduction to Financial Accounting

Basic Accounting principles

Module II

Rules of Accounting, Ledgers, Vouchers, Trial Balance, Balance Sheet, profit and Loss A/c

Module III: Starting with Tally

Company Creation, Features, Configuration, Accounts Master, Accounts Vouchers, accounts reports, Inventory Master (Stock Category, Stock Group, Location, Units of Measurement, Stock Item)

Module IV

Inventory Vouchers, Inventory Reports, Printing Various Reports, Security Control, Backup and restoring Company

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

23 Fundamentals of Management Accounting, P.K. Ghosh and G.S. Gupta

References:

5888 Tally Tutorial 6.3, K.K. Nadhani, BPB Publications

PRINCIPLES OF MANAGEMENT

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC132 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this course is to expose to the theories of management, organizational theory, and the practice of management in contemporary organizations from a conceptual, analytical, and pragmatic perspective. It covers the basic functions of management: planning, organizing, leading, and controlling. Relevance of Computer Applications in Different Functional areas of Management, Decisions Making Process in the principles and role of leadership, communication, and motivation in the management teams.

Course Contents:

Module I: Conceptual Framework of Management

History and Foundations of Management, Components of Management, Distinguish between components like Features of Management, Functions of Management, Nature of Management, Levels of Management, Understand the interplay between management and administration, Appreciate the concept of management as a profession.

Module II: Evolution and Foundation of Management Theories

Introduction to various theories of management, The Classical Organization theory, Neoclassical Approach of theory, Implications of Hawthorne experiments, Systems Approach of Organization, Systems and Modern Organisational theories.

Module III: Study of Management Processes

Basically Planning, Organizing, Directing, Staffing, Communicating, Controlling, Coordinating, To understand the planning process, Its Objectives and Characteristics, Policy and its meaning, Procedure Defined.

Module IV: Types of Organisational Structures and Designs

Meaning and Definition of Organisation, Basic Elements / Steps/Features of an Organization, Characteristics of an Organisation, Formal and Informal Organisation, Functions and Design of an Organisation, Types of Organisations

Module V: Relevance of Computer Applications in Different Functional Areas of Management Viz

Financial Management, Materials Management, Production Management, Human Resources Management and Marketing Management.

Study of different Managements Structures, their Characteristics, Decision Making Techniques, Goals and Motivation and overview of behaviour study

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

23 Management and Principles, Parag Diwan & L.N Agrawal.

References:

23 Organisational Behaviour, Fred Luthans

24 Principles and Practices of Management, L.M Prasad

ENGLISH

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BCS101 | 1 | 0 | 0 | 1 |

Course Objective:

The course is intended to give a foundation of English Language. The literary texts are indented to help students to inculcate creative & aesthetic sensitivity and critical faculty through comprehension, appreciation and analysis of the prescribed literary texts. It will also help them to respond form different perspectives.

Course Contents:

Module I: Vocabulary

Use of Dictionary

Use of Words: Diminutives, Homonyms & Homophones

Module II: Essentials of Grammar - I

Articles

Parts of Speech

Tenses

Module III: Essentials of Grammar - II

Sentence Structure

Subject -Verb agreement

Punctuation

Module IV: Communication

The process and importance

Principles & benefits of Effective Communication

Module V: Spoken English Communication

Speech Drills

Pronunciation and accent

Stress and Intonation

Module VI: Communication Skills-I

Developing listening skills

Developing speaking skills

Module VII: Communication Skills-II

Developing Reading Skills

Developing writing Skills

Module VIII: Written English communication

Progression of Thought/ideas

Structure of Paragraph

Structure of Essays

Module IX: Short Stories

Of Studies, by Francis Bacon

Dream Children, by Charles Lamb

The Necklace, by Guy de Maupassant

A Shadow, by R.K.Narayan

Glory at Twilight, Bhabani Bhattacharya

Module X: Poems

All the Worlds a Stage

To Autumn

O! Captain, My Captain

Where the Mind is Without Fear

Psalm of Life

Shakespeare

Keats

Walt Whitman

Rabindranath Tagore

H.W. Longfellow

Examination Scheme:

| Components | A | CT | HA | EE |
|----------------------|----------|-----------|-----------|-----------|
| Weightage (%) | 05 | 15 | 10 | 70 |

Text & References:

MadhulikaJha, Echoes, Orient Long Man
Ramon &Prakash, Business Communication, Oxford.
Sydney Greenbaum Oxford English Grammar, Oxford.
Successful Communications, MalraTreece (Allyn and Bacon)
Effective Technical Communication, M. Ashraf Rizvi.

*** 30 hrs Programme to be continued for Full year**

BEHAVIOURAL SCIENCE - I

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BSS101 | 1 | 0 | 0 | 1 |

Course Objective:

This course aims at imparting an understanding of:
 Self and the process of self exploration
 Learning strategies for development of a healthy self esteem
 Importance of attitudes and its effect on personality
 Building emotional competence

Course Contents:

Module I: Self: Core Competency

Understanding of Self
 Components of Self – Self identity
 Self concept
 Self confidence
 Self image

Module II: Techniques of Self Awareness

Exploration through Johari Window
 Mapping the key characteristics of self
 Framing a charter for self
 Stages – self awareness, self acceptance and self realization

Module III: Self Esteem & Effectiveness

Meaning & Importance
 Components of self esteem
 High and low self esteem
 Measuring your self esteem

Module IV: Building Positive Attitude

Meaning and Nature of Attitude
 Components and Types of Attitudes
 Relevance and Importance of Attitudes

Module V: Building Emotional Competence

Emotional Intelligence – Meaning, Components, Importance and Relevance
 Positive and Negative Emotions
 Healthy and Unhealthy expression of Emotions

Module VI: End-of-Semester Appraisal

Viva based on personal journal
 Assessment of Behavioural change as a result of training
 Exit Level Rating by Self and Observer

Examination Scheme:

| Components | SAP | A | Mid Term Test (CT) | VIVA | Journal for Success (JOS) |
|----------------------|-----|----|--------------------|------|---------------------------|
| Weightage (%) | 20 | 05 | 20 | 30 | 25 |

Text & References:

- 0 Dressler, David and Cans, Donald: The Study of Human Interaction
- 1 Lindzey, G. and Borgatta, E: Sociometric Measurement in the Handbook of Social Psychology, Addison – Welsley, US.
- 2 J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 2, Group (1996); Pfeiffer & Company

FRENCH - I

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLF101 | 2 | 0 | 0 | 2 |

Course Objective:

To familiarize the students with the French language

- 0 with the phonetic system
- 1 with the syntax
- 2 with the manners
- 3 with the cultural aspects

Course Contents:

Module A: pp. 01 to 37: Unités 1, 2, Unité 3 Objectif 1,2

Only grammar of Unité 3: objectif 3, 4 and 5

Contenu lexical: Unité 1: Découvrir la langue française: (oral et écrit)

0.0 se présenter, présenter quelqu'un, faire la connaissance
des autres, formules de politesse, rencontres

0 dire/interroger si on comprend

0 Nommer les choses

Unité 2: Faire connaissance

0 donner/demander des informations sur une personne,
premiers contacts, exprimer ses goûts et ses préférences

1 Parler de soi: parler du travail, de ses activités, de son pays, de sa ville.

Unité 3: Organiser son temps

1. dire la date et l'heure

Contenu grammatical:

1. organisation générale de la grammaire

0 article indéfini, défini, contracté

1 nom, adjectif, masculin, féminin, singulier et pluriel

2 négation avec « de », "moi aussi", "moi non plus"

3 interrogation: Inversion, est-ce que, qui, que, quoi, qu'est-ce que, où, quand, comment, quel(s), quelle(s)

Interro-négatif: réponses: oui, si, non

4 pronom tonique/disjoint- pour insister après une préposition

5888 futurproche

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

23 le livre à suivre: Campus: Tome 1

GERMAN - I

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLG101 | 2 | 0 | 0 | 2 |

Course Objective:

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Course Contents:

Module I: Introduction

Self introduction: heissen, kommen, wohnen, lernen, arbeiten, trinken, etc.

All personal pronouns in relation to the verbs taught so far.

Greetings: Guten Morgen!, Guten Tag!, Guten Abend!, Gute Nacht!, Danke sehr!, Danke!, Vielen Dank!, (es tut mir Leid!),

Hallo, wie geht's?: Danke gut!, sehr gut!, prima!, ausgezeichnet!,
Es geht!, nicht so gut!, so la la!, miserabel!

Module II: Interviewspiel

To assimilate the vocabulary learnt so far and to apply the words and phrases in short dialogues in an interview – game for self introduction.

Module III: Phonetics

Sound system of the language with special stress on Diphthongs

Module IV: Countries, nationalities and their languages

To make the students acquainted with the most widely used country names, their nationalities and the language spoken in that country.

Module V: Articles

The definite and indefinite articles in masculine, feminine and neuter gender. All Vegetables, Fruits, Animals, Furniture, Eatables, modes of Transport

Module VI: Professions

To acquaint the students with professions in both the genders with the help of the verb —sein.

Module VII: Pronouns

Simple possessive pronouns, the use of my, your, etc.

The family members, family Tree with the help of the verb —to have

Module VIII: Colours

All the color and color related vocabulary – colored, colorful, colorless, pale, light, dark, etc.

Module IX: Numbers and calculations – verb “kosten”

The counting, plural structures and simple calculation like addition, subtraction, multiplication and division to test the knowledge of numbers.

—Wie viel kostet das?!

Module X: Revision list of Question pronouns

W – Questions like who, what, where, when, which, how, how many, how much, etc.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

Text & References:

- 23 Wolfgang Hieber, Lernziel Deutsch
- 24 Hans-Heinrich Wangler, Sprachkurs Deutsch
- 25 Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- 26 P.L Aneja, Deutsch Interessant- 1, 2 & 3
- 27 Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- 28 Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

SPANISH – I

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLS101 | 2 | 0 | 0 | 2 |

Course Objective:

To enable students acquire the relevance of the Spanish language in today’s global context, how to greet each other. How to present / introduce each other using basic verbs and vocabulary.

Course Contents:

Module I

A brief history of Spain, Latin America, the language, the culture...and the relevance of Spanish language in today’s global context.

Introduction to alphabets

Module II

Introduction to *Saludos* (How to greet each other.How to present / introduce each other).

Goodbyes (despedidas)

The verb *llamarse* and practice of it.

Module III

Concept of Gender and Number

Months of the years, days of the week, seasons. Introduction to numbers 1-100, Colors, Revision of numbers and introduction to ordinal numbers.

Module IV

Introduction to *SER* and *ESTAR* (both of which mean To Be).Revision of *Saludos* and *Llamarse*. Some adjectives, nationalities, professions, physical/geographical location, the fact that spanish adjectives have to agree with gender and number of their nouns. Exercises highlighting usage of *Ser* and *Estar*.

Module V

Time, demonstrative pronoun (Este/esta, Aquel/aquella etc)

Module VI

Introduction to some key AR /ER/IR ending regular verbs.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

5888 Español, En Directo I A
 5889 Español Sin Fronteras

CHINESE – I

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLC101 | 2 | 0 | 0 | 2 |

Course Objective:

There are many dialects spoken in China, but the language which will help you through wherever you go is Mandarin, or Putonghua, as it is called in Chinese. The most widely spoken forms of Chinese are Mandarin, Cantonese, Gan, Hakka, Min, Wu and Xiang. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I

Show pictures, dialogue and retell.

Getting to know each other. Practicing chart with Initials and Finals. (CHART – The Chinese Phonetic Alphabet Called —Hanyu Pinyin in Mandarin Chinese.) Practicing of Tones as it is a tonal language.

Changes in 3rd tone and Neutral Tone.

Module II

Greetings

Let me Introduce

The modal particle —ne.

Use of Please _qing – sit, have tea etc.

A brief self introduction – Ni haoma?Zaijian!

Use of —bu negative.

Module III

Attributives showing possession

How is your Health? Thank you

Where are you from?

A few Professions like – Engineer, Businessman, Doctor, Teacher, Worker.

Are you busy with your work?

May I know your name?

Module IV

Use of —How many – People in your family?

Use of —zhe and —na.

Use of interrogative particle —shenme, —shui, —ma and —na.

How to make interrogative sentences ending with —ma.

Structural particle —de.

Use of —Ni when and where to use and with whom. Use of guixing.

Use of verb —zuo and how to make sentences with it.

Module V

Family structure and Relations.

Use of —you – —mei you.

Measure words

Days and Weekdays.

Numbers.

Maps, different languages and Countries.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

“Elementary Chinese Reader Part I” Lesson 1-10

MATHEMATICS – II

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC201 | 2 | 1 | 0 | 3 |

Course Objective:

The Objective of this course is to expose the students to the fundamentals and the concepts of Mathematics including Real Number Systems, Limits and Continuity, Sequences of Real numbers, Infinite series and application of derivatives etc. This course is designed to understand the basic mathematical logic as a foundation of computer science and applications.

Course Contents:

Module I: Real Number System

Natural number [Peano's axiom- mathematical induction- well ordering principle], The Integers, The Rational field [Rational numbers and their main properties: Algebraic properties, field properties, ordered field] Archimedean property, Geometrical Representation, Countability of a set, The Real no. system as a complete ordered field, neighborhood, open sets, closed sets, limit points of sets.

Module II: Limits and Continuity

Limits, Continuity, Piecewise Continuous Functions – discontinuous functions, Algebra of Continuous function, Continuity of Composite functions, Continuity on (a, b), implying boundedness.

Module III: Sequences

Sequences of Real numbers, Bounded Sequence, Monotone Sequence, Limit of a sequence (Convergent Sequence), Limits Superior and Limits Inferior, Cauchy Sequence.

Module IV: Infinite Series

Infinite series, Convergence of series, Series of positive terms, Comparison tests, D' Alembert's ratio test, Cauchy's root test, Raabe's test, Gaussian test.

Module V: Application of Derivatives

Rolle's theorem, Mean value theorem: Lagrange's form, Cauchy's form. Generalized Mean value theorem.

Maxima and minima application of maxima and minima

Taylor's theorem, Indeterminate form: Taylor's infinite series, Maclaurian's series, Power Series Expansion of some standard functions: e^x , $\sin x$, $\cos x$, $\log(1+x)$, $(1+x)^n$ etc.,.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

23 Shanti Narayan, Differential Calculus

24 B. S. Grewal, Higher Engineering Mathematics

References:

B. S. Grewal, Higher Engineering Mathematics

DATA & FILE STRUCTURES USING C

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC202 | 2 | 1 | - | 3 |

Course Objective:

This course is an introduction to the use, design, and analysis of data structures in computer programs. The very commonly used data structures like arrays, stacks, queues, lists, trees, and graphs will be discussed in detail. Sorting and hashing are important topics in the study of algorithms. They are also closely related to the design of data structures. Several algorithms to implement these techniques are included in the syllabus.

Course Contents:

Module I: Basic concepts of data representation

Abstract data types: Fundamental and derived data types, Representation, Primitive Data Structures.

Module II: Arrays

Representation of arrays single and multi dimensional arrays. Address calculation using column and rows major ordering. Various operations on arrays, Vector, Application of arrays: matrix multi multiplication, sparse polynomial and addition.

Module III: Stacks and Queues

Representation of stacks and queues using arrays and linked list. Circular queues, priority queue and D-queue. Application of stacks: conversion from infix to postfix expression, Evaluation of postfix expression using stacks.

Module IV: Linked List

Singly linked list; operations on list. Linked stacks and queue. Polynomial representations and manipulation using linked lists, doubly linked list, addition of two polynomial list.

Module V: Trees

Binary trees traversal method: preorder, in-order, post-ordered traversal. Recursive and non-recursive algorithm for above mentioned Traversal methods. Representation of trees and its application: Binary tree representation of a tree, Binary search tree: height balanced (AVL) tree

Module VI: Searching, sorting and complexity

Searching: Sequential and binary search, indexed search, Sorting: insertion, selection, bubble, quick, merge, heap sort.

Module VII: Graphs

Graph representation: adjacency list, adjacency multicasts, adjacency lists. Traversal scheme: Depth first search, Breadth first search. Spanning tree: definition, minimal spanning tree algorithms.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

- 5888 T. Langsam, M.J Augenstein and A.M. Tanenbaum, —Data structure using C and C++ Second edition, 2000, Prentice Hall of India.
- 5889 R.Kruse, G.L. Tonodo and B. Leung,|| Data structures and program design in C||, Second Edition, 1997, Pearson education.
- 5890 S. Chottopadhyay, D. Ghoshdastidar& M. Chottopadhyay. Data structures through language||, First edition, 2001, BPB Publication.
- 5891 G.L. Heileman, Data structures, Algorithms and object oriented programming,|| First Edition 2002, Tata McGraw Hill.
- 5892 E. Horowitz, Sahni and D. Mehta,|| Fundamentals of data structures in C++,||200 Galgotia Publication

COMPUTER ARCHITECTURE & ASSEMBLY LANGUAGE

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC203 | 2 | 1 | 0 | 3 |

Course Objective:

The student will develop an understanding of the underlying operation of a modern digital computer, identify and understand the various "building blocks" from which a modern computer is constructed. The student will learn to develop simple assembly language programs and understand the underlying operations of more complex programs using Intel's 8085 Microprocessor.

Course Contents:

Module I: General Computer Architecture

Block Diagram of typical Computer, Memory Section, Input/Output Section, CPU, Registers, Arithmetic Unit, Instruction handling Areas, Stacks

Micro operations: Register Transfer, Bus and Memory Transfer, Arithmetic Micro operations, Logic Micro operations, Shift Micro operations, Arithmetic Logic Shift Unit

Module II: Basic Computer Organization and Design

Instruction Codes, Operation code, Timing and Control, Instruction Cycle, Memory Reference Instructions, Input Output Instructions and Interrupts

Control Memory: Control Word, Microinstruction, Microprogramming, Control Memory, Hardwired

Module III: Central Processing Unit

General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, RISC, CISC

Pipelining and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, Vector Processing, Array Processors

Module IV: Input Output Organization

I/O Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA, IOP, Serial Communication

Memory Organization: Associative Memory, Cache Memory, Virtual Memory

Module V: Introduction to Microprocessor

Machine Language, Assembly Language, Assembler, High Level Language, Compiler, Interpreter, Internal Architecture 8085.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|----------------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

23 Computer System Architecture, M.M. Mano, Pearson Education.

References:

- 5888 Computer Architecture and Organization, J.P Hayes, TNH.
- 5889 Lance A Leventhal Introduction to Microprocessors: Software, Hardware, Programming
- 5890 Hwang and Briggs Computer Architecture and Parallel Processing
- 5891 Hayes Computer Architecture and Organization
- 5892 Tannenbaum Structured Computer Organization
- 5893 Zaky Computer Organization
- 5894 William Stallings Computer Organization and Architecture
- 5895 Carpinelli Computer Systems Organization and Architecture
- 5896 Hennesy & Patterson Computer Architecture

SYSTEMS ANALYSIS & DESIGN

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC204 | 2 | 1 | 0 | 3 |

Course Objective:

This course addresses both what is required of an Information System and how this can be achieved. Studying the practices, processes, activities and technologies involved in the development of an Information system provide an excellent insight to develop skills for employment & professional life. Students are involved in activities ranging from the front-end of requirements analysis and system design to the development of User Interfaces and testing & maintenance of software. The course equips the student to carve a niche in the growing portfolio of Information systems careers or go in for higher studies e.g. UBC, MBA & other Master's level programmers.

Course Contents:

Module I: System Concepts and the Information Systems Environment

What is System?, Important System Characteristic, Business Systems, Business, Information Systems, Categories of Information Systems, Transaction, Processing System, MIS, DSS, and Scope of Information system.
The Role of System Analyst: Overview of System Analysis and Design, Multifaceted role of System analyst: Analytical Skill, Technical Skills, and Interpersonal Skills.

Module II: System Development Life Cycle

The System Development Life Cycle, Structured Analysis Development Method, and Systems Prototype Method. System planning and Initial Investigation: System Planning: Information System Committee Method, User Group Committee Method, Initial Investigation, Feasibility Study: Operational, Technical and Economical Feasibility Cost Benefit Analysis: Data Analysis, Cost Benefit Analysis, The system proposal.

Module III: Determining System Requirements

Performing Requirements Determination, Traditional Method, Modern Methods, and Radical Methods. The Tools of Structured Analysis: Process Modeling: DFD, Logical Modeling: Structured English, Decision Trees, and Data Modeling: ER Diagram

Module IV: Process and Stages of System Design

The process of design: logical design, physical design, Structured Design, Functional Decomposition, and Structured Walkthrough. Input/Output and Forms Design: Input design, output design, *forms* design, types of *forms*, layout considerations and *forms* control.

Module V: File organization and Database Design

File structure, file organization, -objectives of database, data structure, normalization, the role of database administrator. Automated Tools for Systems Development: CASE Tools

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

- 23 P-analysis & Design of Information Systems James A. Senn
- 24 Modern System Analysis & Design: Jeffery A. Hoffer, Joey F. George, Joseph S. Valacich
- 25 Elements of System Analysis & Design: Elias Awad.

MANAGEMENT INFORMATION SYSTEM

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC206 | 3 | 1 | - | 4 |

Course Objective:

This course will provide the students with an understanding of the principles of information systems technology and its impact on the strategic goals and direction of the organization. They will learn how MIS concepts are applied in business and how information systems can provide solutions to the entire organization.

Course Contents:

Module I: Introduction

Why Information System, Contemporary Approaches to Information Systems, Types of Systems in organizations, Systems from a Functional Perspective, Organization and Information Systems, Managers, Decision Making and Information Systems, Information Systems and Business Strategy Role of Internet Technology in Management, Electronic Business, Electronic Commerce.

Module II: Ethical and Social Issues

Understanding Ethical and Social Issues, Ethics in information society, Moral Dimensions of Information Systems

Module III: Information Technology Infrastructure

Computer Hardware and Information Technology Infrastructure, Categories of Computers and Computer Systems, Managing Hardware and Software Assets, Total Cost of Ownership, Rent or Build Decisions. Telecommunication and Networks Network Topologies, LANs WANs Network Services and Broadband Technologies.

Module IV: Information Systems

Types of Information Systems for Decision-Making. Decision Support Systems, Executive Information Systems, Transaction Processing Systems, Group Decision Support Systems. Redesigning the organization with Information Systems, Business Process Reengineering

Module V: Information Systems Security and Control

System Vulnerability, Creating Control Environment, Disaster Recovery Planning, Ensuring System Quality, Software Quality Assurance Methodologies and Tools. Case study on ITIL (Information Technology Infrastructure Library)

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Management Information Systems, Laudon and Laudon, Prentice Hall International

DATA & FILE STRUCTURES USING „C“ LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC220 | - | - | 2 | 1 |

- 5888 Write a program to search an element in a given array using linear search.
- 5889 Write a program to search an element in a given array using binary search.
- 5890 Write a program to sort the elements of an array using the following techniques: Bubble Sort, Selection Sort, and Insertion Sort. Compare the time taken by each sorting technique.
- 5891 Write a program using the concept of iteration and recursion to sort the elements of an array using Quick Sort.
- 5892 Write a C program to implement Heap sort.
- 5893 Write a program to delete an element from the kth element of an array.
- 5894 Write a program to insert an element at the kth element in an array.
- 5895 Write a program to remove duplicates in an array.
- 5896 Write a program to merge two sorted arrays.
- 5897 Write a program to perform the following operations on two given matrices: Addition and Multiplication.
- 5898 Write a program to implement a Stack, show overflow and underflow while performing push and pop operations respectively.
- 5899 Write a program to evaluate a postfix expression.
- 5900 Write a program to implement a queue and show the following: insertion and deletion.
- 5901 Write a program to implement a circular queue and show the following: insertion and deletion.
- 5902 Write a program to implement Linear Linked List and show the following operations: creation, display, insertion, deletion and searching.
- 5903 Write a program to increment the data part of every node in a linked list by 10.
- 5904 Write a program to implement a stack using linked list and show the following operations: Push, Pop, and Display.
- 5905 Write a program to implement a stack using linked list and show the following operations: Insertion, Deletion, and Display.
- 5906 Write a program to count the number of repetitions of a number in a linked list.
- 5907 Write a program to implement Doubly Linked List and show the following operations: creation, display, insertion, deletion and searching.
- 5908 Write a program to implement Binary tree and display the contents using preorder, postorder and inorder traversal techniques.
- 5909 Write a program to convert a Binary Tree to a Threaded Binary Tree.
- 5910 Write a program to construct a Binary Search tree and perform the following operations: Insertion and Deletion of a node.
- 5911 Write a program to construct an AVL tree and perform the following operations: insertion, deletion and searching.
- 5912 Write a program to insert and delete nodes in a graph using adjacency matrix.
- 5913 Write a program that demonstrates Warshall's algorithm.
- 5914 Write a program to implement Depth First Search using linked representation of graph.
- 5915 Write a program to implement Breadth First Search using linked representation of graph.
- 5916 Write a program to create a minimum spanning tree using Kruskal's algorithm
- 5917 Write a program to create a minimum spanning tree using Prim's algorithm.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

NETWORKING FOR HOME & SMALL BUSINESS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC230 | 2 | 1 | 0 | 3 |

Course Objective:

This course is aimed to provide a fundamental understanding of Computer Networking, Operating System, Connecting to the networks, network addressing, network services and Wireless technologies etc. After the completion of the course you will understand the core concepts around which computer networks revolve.

Course Contents:

Module I: Personal Computer Hardware

Personal Computers and Applications, types of Computers, Binary Representation of Data, Computer Components and Peripherals, Computer System Components

Module II: Operating System

Choosing the Operating Systems, Installing the Operating System, Maintaining the Operating System.

Module III: Connecting to the Networks

Introduction to Networking, Principals of Communication, Communicating on a Local Wired Network, Building the Access Layer of an Ethernet Network, Building the Distribution Layer of Network, Plan and Connect a Local Network

Module IV: Connecting to the Internet through ISP

The Internet and How We Connect To It Sending Information across the Internet
Networking Devices in a NOC Cables and Connectors Working with Twisted Pair Cabling

Module V: Network Addressing

Addresses and Subnet Masks, Types of IP Addresses, How IP Addresses are obtained
Address Management

Module VI: Network Services

Clients/Servers and Their Interactions, Application Protocols and Services, Layered Model and Protocols

Module VII: Wireless Technologies

Wireless Technology, Wireless LANs, Security Considerations on a Wireless LAN
Configuring an Integrated AP and Wireless Client

Module VIII: Basic Security

Networking Threats, Methods of attack, Security Policy, Using Firewalls

Module IX: Trouble Shooting your Network

Troubleshooting Process, Troubleshooting Issues, Common Issues, Troubleshooting and the Helpdesk

Examination Scheme:

| Components | CT1 | A/C/Q | ATTD. | EE |
|---------------|-----|-------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

23 CCNA-Discovery 4.0, module 1, Cisco Certified Networking Academy

References:

- 5888 Data Communication and Computer Network, Forozoun, TMH Publication
- 5889 Data Communication and Network, Stallings, PHI
- 5890 Computer Network, Tanenbaum, PHI
- 5891 Data Communication and Network, Stallings, PHI
- 5892 Computer Network, Tanenbaum, PHI

WEB TECHNOLOGIES

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC231 | 2 | 1 | 0 | 3 |

Course Objective:

This course is aimed to provide a fundamental understanding of web site creation. HTML is the language used for designing most basic web pages. Syllabus include basic and advanced features of HTML which includes images, links, tables, frames and forms etc. It also gives an overview of XML.

Course Contents:

Module I: Introduction to html programming

History of HTML, Structure of HTML, Adding Comments, Formatting Text, Creating List, Creating Definition List, Creating Hyper Text Links, Creating Link Lists, Inserting Inline Images, Creating Image Links, Horizontal Rules, Address Tag, Working with Text, Changing font Sizes and Colors, Using Background Image, Marquee Tag.

Module II: Tables and frames

Creating Tables, Table Element, Adding Border, Adding Column Headings, Adding Spacing and Padding, Adding a Caption, Setting the table Width and Height, Add Row Headings, Aligning Cell contents, Setting Column Width, Centering a Table, Inserting and Image, Spanning Columns, Spanning Rows Assigning Background Colors, Frame Elements, Creation of Frame Based Pages, Noframes Element.

Module III: Forms and JavaScript

Introduction to Forms, Form Elements, Front level validations using JavaScript

Module IV: Cascading style sheets

Overview of style sheets, Different ways to use style sheets, Selectors DIV and SPAN Elements, Adding style to a Document, Use id Classes and Ids, Style Sheet Properties.

Module V: XML

Introduction to XML, XML Basics, XML Structure, Developing a DTD from XML code, Viewing XML, Viewing XML using the XML Data Source Object, Viewing XML using Style Sheets.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 10 | 15 | 5 | 70 |

Text & References:

Text:

23 HTML, DHTML, JavaScript, Perl, CGI, Ivan Bayross, BPB Publication.

References:

5888 HTML Complete Reference, BPB Publication.

5889 Internet for everyone, Alexis Leon and Mathew Leon, Leon Tech world.

ORGANIZATION BEHAVIOUR

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC232 | 2 | 1 | 0 | 3 |

Course Objective:

To provide an educational experience for students, which will allow them to develop a knowledge of the theories and empirical evidence relating to organizational behaviour, an understanding of the nature and functioning of organizations and of individuals and groups within them, an ability to diagnose organizational situations and to use behavioural knowledge in participating in and managing organizational processes and to better manage both micro and macro organizational issues.

Course Contents:

Module I: Introduction to OB

Introduction to organizational behaviour and individuals. What is an Organization (Micro & Macro perspective), Components of organization, Management Functions, Roles & Skills, Organizations in Indian Context, What is Organizational Behaviour, Challenges & Opportunities for OB, Dependent & Independent Variables.

Module II: Individual Behaviour

Individual Behaviour, Values (Types of Values, RVS, Values across Cultures), Attitudes (Types of Attitudes, Cognitive Dissonance Theory), Job Satisfaction, Personality (Big Five Model, Personality Attributes influencing OB, Myers – Briggs Type Indicator, Type A/Type B Personality, Holland's Typology), Perception (Factors, Attribution Theory, Perceptive short-cuts & applications), Individual Decision-making, Creativity in Decision-making, Motivation (Theories of Motivation – Early & Contemporary), Profile of a Manager and Entrepreneur.

Module III: Group Behaviour

Group Behaviour (Types of Groups, Group Development Model, Group – Behaviour Model, Group Decision Making, Groupthink & Groupshift), Teams (Types, Team Effectiveness Model, Turning Individuals into Team Players), Communication (Functions, Process, Direction, Organizational Communication, Barriers), Leadership (Trust, Contemporary Leadership Theories, Leadership Roles, Emotional Intelligence).

Module IV: Organizational System

Organizational System – Organizational Structure & Designs, Power & Politics (Bases, Power Tactics, Factors contributing to Political Behaviour, Employee Responses to Organizational Politics), Organizational Change Management (Forces for Change, Resistance to Change, Overcoming Resistance to Change), Work Stress & its Management (Sources & Consequences of Stress, Managing Stress).

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

23 Organisational Behaviour, L.M. Prasad, Sultan Chand & Sons

References:

5888 Organizational Behaviour, Stephen P. Robbins, Prentice-Hall India

ADVANCE COMPUTER ARCHITECTURE

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC233 | 2 | 1 | 0 | 3 |

Course Objective:

The course focuses on processor design, pipelining, superscalar, out-of-order execution, caches (memory hierarchies), virtual memory, storage systems, and simulation techniques. Advanced topics include a survey of parallel architectures and future directions in computer architecture.

Course Contents:

Module I: Introduction to Computer Models

The state of computing, Multiprocessors and multicomputers, Multivector and SIMD computers, Architectural development tracks

Module II: Program and network properties

Conditions of parallelism, Data and resource dependencies, Hardware and software parallelism, Program partitioning and scheduling, Grain size and latency, Program flow mechanisms, Control flow versus data flow, Data flow architecture, Demand driven mechanisms, Comparisons of flow mechanisms

Module III: System Interconnect Architectures

Network properties and routing, Static interconnection networks, Dynamic interconnection Networks, Multiprocessor system interconnects Hierarchical bus systems, Crossbar switch and multiport memory, Multistage and combining network.

Module IV: Processors and Memory Hierarchy

Advanced processor technology, Instruction-set Architectures, CISC Scalar Processors, RISC Scalar Processors, Superscalar Processors, VLIW Architectures, Vector and Symbolic processors

Module V: Memory Technology

Hierarchical memory technology, Inclusion, Coherence and Locality, Memory capacity planning, Virtual Memory Technology

Module VI: Backplane Bus System

Backplane bus specification, Addressing and timing protocols, Arbitration transaction and interrupt, Cache addressing models, direct mapping and associative caches.

Module VII: Pipelining

Linear pipeline processor, Nonlinear pipeline processor, Instruction pipeline design, Mechanisms for instruction pipelining, Dynamic instruction scheduling, Branch handling techniques, Arithmetic Pipeline Design, Computer arithmetic principles, Static arithmetic pipeline, Multifunctional arithmetic pipelines

Module VIII: Vector Processing Principles

Vector instruction types, Vector-access memory schemes.

Module IX: Synchronous Parallel Processing

SIMD Architecture and Programming Principles, SIMD Parallel Algorithms, SIMD Computers and Performance Enhancement

Module X: VLSI Computing

VLSI Computers, VLSI Complexity Model

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:***Text:***

- 23 Advanced computer architecture, Kai Hwang, TMH.
- 24 Computer Architecture and organization, J.P. Hayes, MGH.
- 25 Memory System and Pipelined processors, Harvey G. Cragon, Narosa Publication.

References:

- 0 Parallel computer, V. Rajaranam & C. S. R. Murthy, PHI.
- 1 Foundation of Parallel Processing, R.K. Ghose, Rajan Moona & Phalguni Gupta, Narosa
- 2 Kai Hwang and Zu, —Scalable Parallel Computers Architecture; MGH.

INTERNET FUNDAMENTALS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC234 | 2 | 1 | 0 | 3 |

Course Objective: The course provides introduction to internet and a deep insight into the basics of internet, world wide web, security risks over internet, basics of various languages used over internet. With this course students would be able to know the basics of each and every introductory internet and computer features which would prove to be very helpful throughout their degree, and would prove helpful in understanding other related subjects also.

Course Contents:

Module 1: Internet Basics

Introduction to Internet, History of Internet, Internet Working, Modes of Connecting to Internet, Internet Service Providers(ISPs), Differentiate between Internet, Intranet and Extranet, Protocol, Internet address, IP addressing, standard address, domain name, DNS, internet tool, TCP/IP and UDP, OSI reference model.

Module 2: Electronic Mail

Introduction to E-mail, advantages and disadvantages of e-mails, structure of an e-mail address, message components, message composition, mailer features, Internal working of E-mail, E-mail management, MIME types, Newsgroups, mailing lists, chat rooms, secure-mails, SMTP,POP, PICO, Pine, Gopher.

Module 3: World Wide Web

Introduction to www, Miscellaneous Web Browser details, searching www: Search engines and meta search engines, search fundamentals, search strategies, working of search engines, Telnet, FTP, HTTP, Introduction to Browser, Coast-to-coast surfing, HTML, Web page installation and setup , Basics of HTML, formatting & hyperlink creation. Using and installing Plug-ins.

Module 4: Introduction to Languages and Servers

Basics of java script language, Client/Server Side Programming in java script, Using Forms and data entry using java script, XML and DHTML basics, Creating Static and dynamic web pages. Web Servers: PWS, IIS, Apache, Advantages and limitations of using these servers.

Module 5: Privacy and security

Introduction to security over internet,Network Attacks, security and privacy levels, security policy, virus worms anddd Trozan horses, Cryptography: Encryptionand Decryption techniques, SecureWeb document, Digital Signatures, Firewalls and its types, IDS.

Examination Scheme:

| Components | CT1 | A/C/Q | ATTD. | EE |
|---------------|-----|-------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

- 0 Fundamentals of the Internet and the World Wide Web, Raymond Greenlaw and Ellen Hepp – 2001, TMH
- 1 Internet & World Wide Programming, Deitel,Deitel & Nieto, 2000, Pearson Education

References:

- 2 Complete idiots guide to java script,. Aron Weiss, QUE, 1997
- 3 Atul Kahate, —Cryptography and Network Securityll, Tata McGraw-Hill, 2003

PRODUCTION & OPERATIONS MANAGEMENT

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC235 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of the course is to obtain a general understanding of operations management environment, forecasting, demand and factor supply. In order to improve the competitiveness and productivity of an organization use of Linear Programming model, Implementing decisions related to product and service design, capacity planning, process selection and facility layout, location planning, MRP and Inventory. Role of Quality and its implementation in Organizations

Course Contents:

Module I: Introduction

Introduction to Operations systems, Production systems definition, Operations Management Definition, difference, Historical Evolution of operations Management

Module II: New Product Development

Stages of New Product Development, Product Design and Service Design, Capacity Planning Decisions, its need and strategies for modifying capacity, Conceptual definition of Facility Location

Module III: Layout and Aggregate Planning Concepts

Layout concepts, Developing the Process Layout: Models and Behaviour, Production Planning and Control its need, Categories, Aggregate Planning Process: its concept and goals

Module IV: Material Requirement Planning Systems

Introduction to Materials Management, Material Requirements Planning Systems. Applications of JIT.

Module V: Quality Assurance and its Control

Quality Assurance, Statistical Quality Control, Acceptance Sampling & Total Quality Management

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 Adam & Ebert, Production & Operations Management.

References:

- 0 Buffa & Sarin, Modern Production / operations Management.
- 1 Chase & Aquilano, Production & Operations Management.
- 2 Render & Heizer, Principles of Operations Management.

ENGLISH

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BCS201 | 1 | 0 | 0 | 1 |

Course Objective:

The course is intended to give a foundation of English Language. The literary texts are indented to help students to inculcate creative & aesthetic sensitivity and critical faculty through comprehension, appreciation and analysis of the prescribed literary texts. It will also help them to respond form different perspectives.

Course Contents:

Module I: Vocabulary

Use of Dictionary
Use of Words: Diminutives, Homonyms & Homophones

Module II: Essentials of Grammar - I

Articles
Parts of Speech
Tenses

Module III: Essentials of Grammar - II

Sentence Structure
Subject -Verb agreement
Punctuation

Module IV: Communication

The process and importance
Principles & benefits of Effective Communication

Module V: Spoken English Communication

Speech Drills
Pronunciation and accent
Stress and Intonation

Module VI: Communication Skills-I

Developing listening skills
Developing speaking skills

Module VII: Communication Skills-II

Developing Reading Skills
Developing writing Skills

Module VIII: Written English communication

Progression of Thought/ideas
Structure of Paragraph
Structure of Essays

Module IX: Short Stories

Of Studies, by Francis Bacon
Dream Children, by Charles Lamb
The Necklace, by Guy de Maupassant
A Shadow, by R.K.Narayan
Glory at Twilight, Bhabani Bhattacharya

Module X: Poems

| | |
|------------------------|--------------|
| All the Worlds a Stage | Shakespeare |
| To Autumn | Keats |
| O! Captain, My Captain | Walt Whitman |

Where the Mind is Without Fear
Psalm of Life

Rabindranath Tagore
H.W. Longfellow

Examination Scheme:

| Components | A | CT | HA | EE |
|----------------------|----------|-----------|-----------|-----------|
| Weightage (%) | 05 | 15 | 10 | 70 |

Text & References:

- 0 MadhulikaJha, Echoes, Orient Long Man
- 1 Ramon &Prakash, Business Communication, Oxford.
- 2 Sydney Greenbaum Oxford English Grammar, Oxford.
- 3 Successful Communications, MalraTreece (Allyn and Bacon)
- 4 Effective Technical Communication, M. Ashraf Rizvi.

BEHAVIOURAL SCIENCE - II

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BSS201 | 1 | 0 | 0 | 1 |

Course Objective:

To enable the students:

Understand the process of problem solving and creative thinking.

Facilitation and enhancement of skills required for decision-making.

Course Contents:

Module I: Thinking as a tool for Problem Solving

What is thinking: The Mind/Brain/Behaviour

Thinking skills

Critical Thinking and Learning:

Making Predictions and Reasoning

Memory and Critical Thinking

Emotions and Critical Thinking

Module II: Hindrances to Problem Solving

Perception

Expression

Emotion

Intellect

Work environment

Module III: Problem Solving Process

Recognizing and Defining a problem

Analyzing the problem (potential causes)

Developing possible alternatives

Evaluating Solutions

Resolution of problem

Implementation

Module IV: Plan of Action

Construction of POA

Monitoring

Reviewing and analyzing the outcome

Module V: Creative Thinking

Definition and meaning of creativity

The nature of creative thinking

Convergent and Divergent thinking

Idea generation and evaluation (Brain Storming)

Image generation and evaluation

Debating

The six-phase model of Creative Thinking: ICEDIP model

Module VI: End-of-Semester Appraisal

Viva based on personal journal

Assessment of Behavioural change as a result of training

Exit Level Rating by Self and Observer

Examination Scheme:

| Components | SAP | A | Mid Term Test (CT) | VIVA | Journal for Success (JOS) |
|---------------|-----|----|--------------------|------|---------------------------|
| Weightage (%) | 20 | 05 | 20 | 30 | 25 |

Text & References:

- 0 Michael Steven: How to be a better problem solver, Kogan Page, New Delhi, 1999
- 1 Geoff Petty: How to be better at creativity; Kogan Page, New Delhi, 1999
- 2 Phil Lowe Koge Page: Creativity and Problem Solving, New Delhi, 1996
- 3 Bensley, Alan D.: Critical Thinking in Psychology – A Unified Skills Approach, (1998), Brooks/Cole Publishing Company.

FRENCH - II

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLF201 | 2 | 0 | 0 | 2 |

Course Objective:

To enable the students to overcome the fear of speaking a language and take position as a foreigner speaking French.
To make them learn the basic rules of French Grammar.

Course Contents:

Module A: pp.38 – 47: Unité 3: Objectif 3, 4, 5, 6

Module B: pp. 47 to 75 Unité 4, 5

Contenu lexical: Unité 3: Organiser son temps

0.0 donner/demander des informations sur un emploi du temps, un horaire SNCF – Imaginer un dialogue

0.1 rédiger un message/ une lettre pour ...

prendre un rendez-vous/ accepter et confirmer/ annuler

inviter/accepter/refuser

Faire un programme d'activités

imaginer une conversation téléphonique/un dialogue

Propositions- interroger, répondre

Unité 4: Découvrir son environnement

0 situer un lieu

0 s'orienter, s'informer sur un itinéraire.

1 Chercher, décrire un logement

2 connaître les rythmes de la vie

Unité 5: s'informer

0 demander/donner des informations sur un emploi du temps passé.

1 donner une explication, exprimer le doute ou la certitude.

2 découvrir les relations entre les mots

3 savoir s'informer

Contenu grammatical: 1. Adjectifs démonstratifs

0 Adjectifs possessifs/exprimer la possession à l'aide de:

0 « de » ii. A+nom/pronom disjoint

1 Conjugaison pronominale – négative, interrogative -

construction à l'infinitif

23 Impératif/exprimer l'obligation/l'interdiction à l'aide de « il

faut... »/ «il ne faut pas... »

24 passé composé

25 Questions directes/indirectes

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

5888 le livre à suivre: Campus: Tome 1

GERMAN – II

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLG201 | 2 | 0 | 0 | 2 |

Course Objective:

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Introduction to Grammar to consolidate the language base learnt in Semester I

Course Contents:

Module I: Everything about Time and Time periods

Time and times of the day.

Weekdays, months, seasons.

Adverbs of time and time related prepositions

Module II: Irregular verbs

Introduction to irregular verbs like to be, and others, to learn the conjugations of the same, (fahren, essen, lessen, schlafen, sprechen und ähnliche).

Module III: Separable verbs

To comprehend the change in meaning that the verbs undergo when used as such

Treatment of such verbs with separable prefixes

Module IV: Reading and comprehension

Reading and deciphering railway schedules/school time table

Usage of separable verbs in the above context

Module V: Accusative case

Accusative case with the relevant articles

Introduction to 2 different kinds of sentences – Nominative and Accusative

Module VI: Accusative personal pronouns

Nominative and accusative in comparison

Emphasizing on the universal applicability of the pronouns to both persons and objects

Module VII: Accusative prepositions

Accusative prepositions with their use

Both theoretical and figurative use

Module VIII: Dialogues

Dialogue reading: ‘In the market place’

‘At the Hotel’

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

- 23 Wolfgang Hieber, Lernziel Deutsch
- 24 Hans-Heinrich Wangler, Sprachkurs Deutsch
- 25 Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- 26 P.L Aneja, Deutsch Interessant- 1, 2 & 3
- 27 Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- 28 Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

SPANISH – II

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLS201 | 2 | 0 | 0 | 2 |

Course Objective:

To enable students acquire more vocabulary, grammar, Verbal Phrases to understand simple texts and start describing any person or object in Simple Present Tense.

Course Contents:

Module I

Revision of earlier modules.

Module II

Some more AR/ER/IR verbs. Introduction to root changing and irregular AR/ER/IR ending verbs

Module III

More verbal phrases (eg, Dios Mio, Que lastima etc), adverbs (*bueno/malo, muy, mucho, bastante, poco*). Simple texts based on grammar and vocabulary done in earlier modules.

Module IV

Possessive pronouns

Module V

Writing/speaking essays like my friend, my house, my school/institution, myself....descriptions of people, objects etc, computer/internet related vocabulary

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

- 5888 Español, En Directo I A
- 5889 Español Sin Fronteras

CHINESE – II

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLC201 | 2 | 0 | 0 | 2 |

Course Objective:

Chinese is a tonal language where each syllable in isolation has its definite tone (flat, falling, rising and rising/falling), and same syllables with different tones mean different things. When you say, —mal with a third tone, it mean horse and —mal with the first tone is Mother. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I

Drills
Practice reading aloud
Observe Picture and answer the question.
Tone practice.
Practice using the language both by speaking and by taking notes.
Introduction of basic sentence patterns.
Measure words.
Glad to meet you.

Module II

Where do you live?
Learning different colors.
Tones of —bul
Buying things and how muchit costs?
Dialogue on change of Money.
More sentence patterns on Days and Weekdays.
How to tell time.Saying the units of time in Chinese. Learning to say useful phrases like – 8:00, 11:25, 10:30 P.M. everyday, afternoon, evening, night, morning 3:58, one hour, to begin, to end etc.
Morning, Afternoon, Evening, Night.

Module III

Use of words of location like-li, wais hang, xia
Furniture – table, chair, bed, bookshelf,..etc.
Description of room, house or hostel room..eg what is placed where and how many things are there in it? Review Lessons – Preview Lessons.
Expression _yaoll, —xiangl and —yaoshil (if).
Days of week, months in a year etc.
I am learning Chinese. Is Chinese difficult?

Module IV

Counting from 1-1000
Use of —chang-changl.
Making an Inquiry – What time is it now? Where is the Post Office?
Days of the week.Months in a year.
Use of Preposition – —zail, —genl.
Use of interrogative pronoun – —duoshaoll and —jil.
—Whosell??? Sweater etc is it?
Different Games and going out for exercise in the morning.

Module V

The verb —qul
0 Going to the library issuing a book from the library
1 Going to the cinema hall, buying tickets
2 Going to the post office, buying stamps
3 Going to the market to buy things..etc
4 Going to the buy clothes Etc.
Hobby. I also like swimming.

Comprehension and answer questions based on it.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|------------|------------|----------|----------|----------|----------|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

0 —Elementary Chinese Reader Part II Lesson 11-20

COMPUTER ORIENTED STATISTICAL & OPTIMIZATION METHODS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC301 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this course is to expose students to the fundamentals and concepts of statistical and optimization methods, in particular, with reference to frequency distribution and measures of central tendency, measures of dispersion, skewness and kurtosis, theory of probability, linear programming problems, transportation, assignment and game problems. This course is designed with an aim of helping the students to understand important theorems, different formulae and practical applications of these statistical and optimization methods in the field of Computer Sciences and Applications.

Course Contents:

Module I

Collection of Data, Sampling and Sampling Designs, Classification and Tabulation of Data, Graphical representation of Data, Measures of Central Value, Measures of Dispersion. Moments, Skewness, Kurtosis, Correlation and Regression.

Module II: Probability

Classical Definition of Probability, Algebra of Events, Probability Axioms, Conditional Probability.

Probability Distributions: Discrete and Continuous Distributions, Binomial Distribution, Poisson distribution, Normal Distribution.

Module III: Linear Programming

Mathematical Formulation of Linear Programming models and its Graphical Solutions, Simplex Method, Charne's Big M method, Two Phase Method.

Module IV: Transportation Problem

General Transportation model, Starting basic Solutions: -North west Corner Method, Least Cost Method, Vogel's Approximation Method, Test of optimality, unbalanced Problem, Assignment Problems.

Assignment Problems

Module V: Game Theory

Two-Person Zero Sum Games, Maximin-Minimax Principal, Pure Strategies, Mixed Strategies, Expected Pay off, Concept of Dominance, Graphical Solution of $m \times 2$ and $2 \times n$ Games.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

- 0 P.K. Gupta & Manmohan, Linear Programming and Theory of Games.
- 1 S.C Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics.

References:

- 23 Hogg, Probability and Statistical Inference.
- 24 Alexander. M. Mood, Introduction to the Theory of Statistics
- 25 Franklin. A. Graybill, Dane. C. Boes
- 26 Taha, Handy A, Operations Research
- 27 G. Hadley, Linear Programming.

OBJECT ORIENTED PROGRAMMING CONCEPTS USING C++

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC302 | 2 | 1 | 0 | 3 |

Course Objective:

C++ is one of the most widely used programming languages for solving problems. The objective of this course is to provide object oriented programming fundamentals using C++. Topics to be covered include fundamentals of syntax, semantics of C++, loops & decisions, functions, classes and structures and features of classes such as overloading and inheritance, files, streams, pointers etc.

Course Contents:

Module I: Overview of C++

What is Object Oriented Programming, Characteristics of OOP, Difference between C and C++. Basics:-Input/Output in C++ using cin/cout, Preprocessor Directives, Data Types-Integer, Float, character, Enumerated data types, library functions, comments, storage classes, manipulators, type conversion, arithmetic operators, arrays and strings

Module II: Loops and Decisions

Relational operators, Logical operators, Decisions-if, if-else and switch. Loops-for, while, do-while and nested loops, precedence summary, break, continue and goto statements. Functions: Simple functions, passing arguments to functions, returning values from functions, reference arguments, returning by reference, Overloaded functions, Inline functions

Module III: Structures

A simple Structure, specifying the Structure, defining the structure variable, accessing members of structure, structure within structure, accessing structure members using pointers. Classes and objects: A simple class, C++ objects as physical objects, Constructors, Destructors, objects as function arguments, returning objects from functions, static class data, array as class data member, array of objects.

Module IV: Operator Overloading & Inheritance

Overloading unary operator, Overloading binary operator, data conversion. Inheritance: Derived and Base class, Derived class Constructor, types of Inheritance, Abstract base class, public and private Inheritance, level of Inheritance, Ambiguity in multiple inheritance.

Module V: Pointers and Virtual functions

Pointers and Arrays, pointers and strings, pointers and functions, pointers to objects, virtual functions, friend functions, static functions, this pointer. Files and Streams: streams, string I/O, character I/O, object I/O, file pointer, error handling, command line arguments.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

- 0 Programming with C++, Ravi Chandran
- 1 Mastering C++, Venugopal
- 2 Programming in C++, SCHAUM's series
- 3 The complete reference C++, Herbert Schildt
- 4 Turbo C++, Robert Lafore

DATABASE MANAGEMENT SYSTEMS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC303 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this course is to expose the students to the fundamentals & basic concepts in Data Base Management Systems. This course discusses architecture of Database Systems with concept of relational model & ER model. This course explains techniques for database design, Normalization and database recovery and protection.

Course Contents:

Module I: Introduction to DBMS

Definition of DBMS, Data Independence, DBMS Architecture, Levels, Database Administrator, File System Approach Vs DBMS Approach, Advantages of Using a DBMS, Data Models, Schemas, and Instances.

Module II: Relational Database & ER Model

Relational System, Codd's Rule, Relational Model, Optimization, Tables and Views, Entity, Types of Entity, Weak Entity Attributes, Entity sets, Entity – Relationship Diagrams.

Module III: Relational Model Objects

Domains and Relations, Relations and predicates, Relational Data Integrity; Primary Key, Candidate Key, Foreign Key and their rules; Relational operators, Relational Algebra, Relational Calculus, SQL Language, Data definition, Data retrieval and update operations.

Module IV: Database Design

Definition Of Functional Dependencies, Process Of Normalization, First Normal Form, Second Normal Form, Third Normal Form. BoyceCodd Normal Form, Fourth Normal Form, Fifth Normal Form.

Module V: Data Recovery & Protection

Recovery- Transaction recovery, System recovery, Media Recovery, Concurrency Control Techniques, Locking, Dead Lock, Serializability; Security- Introduction.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Elmasari, Navathe, —Fundamentals of Database Systems, Addison Wesley.
 Korth, Silbertz, Sudarshan, —Database Concepts, McGraw Hill.
 Majumdar & Bhattacharya, —Database Management System, Tata McGraw Hill.
 Date C J, —An Introduction to Database Systems, Addison Wesley.

WORKING AT A SMALL-TO-MEDIUM BUSINESS OR ISPs

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC304 | 2 | 1 | 0 | 3 |

Course Objective:

This course is aimed to provide a fundamental understanding of small to medium business or ISP. After the completion of this, students will know how to plan network upgrade, planning the addressing structure, configuring the network devices and ISP services.

Course Contents:

Module I: The Internet and Its Uses

What is the Internet, Internet Service Providers, and ISP Connectivity

Module II: ISP Help Desk

Help Desk Technicians, OSI Model, ISP Troubleshooting

Module III: Planning a Network Upgrade

Common Issues, Planning the Network Upgrade, Purchasing and Maintaining Equipment

Module IV: Planning the addressing structure

IP Addressing in the LAN, NAT and PAT

Module V: Configuring Network Devices

Initial ISR Router Configuration, Configuring an ISR with SDM, Configuring a Router Using IOS CLI, Initial Cisco 2960 Switch Configuration, Connecting the CPE to the ISP

Module VI: Routing

Enabling Routing Protocols, Exterior Routing Protocols

Module VII: ISP Services

Introducing ISP Services, Protocols that Support ISP Services, Domain Name Service Services and Protocols

Module VIII: ISP Responsibilities

ISP Security Considerations, Security Tools, Monitoring and Managing the ISP Backups and Disaster Recovery

Examination Scheme:

| Components | CT1 | A/C/Q | ATTD. | EE |
|---------------|-----|-------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 CCNA-Discovery 4.0, module 2, Cisco Certified Networking Academy

References:

- 0 Data Communication and Computer Network, Forozoun, TMH Publication
- 1 Data Communication and Network, Stallings, PHI
- 2 Computer Network, Tanenbaum, PHI

SUMMER PROJECT – I (EVALUATION)

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC360 | 0 | 0 | 0 | 6 |

Course Objective:

The objective of project work is to provide students, exposure about the technology they have learnt in previous and current semesters and their applications in real time situations. Appropriate application software as assigned by the project guide to be developed individually or in-groups.

They are supposed to follow the following technologies:

C,
C++
DBMS

Guidelines:

There are certain phases of every Intern's professional development that cannot be effectively taught in the academic environment. These facets can only be learned through direct, on-the-job experience working with successful professionals and experts in the field. The internship program can best be described as an attempt to institutionalize efforts to bridge the gap between the professional world and the academic institutions. Entire effort in internship is in terms of extending the program of education and evaluation beyond the classroom of a university or institution. The educational process in the internship course seeks out and focuses attention on many latent attributes, which do not surface in the normal classroom situations. These attributes are intellectual ability, professional judgment and decision-making ability, inter-disciplinary approach, skills for data handling, ability in written and oral presentation, sense of responsibility etc.

In order to achieve these objectives, each student will maintain a file (**Internship File**). The Internship File aims to encourage students to keep a personal record of their learning and achievement throughout the Programme. It can be used as the basis for lifelong learning and for job applications. Items can be drawn from activities completed in the course modules and from the workplace to demonstrate learning and personal development.

The File will assess the student's analytical skills and ability to present supportive evidence, whilst demonstrating understanding of their organization, its needs and their own personal contribution to the organization.

The **layout guidelines** for the Project & Seminar Report:

23 File should be in the following specification

- 23 A4 size paper
- 24 Font: Arial (10 points) or Times New Roman (12 points)
- 25 Line spacing: 1.5
- 26 Top & bottom margins: 1 inch/ 2.5 cm
- 27 Left & right margins: 1.25 inches/ 3 cm

24 Report Layout: The report should contain the following components

Front Page
Table of Content
Acknowledgement Student
Certificate Company
Profile (optional)
Introduction
Main Body
References / Bibliography

The File will include **five sections** in the order described below. The content and comprehensiveness of the main body and appendices of the report should include the following:

5888 **The Title Page**--Title - An Internship Experience Report For (Your Name), name of internship organization, name of the Supervisor/Guide and his/her designation, date started and completed, and number of credits for which the report is submitted.

23 **Table of Content**--an outline of the contents by topics and subtopics with the page number and location of each section.

24 **Introduction**--short, but should include how and why you obtained the internship experience position and the relationship it has to your professional and career goals.

25 **Main Body**--should include but not be limited to daily tasks performed. Major projects contributed to, dates, hours on task, observations and feelings, meetings attended and their purposes, listing of tools and materials and their suppliers, and photographs if possible of projects, buildings and co-workers.

26 **References / Bibliography** --This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system

ASSESSMENT OF THE INTERNSHIP FILE

The student will be provided with the Student Assessment Record (SAR) to be placed in front of the Internship File. Each item in the SAR is ticked off when it is completed successfully. The faculty will also assess each item as it is completed. The SAR will be signed by the student and by the faculty to indicate that the File is the student's own work. It will also ensure regularity and meeting the delaines.

STUDENT ASSESSMENT RECORD (SAR)

5888 Range of Research Methods used to obtain information

5889 Execution of Research

5890 Data Analysis

5888 Analyse Quantitative/ Qualitative information

5889 Control Quality

5891 Draw Conclusions

Examination Scheme:

| Components | V | S | R | FP |
|----------------------|----------|----------|----------|-----------|
| Weightage (%) | 20 | 20 | 20 | 40 |

V – Viva, S – Synopsis, FP – Final Presentation, R - Report

Object Oriented Programming Concepts using C++ LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC320 | 0 | 0 | 2 | 1 |

List of C++ Programmes:

- 23 WAP to find greatest of three numbers.
- 24 WAP to calculate factorial of a number.
- 25 WAP to print Fibonacci series of `_n` numbers , where n is given by the programmer
- 26 WAP to check whether a number is prime or not.
- 27 WAP to find the number of characters and words in a string.
- 28 WAP to read a set of numbers in an array & to find the largest of them.
- 29 WAP to implement bubble sort using arrays.
- 30 WAP to read a set of numbers from keyboard & to find sum of all elements of the given array using a function.
- 31 WAP to exchange contents of two variables using call by value.
- 32 WAP to exchange contents of two variables using call by reference.
- 33 WAP to find the sum of three numbers using pointer to function method.
- 34 WAP to display content of an array using pointer arithmetic.
- 35 Calculate area of different geometrical figures (circle, rectangle, square, triangle) using function overloading.
- 36 WAP a program to maintain the student record containing roll number , Name, marks1, marks2, marks3 as data member and `getdata()`, `display()` and `setdata()` as member functions(use array of object)
- 37 WAP to increment the employee salaries on the basis of their designation (Manager-5000, General Manager-10000, CEO-20000, worker-2000). Use employee name, id, designation, salary as data member and `inc_sal` as member function (Use array of object).
- 38 Write a class bank, containing data member: Name of Depositor, A/c type, Type of A/c, Balance amount. Member function: To assign initial value, To deposit an amount, to withdraw an amount after checking the balance (which should be greater than Rs. 500) , To display name & balance.
- 39 WAP to define nested class `_student_info` which contains data members such as name, roll number and sex and also consists of one more class `_date` ,whose data members are day, month and year. The data is to be read from the keyboard & displayed on the screen.
- 40 WAP to generate a series of Fibonacci numbers using copy constructor, where it is defined outside the class using scope resolution operator.
- 41 Write a program to add two complex numbers using friend function.
- 42 Write a class string to compare two strings, overload (`=`) operator.
- 43 Write a class to concatenate two strings, overload (`+`) operator.
- 44 Create a class item, having two data members x & y, overload `_-` (unary operator) to change the sign of x and y.
- 45 Create a class Employee. Derive 3 classes from this class namely, Programmer, Analyst & Project Leader. Take attributes and operations on your own. Write a program to implement this with array of pointers.
- 46 Create two classes namely Employee and Qualification. Using multiple inheritance derive two classes Scientist and Manager. Take suitable attributes & operations. Write a program to implement this class hierarchy.
- 47 Write a program to read data from keyboard & write it to the file. After writing is
- 48 Completed, the file is closed. The program again opens the same file, reads

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

Database Management Systems LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC321 | 0 | 0 | 2 | 1 |

List of DBMS Programmes:

23 Given the table STUDENT:

| Student No. | Class | Name | GAME | Grade1 | SUPW | Grade2 |
|-------------|-------|---------|-------------|--------|-------------|--------|
| 10 | 7 | Sameer | Cricket | B | Photography | A |
| 11 | 8 | Sujit | Tennis | A | Gardening | C |
| 12 | 7 | Kamal | Swimming | B | Photography | B |
| 13 | 7 | Veena | Tennis | C | Cooking | A |
| 14 | 9 | Archana | Basket Ball | A | Literature | A |
| 15 | 10 | Arpit | Cricket | A | Gardening | C |

- 23 Display the names of the students who are getting a grade C in either GAME or SUPW.
- 24 Display the number of students getting grade A in cricket.
- 25 Display the different games offered in the school.
- 26 Display the SUPW taken by the students, whose name starts with '_A'.
- 27 Add a new column named '_Marks'.
- 28 Assign a value 200 for Marks for all those who are getting grade B or above in GAME.
- 29 Arrange the whole table in the alphabetical order to SUPW.

5888 Given the table SPORTS:

| Student No. | Class | Name | GAME1 | Grade1 | GAME2 | Grade2 |
|-------------|-------|---------|-------------|--------|-----------|--------|
| 10 | 7 | Sameer | Cricket | B | Swimming | A |
| 11 | 8 | Sujit | Tennis | A | Skating | C |
| 12 | 7 | Kamal | Swimming | B | Football | B |
| 13 | 7 | Veena | Tennis | C | Tennis | A |
| 14 | 9 | Archana | Basket Ball | A | Cricket | A |
| 15 | 10 | Arpit | Cricket | A | Athletics | C |

- 0 Display the names of the students who are getting a grade C in either GAME1 or GAME2.
- 1 Display the number of students getting grade A in cricket.
- 2 Display the names of the students who have same game for both GAME1 and GAME2.
- 3 Display the games taken by the students, whose name starts with '_A'.
- 4 Add a new column named '_Marks'.
- 5 Assign a value 200 for Marks for all those who are getting grade B or above in GAME.
- 6 Arrange the whole table in the alphabetical order of Name.

Given the table STUDENT:

| Student No. | Name | Stipend | Stream | AvgMarks | Grade | Class |
|-------------|---------|---------|------------|----------|-------|-------|
| 1 | Karan | 400.00 | Medical | 78.5 | B | 12B |
| 2 | Divakar | 450.00 | Commerce | 89.2 | A | 11C |
| 3 | Divya | 300.00 | Commerce | 68.6 | C | 12C |
| 4 | Arun | 350.00 | Humanities | 73.1 | B | 12C |
| 5 | Sabina | 500.00 | Nonmedical | 90.6 | A | 11A |
| 6 | John | 400.00 | Medical | 75.4 | B | 12B |
| 7 | Robert | 250.00 | Humaities | 64.4 | C | 11A |
| 8 | Rubina | 450.00 | Nonmedical | 88.5 | A | 12A |
| 9 | Vikas | 500.00 | Nonmedical | 92.0 | A | 12A |
| 10 | Mohan | 300.00 | Commerce | 67.5 | C | 12C |

- 0 Select all the Nonmedical stream students from STUDENT.
- 1 List the names of those students who are in class 12 sorted by Stipend.
- 2 List all students sorted by AvgMarks in descending order.

- 0 Display a report listing Name, Stipend, Stream, and amount of Stipend received in a year assuming that the stipend is paid every month.
- 1 Count the number of students with Grade `'_A'`.
- 2 Insert a new student in the STUDENT table and fill all the columns with some values.
- 3 Give the output of the following SQL statements:
 - 0 Select MIN(AvgMarks) from STUDENT where AvgMarks > 75;
 - 1 Select SUM(Stipend) from STUDENT where Grade = `'_B'`;
 - 2 Select AVG(Stipend) from STUDENT where Class = `'_12A'`;
 - 3 Select COUNT(DISTINCT);

0 Write SQL statement to create EMPLOYEE relation which contain EmpNo, Name, Skill, PayRate.

- 1 Create a table with the under-mentioned structure (Table name is Emp)

| | |
|------------|---------------|
| EmpNo | NUMBER(4) |
| DeptNo | NUMBER(2) |
| EmpName | CHAR(10) |
| Job | CHAR(10) |
| Manager | NUMBER(4) |
| HireDate | DATE |
| Salary | NUMBER(7, 2) |
| Commission | NUMBER (7, 2) |

0 Find out the number of employees having manager as job.

1 Display only the jobs with maximum salary greater than or equal to 3000.

2 Find all those employees whose job does not start with `'_M'`.

3 List the minimum and maximum salary of each job type.

4 Find all the employees who have no manager.

5 Create a table with the under-mentioned structure (Table name is Dept)

| | |
|----------|-----------|
| DeptNo | NUMBER(2) |
| DeptName | CHAR(12) |
| Location | CHAR(12) |

0 Create a table with the under-mentioned structure (Table name is PROJECT)

| | |
|--------------|-----------|
| ProjId | NUMBER(4) |
| ProjDesig | CHAR(20) |
| ProjStartDT | DATE |
| ProjEndDT | DATE |
| BudgetAmount | NUMBER(7) |
| MaxNoStaff | NUMBER(2) |

13. Create a table with the under-mentioned structure (Table name is SalGrade)

| | |
|---------|--------------|
| LowSal | NUMBER(7, 2) |
| HighSal | NUMBER(7, 2) |
| Grade | NUMBER(2) |

Where LowSal is the lowest salary limit in the grade and HighSal is the highest salary limit in the grade.

14. Write SQL statements to list all employees in the following format:

| | |
|------------------------------|----------|
| EMPLOYEE WORKS IN DEPARTMENT | Dept. No |
| SMITH WORKS IN DEPARTMENT | 20 |
| SUDHIR WORKS IN DEPARTMENT | 20 |
| RAJWORKS IN DEPARTMENT | 10 |
| SMITHS WORKS IN DEPARTMENT | 30 |
| SANTOSH WORKS IN DEPARTMENT | 30 |

15. Given the table MOV:

| No. | Title | Type | Rating | Stars | Qty | Price |
|-----|-----------------------------|--------|--------|---------|-----|-------|
| 1 | Gone with the Wind | Drama | G | Gable | 4 | 39.95 |
| 2 | Friday the 13 th | Horror | R | Jason | 2 | 69.95 |
| 3 | Top Gun | Drama | PG | Cruise | 7 | 49.95 |
| 4 | Splash | Comedy | PG13 | Hanks | 3 | 29.95 |
| 5 | Independence Day | Drama | R | Turner | 3 | 19.95 |
| 6 | Risky Business | Comedy | R | Cruise | 2 | 44.95 |
| 7 | Cocoon | Scifi | PG | Ameche | 2 | 31.95 |
| 8 | Crocodile Dundee | Comedy | PG13 | Harris | 2 | 69.95 |
| 9 | 101 Dalmations | Comedy | G | | 3 | 59.95 |
| 10 | Tootsie | Comedy | PG | Hoffman | 1 | 29.95 |

Find the total value of the movie cassettes available I the library.

Display a list of all movies with Price over 20 and sorted by Price.

Display all the movies sorted by Qty in descending order.

Display a report listing a movie number, current value and replacement value for each movie in the above table.

Calculate the replacement value for all movies as Qty * Price * 1.15.

Count the number of movies where rating is not 'G'.

Insert a new movie in the MOV table. Fill all the columns with some values.

Give the output of the following SQL statements:

Select AVG (Price) from MOV where Price < 30;

Select MAX (Price) from MOV where Price > 30;

Select SUM (Price * Qty) from MOV where Qty < 4;

Select COUNT (DISTINCT);

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

WEB DESIGNING

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC330 | 2 | 1 | 0 | 3 |

Course Objective:

This course is aimed to provide a fundamental understanding of web site creation. HTML is the language used for designing most basic web pages. Syllabus include basic and advanced features of HTML which includes images, links, tables, frames and forms etc. It also gives an overview of XML.

Course Contents:

Module I: Introduction to html programming

History of HTML, Structure of HTML, Adding Comments, Formatting Text, Creating List, Creating Definition List, Creating Hyper Text Links, Creating Link Lists, Inserting Inline Images, Creating Image Links, Horizontal Rules, Address Tag, Working with Text

Changing font Sizes and Colors, Using Background Image, Marquee Tag.

Module II

Tables and frames, Creating Tables, Table Element, Adding Border, Adding Column Headings, Adding Spacing and Padding, Adding a Caption, Setting the table Width and Height, Add Row Headings, Aligning Cell contents, Setting Column Width, Centering a Table, Inserting and Image, Spanning Columns, Spanning Rows Assigning Background Colors, Frame Elements, Creation of Frame Based Pages, Noframes Element.

Module III

Forms and Java Script Introduction to Forms, Form Elements, Front level validations using JavaScript

Module IV

Cascading style sheets, Overview of style sheets, Different ways to use style sheets, Selectors DIV and SPAN Elements, Adding style to a Document, Use id Classes and Ids, Style Sheet Properties.

Module V: XML

Introduction to XML, XML Basics, XML Structure, Developing a DTD from XML code, Viewing XML, Viewing XML using the XML Data Source Object, Viewing XML using Style Sheets.

Examination Scheme:

| Components | CT1 | A/C/Q | ATTD. | EE |
|---------------|-----|-------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 HTML, DHTML, JavaScript, Perl, CGI, Ivan Bayross, BPB Publication.

References:

0 HTML Complete Reference, BPB Publication.

1 Internet for everyone, Alexis Leon and Mathew Leon, Leon Tech world.

ACCOUNTING & FINANCIAL MANAGEMENT

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC331 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this course is to provide to students of IFT and IUBC with an introduction to fundamentals, concepts and principles / practices of Accounting and Financial Management. The topics covered including basic accounting, preparation of Trial Balance, Profit and Loss Account and Balance Sheet Account as applied to Banking including Bank Reconciliation Statement, Definition and Principles of Working Capital Management, Capital Budgeting and Analysis of Financial Statements.

Course Contents:

Module I: Accounting

Definition of Accounting, Its Objectives, Advantages and Limitation. Principles, Concepts and Conventions of Accounting, Double entry system, Recording of Transactions in subsidiary Books – Journal, Cash Book, sales Book, Purchase Book and Return Book. Posting into Ledger accounts.

Module II: Final Accounts

Preparation of Trial balance, Final Accounts including adjustments Trading account, Profit and Loss account, Balance Sheet.

Module III: Banking

Opening of different types of Banks Accounts, Cheque Book, Pass Book, Deposit slips, Bank Reconciliation Statements.

Module IV: Working Capital Management

Definition of working Capital, Types of Working Capital, Determinants of working Capital, Cash Management and Receivables Management.
Capital Budgeting: Principles and Techniques.

Module V: Analysis of Financial statements

Ratio Analysis: Meaning, Advantages, limitations, types of ratios and their usefulness Statements of charges in the Financial Position on Cash basis.

| | | | | |
|---------------------------------------|-----|-------|------|----|
| Examination Scheme: Components | CT1 | A/C/Q | Attd | EE |
| Weightage (%) | 10 | 15 | 5 | 70 |

ADVANCE TECHNOLOGIES IN COMPUTER SCIENCE

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC332 | 2 | 1 | 0 | 3 |

Course Objective

The objective is of this course to make aware the students about emerging technologies and areas in computer science viz Soft computing, Parallel computing, Pervasive computing, High performance computing and Quantum Computing.

Course Contents

Module I: Soft Computing

Introduction of soft computing, soft computing vs. hard computing, various types of soft computing techniques, applications of soft computing.

Module II: Green Computing

Introduction to Green Computing, Websites, statistics, and government initiatives, Reducing the IT footprint, Computing technology for greener transportation, smarter buildings, Major green initiatives: Sustainable IT, Green Business, Smarter Plant

Module III: Internet of Things

Introduction – Concepts behind the Internet of Things, Trends and characteristics, Technologies behind the Internet of Things, Creative thinking techniques, application areas

Module IV: Civic technology

Civic technology, Smart city, e-democracy, open data, intelligent environment

Module V: Emerging Technologies

Brief introduction to emerging technologies: Quantum Computing, Parallel Computing, Pervasive Computing, High Performance Computing, Cluster computing, cloud computing, Super Computing

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

- 0 Internet and Emerging Technologies 2nd Edition, by [FADAIRO SIKIRUA](#) (Author), [MOORNING KIM](#)
- 1 Advanced Technologies: Building in the Computer Age (The Information Technology Revolution in Architecture) Paperback – June 1, 2001 by [Valerio Travi](#)

MARKETING MANAGEMENT

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC333 | 2 | 1 | 0 | 3 |

Course Objective:

This course aims at providing the insight of the market trends and strategies in order to prepare the students for the challenges ahead.

Course Contents:

Module I: Understanding Marketing Management

Marketing Tasks, Marketing Concepts and Tools, Company Orientation towards Market Place

Building Customer Satisfaction, Value and Retention

Winning Markets: Market Oriented Strategic Planning, Corporate and Divisio Strategic Planning, Business Strategic Planning, Market Process

Module II: Analyzing Market Opportunities

Gathering Information and Measuring Market Demand: Components of Modern Marketing Information System

Scanning Marketing Environment: Demographic, Economic, Natural, Technological, Political-Legal, Social-Cultural environments.

Analyzing Consumer Markets and Buyer Behaviour: Major Factors influencing Buyer behaviour; cultural, social, personal, psychological; Buying Decision Process; Stages of Buying Decision Process

Analyzing Business Markets and Business Buying Behaviour: What is organizational buying, Participants in Business Buying Process, Purchasing-Procurement Process, Institutional and Government Markets

Dealing with Competition: Identifying Competitors, Analyzing Competitors, Designing Competitive Intelligence System, Designing Competitive Strategies

Module III: Developing Marketing Strategies

Positioning the Market Offering Through the Product Life Cycle: Differentiation Tools, Developing and Communicating Positioning Strategy, Product Life-Cycle Marketing Strategies, Market Evolution

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

0 Marketing Management, Phillip Kotler, Prentice-Hall India

ENVIRONMENTAL STUDIES

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| EVS001 | 4 | 0 | 0 | 4 |

Course Objective:

The term environment is used to describe, in the aggregate, all the external forces, influences and conditions, which affect the life, nature, behaviour and the growth, development and maturity of living organisms. At present a great number of environment issues, have grown in size and complexity day by day, threatening the survival of mankind on earth. A study of environmental studies is quite essential in all types of environmental sciences, environmental engineering and industrial management. The objective of environmental studies is to enlighten the masses about the importance of the protection and conservation of our environment and control of human activities which has an adverse effect on the environment.

Course Contents:

Module I: The multidisciplinary nature of environmental studies

Definition, scope and importance
Need for public awareness

Module II: Natural Resources

Renewable and non-renewable resources:

Natural resources and associated problems

Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.

Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

0 Role of an individual in conservation of natural resources.

1 Equitable use of resources for sustainable lifestyles.

Module III: Ecosystems

Concept of an ecosystem

Structure and function of an ecosystem

Producers, consumers and decomposers

Energy flow in the ecosystem

Ecological succession

Food chains, food webs and ecological pyramids

Introduction, types, characteristic features, structure and function of the following ecosystem:

0 Forest ecosystem

1 Grassland ecosystem

2 Desert ecosystem

3 Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

Module IV: Biodiversity and its conservation

Introduction – Definition: genetic, species and ecosystem

diversity Biogeographical classification of India

Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values

Biodiversity at global, national and local levels

India as a mega-diversity nation

Hot-spots of biodiversity

Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts

Endangered and endemic species of India

Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

Module V: Environmental Pollution

Definition

Causes, effects and control measures of:

- 0 Air pollution
- 1 Water pollution
- 2 Soil pollution
- 3 Marine pollution
- 4 Noise pollution
- 5 Thermal pollution
- 6 Nuclear pollution

Solid waste management: Causes, effects and control measures of urban and industrial wastes.

Role of an individual in prevention of pollution.

Pollution case studies.

Disaster management: floods, earthquake, cyclone and landslides.

Module VI: Social Issues and the Environment

From unsustainable to sustainable development

Urban problems and related to energy

Water conservation, rain water harvesting, watershed management

Resettlement and rehabilitation of people; its problems and concerns. Case studies.

Environmental ethics: Issues and possible solutions

Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.

Wasteland reclamation

Consumerism and waste products

Environmental Protection Act

Air (Prevention and Control of Pollution) Act

Water (Prevention and control of Pollution) Act

Wildlife Protection Act

Forest Conservation Act

Issues involved in enforcement of environmental legislation

Public awareness

Module VII: Human Population and the Environment

Population growth, variation among nations

Population explosion – Family Welfare Programmes

Environment and human health

Human Rights

Value Education

HIV / AIDS

Women and Child Welfare

Role of Information Technology in Environment and Human Health

Case Studies

Module VIII: Field Work

Visit to a local area to document environmental assets-river / forest/ grassland/ hill/ mountain.

Visit to a local polluted site – Urban / Rural / Industrial / Agricultural

Study of common plants, insects, birds

Study of simple ecosystems-pond, river, hill slopes, etc (Field work equal to 5 lecture hours)

Examination Scheme:

| Components | CT | HA | S/V/Q | A | EE |
|---------------|----|----|-------|---|----|
| Weightage (%) | 15 | 5 | 5 | 5 | 70 |

Text & References:

- 0 Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- 1 Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380 013, India, Email:mapin@icenet.net (R)

- 0 Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- 1 Clark R.S., Marine Pollution, Clarendon Press Oxford (TB)
- 2 Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p
- 3 De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- 4 Down to Earth, Centre for Science and Environment (R)
- 5 Gleick, H.P. 1993. Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
- 6 Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
- 7 Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
- 8 Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
- 9 Mckinney, M.L. & School, R.M. 1996. Environmental Science Systems & Solutions, Web enhanced edition. 639p.
- 10 Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
- 11 Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- 12 Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- 13 Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
- 14 Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
- 15 Survey of the Environment, The Hindu (M)
- 16 Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science
- 17 Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)
- 18 Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- 19 Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

COMMUNICATION SKILLS - I

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BCS301 | 1 | 0 | 0 | 1 |

Course Objective:

To form written communication strategies necessary in the workplace

Course Contents:

Module I: Introduction to Writing Skills

Effective Writing Skills
Avoiding Common Errors
Paragraph Writing
Note Taking
Writing Assignments

Module II: Letter Writing

Types
Formats

Module III

Memo
Agenda and Minutes
Notice and Circulars

Module IV: Report Writing

Purpose and Scope of a Report
Fundamental Principles of Report Writing
Project Report Writing
Summer Internship Reports

Examination Scheme:

| Components | CT1 | CT2 | CAF | V | GD | GP | A |
|---------------|-----|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 25 | 10 | 10 | 10 | 5 |

CAF – Communication Assessment File

GD – Group Discussion

GP – Group Presentation

Text & References:

- 0 Business Communication, Raman – Prakash, Oxford
- 1 Creative English for Communication, Krishnaswamy N, Macmillan
- 2 Textbook of Business Communication, Ramaswami S, Macmillan
- 3 Working in English, Jones, Cambridge
- 4 A Writer's Workbook Fourth edition, Smoke, Cambridge
- 5 Effective Writing, Withrow, Cambridge
- 6 Writing Skills, Coe/Rycroft/Ernest, Cambridge
- 7 Welcome!, Jones, Cambridge

BEHAVIOURAL SCIENCE - III

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BSS301 | 1 | 0 | 0 | 1 |

Course Objective:

This course aims at imparting an understanding of:
 Interpersonal communication and relationship.
 Strategies for healthy interpersonal relationship
 Effective management of emotions.
 Building interpersonal competence.

Course Contents:

Module I: Interpersonal Communication

Importance of Behavioural/ Interpersonal Communication
 Types – Self and Other Oriented
 Rapport Building – NLP, Communication Mode
 Steps to improve Interpersonal Communication

Module II: Interpersonal Styles

Transactional Analysis
 Life Position/Script Analysis
 Games Analysis
 Interactional and Transactional Styles
 Bridging differences in Interpersonal Relationship through TA
 Communication Styles

Module III: Conflict Management and Negotiation

Meaning and Nature of conflicts
 Styles and techniques of conflict management
 Meaning of Negotiation
 Process and Strategies of Negotiation
 Interpersonal Communication: Conflict Management and Negotiation

Module IV: Interpersonal Relationship Development

Importance of Interpersonal Relationships
 Interpersonal Relationship Skills
 Types of Interpersonal Relationships
 Relevance of Interpersonal Communication in Relationship Development

Module V: Impression Management

Meaning & Components of Impression Management
 Impression Management Techniques
 Impression Management Training-Self help and Formal approaches

Module VI: End-of-Semester Appraisal

Viva based on personal journal
 Assessment of Behavioural change as a result of training
 Exit Level Rating by Self and Observer

Examination Scheme:

| Components | SAP | A | Mid Term Test (CT) | VIVA | Journal for Success (JOS) |
|---------------|-----|----|--------------------|------|---------------------------|
| Weightage (%) | 20 | 05 | 20 | 30 | 25 |

Text & References:

- 0 Vangelist L. Anita, Mark N. Knapp, Inter Personal Communication and Human Relationships: Third Edition, Allyn and Bacon

- 0 Julia T. Wood. *Interpersonal Communication everyday encounter*
- 1 Beebe, Beebe and Redmond; *Interpersonal Communication*, 1996; Allyn and Bacon Publishers.
- 2 Rosenfeld, P., Giacalone, R.A. and Catherine, A.R. (2003). *Impression Management: Building and Enhancing Reputations at Work*. Thomson Learning, Singapore.

FRENCH - III

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLF301 | 2 | 0 | 0 | 2 |

Course Objective:

To provide the students with the know-how

To master the current social communication skills in oral and in written.

To enrich the formulations, the linguistic tools and vary the sentence construction without repetition.

Course Contents:

Module B: pp. 76 – 88 Unité 6

Module C: pp. 89 to 103 Unité 7

Contenu lexical: Unité 6: se faire plaisir

- acheter: exprimer ses choix, décrire un objet (forme, dimension, poids et matières)
payer
- parler de la nourriture, deux façons d'exprimer la quantité, commander un repas au restaurant
- 3. parler des différentes occasions de faire la fête

Unité 7: Cultiver ses relations

- 0 maîtriser les actes de la communication sociale courante (Salutations, présentations, invitations, remerciements) annoncer un événement, exprimer un souhait, remercier, s'excuser par écrit.
- 0 caractériser une personne (aspect physique et caractère)

Contenu grammatical:

- 0 accord des adjectifs qualificatifs
- 1 articles partitifs
- 2 Négations avec de, ne...rien/personne/plus
- 3 Questions avec combien, quel...
- 4 expressions de la quantité
- 0 ne...plus/toujours - encore
- 1 pronoms compléments directs et indirects
- 0 accord du participe passé (auxiliaire « avoir ») avec l'objet direct
- 1 Impératif avec un pronom complément direct ou indirect
- 2 construction avec « que » - Je crois que/ Je pense que/ Je sais que

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

- 0 le livre à suivre: Campus: Tome 1

GERMAN - III

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLG301 | 2 | 0 | 0 | 2 |

Course Objective:

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Course Contents:

Module I: Modal verbs

Modal verbs with conjugations and usage
Imparting the finer nuances of the language

Module II: Information about Germany (ongoing)

Information about Germany in the form of presentations or —Referat— neighbors, states and capitals, important cities and towns and characteristic features of the same, and also a few other topics related to Germany.

Module III: Dative case

Dative case, comparison with accusative case
Dative case with the relevant articles
Introduction to 3 different kinds of sentences – nominative, accusative and dative

Module IV: Dative personal pronouns

Nominative, accusative and dative pronouns in comparison

Module V: Dative prepositions

Dative preposition with their usage both theoretical and figurative use

Module VI: Dialogues

In the Restaurant,
At the Tourist Information Office,
A telephone conversation

Module VII: Directions

Names of the directions
Asking and telling the directions with the help of a roadmap

Module VIII: Conjunctions

To assimilate the knowledge of the conjunctions learnt indirectly so far

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

- 0 Wolfgang Hieber, Lernziel Deutsch
- 1 Hans-Heinrich Wangler, Sprachkurs Deutsch
- 2 Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- 3 P.L Aneja, Deutsch Interessant- 1, 2 & 3
- 4 Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- 5 Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

SPANISH – III

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLS301 | 2 | 0 | 0 | 2 |

Course Objective:

To enable students acquire knowledge of the Set/definite expressions (idiomatic expressions) in Spanish language and to handle some Spanish situations with ease.

Course Contents:

Module I

Revision of earlier semester modules

Set expressions (idiomatic expressions) with the verb *Tener, Poner, Ir....*

Weather

Module II

Introduction to *Gustar...* and all its forms. Revision of *Gustar* and usage of it

Module III

Translation of Spanish-English; English-Spanish. Practice sentences.

How to ask for directions (using *estar*)

Introduction to IR + A + INFINITIVE FORM OF A VERB

Module IV

Simple conversation with help of texts and vocabulary

En el restaurante

En el instituto

En el aeropuerto

Module V

Reflexives

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

- 0 Español, En Directo I A
- 1 Español Sin Fronteras -Nivel Elemental

CHINESE – III

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLC301 | 2 | 0 | 0 | 2 |

Course Objective:

Foreign words are usually imported by translating the concept into Chinese, the emphasis is on the meaning rather than the sound. But the system runs into a problem because the underlying name of personal name is often obscure so they are almost always transcribed according to their pronunciation alone. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I

Drills
Dialogue practice
Observe picture and answer the question.
Introduction of written characters.
Practice reading aloud
Practice using the language both by speaking and by taking notes.
Character writing and stroke order

Module II

Measure words
Position words e.g. inside, outside, middle, in front, behind, top, bottom, side, left, right, straight.
Directional words – beibian, xibian, nanbian, dongbian, zhongjian.
Our school and its different building locations.
What game do you like?
Difference between —hiill and —nengll, —keyill.

Module III

Changing affirmative sentences to negative ones and vice versa
Human body parts.
Not feeling well words e.g.; fever, cold, stomach ache, head ache.
Use of the modal particle —lell
Making a telephone call
Use of —jiull and —call (Grammar portion)
Automobiles e.g. Bus, train, boat, car, bike etc.
Traveling, by train, by airplane, by bus, on the bike, by boat..etc.

Module IV

The ordinal number —dill
—Meill the demonstrative pronoun e.g. meitian, meinian etc.
use of to enter to exit
Structural particle —del (Compliment of degree).
Going to the Park.
Description about class schedule during a week in school.
Grammar use of —lill and —congll.
Comprehension reading followed by questions.

Module V

Persuasion-Please don't smoke.
Please speak slowly
Praise – This pictorial is very beautiful
Opposites e.g. Clean-Dirty, Little-More, Old-New, Young-Old, Easy-Difficult, Boy-Girl, Black-White, Big-Small, Slow-Fast ... etc.
Talking about studies and classmates
Use of —it doesn't matterll
Enquiring about a student, description about study method.

Grammar: Negation of a sentence with a verbal predicate.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|------------|------------|----------|----------|----------|----------|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

0 —Elementary Chinese Reader Part I, Part-2|| Lesson 21-30

COMPUTER ORIENTED NUMERICAL METHODS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC401 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this course is to provide conceptual understanding of various numerical methods, in particular, with reference to numerical solution of non linear equations and system of linear equations, interpolation, numerical differentiation and integration and numerical solution of ordinary differential equations. Important theorems and different formulae for various numerical methods to be covered with an aim of helping the students to understand the fundamentals, concepts and practical use of these methods in the field of computer sciences and applications.

Course Contents:

Module I: Numeric Computation and Numerical Solutions of Algebraic and Transcendental Equations

Computer Arithmetic- Floating point numbers-operations, Normalization and their Consequences, Absolute, Relative and Percent Error.

Solution of Algebraic and Transcendental Equations using Iterative Methods- Zeros of a single Transcendental equations and Zeros of Polynomial Equations using Bisection, False Position, Newton-Raphson Methods, Convergence of Solution.

Module II: Solutions of system of Simultaneous Linear Equations

Solution of Simultaneous Linear Equations. Direct Methods:- Gauss elimination method, Pivoting variable, Gauss-Jordan Method. Eigen values and Eigen vectors.

Iterative methods:-Jacobi's Methods, Gauss-Seidal Method.

Module III: Polynomial Interpolation

Newtons divided difference, Forward and backward difference Formulae, Difference Tables, Lagrange's Method.

Module IV: Numerical Differentiation and Integration

Formula for first and second order derivatives using newton's- Forward and Backward formula.

Numerical Integration, Newton- Trapezoidal rule, Simpson's 1/3rd rule, Simpson's 3/8th rule, Cotes Formula

Module V: Numerical Solution of Differential Equations

Basic Terminology of Differential Equations, Picard's Method, Euler's method, Taylor's Series method, Runge-Kutta Methods, Predictor –Connector Method.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 Jain M.K, Jain R.K and Iyenger, Numerical Methods for Scientific and Engineering Applications.

References:

- 0 Rajaraman V, Computer Oriented Numerical Methods.
- 1 Krishnamuty, E.V., Sen, S.K, Computer Based Numerical Algorithms.
- 2 Stoer, Bullrich, Computer Oriented Numerical Methods.

SOFTWARE ENGINEERING

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC402 | 2 | 1 | 0 | 3 |

Course Objective:

The purpose of this course is to acquaint students with the concepts and methods available for software development in industrial environments. Students will be exposed to a variety of topics such as design notations, costing techniques, and testing methods, as well as to the tools which are available to support software specification, design, testing, and maintenance.

Course Contents:

Module I: Software Development Life Cycle

Evolution of Software Engineering, Software Problems, Issues Involved in Software Engineering, Fundamental Qualities of a Software Product, Approaches to Software Engineering, Planning the development Process, Development/Product Life-Cycle Model, Kinds of Software Life-Cycle Model.

Module II: Project Management

Project Management Concepts, Project Management Activities, Size Metrics. Software Requirement analysis and Specification, Cost Models.

Module III: System Design

Design Objectives, Design Principles, Effective Modular Design (Functional Independence, Coupling, and Cohesion), Design Tools and Techniques, Prototyping, Structured Programming.

Module IV: Coding

Programming Practices, Verification, Monitoring and Control.

Module V: Software Testing

Testing Fundamentals, Test case design, Functional Testing, Structural Testing, Test Plan, Activities during testing, Unit System, Integration Testing, Software Maintenance.

Module VI: Software Reliability

Concept of Software Reliability, Software Repair and Availability, Software Errors, Failure and Faults.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 Software Engineering, A Practitioner's Approach - Roger S. Pressman.

References:

- 0 An Integrated Approach to Software Engineering, PankajJalote.
- 1 Software Engineering Concepts, Richard Fairley.

COMPUTER GRAPHICS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC403 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this course is to present the basic principles for the design, use and understanding of computer graphics systems. Both hardware and software components of graphics systems are discussed here. This course also teaches the students about different algorithms for creating and manipulating graphics displays. Varieties of mathematical methods are used in various computer graphics algorithm.

Course Contents:

Module I: Introduction of Graphics

Development of Computer Graphics, Basic Graphics System and Standards.

Graphics Devices:

Raster and Random Scan Devices, Continual Refresh and Storage Displays, Display Processor, Color Display Techniques, Frame Buffer, Concepts in Raster Graphics.

Module II: Graphics Primitives

Points, Pixels, Scan Conversion, Line Drawing Algorithms, Circle Drawing Algorithms, Anti-aliasing Technique, Character generator

Polygon

Polygon representation, Polygon Filling, Inside/Outside Testing

Module III: Transformation

Scaling, Translation, Rotation, Coordinate Axis Rotation, Reflection, Shears, Composite Transformation, Modeling and Coordinate Transformation

Viewing: Two – Dimensional Viewing, Viewing transformation, Interactive Picture Construction

Techniques, Interactive Input/Output Devices,

Module IV: Segment

Segment Table, Creating Deleting and Renaming a Segment, Visibility and Image Transformation

Windowing and Clipping: Window, View-port, Line clipping, polygon clipping, Multiple Windowing

Module V: Three Dimensional Concepts

3-D Representation and Transformation, 3-D Viewing, Algorithm for 3-D Volumes, Introduction to Spline Curves and Surfaces

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|----------------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

- 0 Computer Graphics By Donald Hearn And Pauline Baker
- 1 Harrington's —Computer Graphics — A Programming Approach

References:

- 0 Principle of Interactive Computer Graphics By New, W. M. And Spraul
- 1 Foley —Computer Graphics|| Addison Wesley
- 2 Rogers' —Procedural Elements Of Computer Graphics — Mc-Grawhill

DESIGN & ANALYSIS OF ALGORITHMS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC404 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of the course is to provide the fundamentals and the concepts of Design & analysis of Algorithms including Mathematical foundations, Sorting & Order Statistics, Data Structures, Advanced Design & Analysis techniques such as Divide & Conquer, greedy method & Dynamic Programming approaches.

Course Contents:

Module I: Introduction

Algorithms, Analyzing algorithms, Designing algorithms.

Mathematical Foundations: Growth of Functions-Asymptotic notation, Recurrence The substitution Method, Recursion tree method, Master Method.

Module II: Sorting and Order statistics

Divide & Conquer Strategy, Heap Sort, Quick Sort, V. stressen Matrix Multiplication, Sorting in Linear time.

Data Structures: Elementary data structures, hash tables, Binary search trees.

Module III: Advanced Design and Analysis Techniques

Dynamic programming- Elements of

dynamic programming, Chain-matrix multiplication, All pair shortest path (Flayed -algorithm),

Optimal Binary Search. Tree.

Greedy algorithms- Elements of the greedy strategy, Huffman codes, Single-source shortest path in a directed graph, Knapsack problem, Minimum Spanning trees- The Algorithm of Kruskals and Prims.

Module IV: Graph Algorithms

Elementary graphs Algorithms, Minimum spanning Trees, Single source Shortest paths, All Pair Shortest Paths.

Selected Topics: Sorting Networks, Algorithms for Parallel Computers.

Module V

Polynomials and tile FFT, String Matching, NP-Completeness, Approximation Algorithms.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|----------------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 Coreman, Rivest, Lisserson, "Algorithms", PHI

References:

0 Horowitz & Sahni, "Fundamental of Computer Algorithm", Galgotia. Aho, Hopcroft, Ullman,

1 Data Structure & Algorithm", Addison Wesley.

OPERATING SYSTEMS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC405 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this course is to provide a clear description of the concepts that underlie operating systems. It tells about fundamental concepts that are applicable to a variety of systems. We present a large number of examples that pertains particularly to UNIX and to other popular operating systems. This course basically revolves around process, and it tells about every thing about a process.

Course Contents:

Module I: Operating System as a Resource Manager

Operating System Classifications
Monitor, Multiprogramming, Time Sharing, Real Time Systems,
Multiprocessor Systems and Operating System Services.

Module II: CPU Scheduling

Basic Scheduling Concepts, Process Overviews, Process States, Multiprogramming,
Scheduler and Scheduling Algorithms, Multiple Processor Scheduling

Module III: Memory Management

Bare Machine, Resident Monitor, Partition, Paging and Segmentation, Virtual Memory and Demand Paging,
Replacement Policies, Cache Memory

Module IV: File Systems

File Support, Access Methods
Allocation Methods- Contiguous Linked and Index Allocation

Directory Systems

Single Level, Tree Structured, Acyclic Graph and General Graph Directory, File Protection

Deadlock

Deadlock Characterization, Deadlock Prevention, Deadlock Avoidance and Deadlock Recovery

Module V: Security and Protection

Security Policies and Mechanism
Protection and Access Control-Access Matrix Model of Protection, Access Hierarchies, Access List, Capabilities

Overview of Unix Operating System

Command-Language User's View of Unix, Implementation of Unix, Unix Summary Etc.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd. | EE |
|----------------------|-----|-------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 Peterson And Silberschatz, Operating System Concepts

References:

- 0 Tannenbaum A.S., Modern Operating System
- 1 CrowleyCharrles, Operating System- A design Approach
- 2 Dietel H.M., Operating Systems

OPTIMIZATION TECHNIQUES

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC406 | 3 | 1 | 0 | 4 |

Course Objective:

Students will learn the tools and techniques of quantitative analysis outlined in the schedule, how and when to apply them, and practice application of those tools. Students completing this goal will be prepared to quantify a variety of policy problems for analysis and decision making. The syllabus includes Linear, Non-linear Programming, Transportation, Decision Theory and Project Management.

Course Contents:

Module I: Introduction

Basic Definition, Nature and Significance of OR, feature of OR Approach Application and Scope of OR, General Methods for Solving Or Models

Module II: Linear Programming

General Structure of Linear Programming, Advantages and Limitations of Linear Programming, Application Areas of Linear Programming.

Module III: Type of Linear Programming Solutions

Multiple Solution, Unbounded Solutions, Infeasible Solution

Module IV: Simplex Method

Maximization and Minimization Problem, two Phase Method, Big M Method

Module V: Duality in LPP

Dual Linear Programming Problem, Rules for Constructing the Dual from Primal, Feature of Duality

Module VI: Transportation Problem

Mathematical Model of Transportation Problem, Transportation Method, North West Corner Method, Linear Cost Method, Vogel's Approximation Method, Unbalanced Supply and Demand, Degeneracy Problem, Alternative Optional Solution, Maximization Transportation Problem, Trans-shipment Problem

Module VII: Decision Theory & Decision Tree

Steps in DT Approach, types of Decision Making Environments, Criterion of Optimism and Pessimism, Equally Likely Decision Criterion, Decision Making under Risk, Decision Tree Analysis.

Module VIII: Theory of Games

Two Person Zero-Sum Games, Pure Strategies, Game with Saddle Point, Games without Saddle Point, Rule of Dominance, Methods for Solving Problems without Saddle Point.

Module IX: Project Management

Basic Idea of PERT & CRM, Difference between PERT & CPM, PERT/CPM Network Components and Precedence Relationship Critical Path Analysis, Project Scheduling, Project Time-Cost, Trade-Off, Resource Allocation.

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|----------------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 Operations Research, J K Sharma, Macmillan Publication

References:

0 Operations Research, H. A. Taha

1 Operations Research, Kanti Swaroop, Macmillan Publication

COMPUTER GRAPHICS LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC420 | 0 | 0 | 2 | 1 |

List of Computer Graphics Programmes

- 0 Write a program to change the working mode from text to graphics and plot a pixel.
- 1 Write a program to draw a line of same dimension in three different graphics mode.
- 2 Write a program to display line, rectangle, circle and polyline using graphics command.
- 3 Write a program to draw a line of slope between 0 and 1 using DDA algorithm.
- 4 Write a program to draw a line of slope between 1 and ∞ using DDA algorithm.
- 5 Write a program to draw a line of slope between 0 and 1 using midpoint algorithm.
- 6 Write a program to draw a line of slope between 1 and ∞ using midpoint algorithm
- 7 Write a program to draw a dashed line of slope 1 using any line algorithm
- 8 Write a program to draw a dotted line of slope 1 using DDA algorithm
- 9 Write a program to draw a line of slope between 0 and -1 using midpoint algorithm.
- 10 Write a program to draw a line of slope between -1 and $-\infty$ using midpoint algorithm.
- 11 Write a program to draw an octant of a circle with it's center at point (0,0) a using midpoint circle drawing.
- 12 Write a program to draw a circle with its center at point (0, 0) and radius r using midpoint circle drawing.
- 13 Write a program to draw an octant of a circle with it's center at point (a, b) and radius r using midpoint circle drawing.
- 14 Write a program to a circle with it's center at point (a, b) and radius r using midpoint circle drawing.
- 15 Write a program to fill a polygon using flood-fill method.
- 16 Write a program to fill a polygon using boundary-fill method.
- 17 Write a program to reflect a point in X and Y-axis both.
- 18 Write a program to rotate a point (100, 50) about origin in anti-clock wise direction.
- 19 Write a program to rotate a point (100,150) about point (30, 40) in clock wise direction..

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

INTRODUCING ROUTING AND SWITCHING IN THE ENTERPRISE

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC430 | 2 | 1 | 0 | 3 |

Course Objective:

This course focuses networking in enterprise network, switching in enterprise network, addressing in enterprise network, routing & distance vector and link state protocol, and Trouble shooting an enterprise network.

Course Contents:

Module I: Networking in the Enterprise

Describing the Enterprise Network, Identifying Enterprise Applications

Module II: Exploring the Enterprise Network Infrastructure

Describing the Current Network, Supporting the Enterprise Edge, Reviewing Cisco Routing and Switching

Module III: Switching in an Enterprise Network

Describing Enterprise Level Switching, Preventing Switching Loops, Configuring VLANs, Trunking and Inter-VLAN Routing, Maintaining VLANs on an Enterprise Network

Module IV: Addressing in an Enterprise Network

Using a Hierarchical IP Network Address Scheme, Using VLSM, Using Classless Routing and CIDR, Using NAT and PAT

Module V: Routing with a Distance Vector Protocol

Managing Enterprise Networks, Routing Using the RIP Protocol, Routing Using the EIGRP Protocol, Implementing EIGRP

Module VI: Routing with a Link-State Protocol

Routing Using the OSPF Protocol, Implementing Single-Area OSPF, Using Multiple Routing Protocols

Module VII: Implementing Enterprise WAN Links

Connecting the Enterprise WAN, Comparing Common WAN Encapsulations
Using Frame Relay

Module VIII: Filtering Traffic Using Access Control Lists

Using Access Control Lists, Using a Wildcard Mask, Configuring Access Control Lists, Permitting and Denying Specific Types of Traffic, Filtering Traffic Using Access Control Lists

Module IX: Troubleshooting an Enterprise Network

Understanding the Impact of Network Failure, Troubleshooting Switching and Connectivity Issues, Troubleshooting Routing Issues, Troubleshooting WAN Configurations, Troubleshooting Access Control List Issues

Examination Scheme:

| Components | CT1 | A/C/Q | ATTD. | EE |
|---------------|-----|-------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 CCNA-Discovery 4.0, module 3, Cisco Certified Networking Academy

References:

- 0 Data Communication and Computer Network, Forozoun, TMH Publication
- 1 Data Communication and Network, Stallings, PHI
- 2 Computer Network, Tanenbaum, PHI

INTRODUCTION TO OPEN SOURCE TECHNOLOGIES (PHP, MySql)

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC431 | 2 | 1 | 0 | 3 |

Course Objective:

This course is aimed to provide a fundamental understanding of dynamic web site creation. PHP is the language used for development of most common web sites. Syllabus includes basic and advanced features of PHP which includes detailed introduction of PHP and MYSQL, Arrays, Loops and variables etc. It also gives an overview open source framework like JOOMLA, ZEND etc...

Course Contents:

Module I: Introduction to PHP programming

Introduction to PHP, installation and configuration, Variables, String functions, Numeric functions

Module II: Operator, Loops and Array

Operators, Conditions, Loops, Array, Multidimensional Array, Associative array

Module III: Classes and Functions

Classes, Regular Expr, Working with Datetime, code re-use, require (), include(), and the include_path; filesystem functions, and file input and output; file uploads; error handling and logging; sending mail,

Module IV: Working with database

MYSQL, Introducing MySQL; database design concepts; the Structured Query, Language (SQL); communicating with a MySQL backend via the PHP, MySQL API Building Database Applications,

Module V: Working with Frameworks

Working with Wordpress, Mambo, Joomla, OS Commerce, Zend Framework, Drupal

Examination Scheme:

| Components | CT1 | A/C/Q | ATTD. | EE |
|---------------|-----|-------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

- 0 Beginning PHP, Apache, MySQL Web Development
- 1 Michael K. Glass, Yann Le Scouarnec, Elizabeth Naramore, Gary Mailer, Jeremy Stolz, Jason Gerner

References:

- 0 PHP Manual.

PROGRAMMING IN VISUAL BASIC

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC432 | 2 | 1 | 0 | 3 |

Course Objective:

This course is aimed to provide a fundamental understanding of Visual Programming Environment for the students in their early stages of academic career. Various concepts regarding GUI such as Manipulating GUI Tools like Command Buttons, Checkboxes, Combo boxes, etc. through Programming in a Visual Environment will be introduced for students to develop a Healthy Programming attitude towards new and emerging Technologies in the field of Visual Programming. After this course, you will be able to understand fundamental concepts of Visual Programming and development of various GUI applications.

Course Contents:

Module I: Introduction to Visual Basic

Introduction, CUI, GUI, Why Visual Programming, Different Visual Programming Languages, Initial Screens, Different applications, Starting a new project, MDI and SDI, Variables and constants, Data Types, Scope of variables, Operators, Forms, Basic Controls (Text box, Labels, Command buttons, Image Control, Picture box), Properties, Methods and Events, Message Box, Input Box

Module II: Controlling Program Flow

Determinate and Indeterminate Loops, Making Decisions, Select Case, Nested If-Then, Go to.

Module III: Some More Controls

Option Button, Check Boxes, List and Combo and Boxes, Timers, Scroll bars.

Module IV: Arrays, Function and Procedure

Arrays, Control arrays, Sub procedure, Functions, Built in functions.

Module V: Menus and dialog boxes

Menus, Toolbars, Image list control, Status bar control.

Module VI: Additional Controls

File List Box, Directory List Box, Drive List Box.

Module VII: File Handling

File Commands, Sequential Files, Random Access Files, Binary Files.

Module VIII: Introduction to Database handling

Introduction, Database access methods, DAO, ADO, RDO, Database handling through ADO, SQL.

Examination Scheme:

| Components | CT1 | A/C/Q | ATTD. | EE |
|---------------|-----|-------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

- 0 Petroutsos, Evangelos. *Mastering Microsoft Visual Basic 2010*. John Wiley & Sons, 2010.
- 1 Sheldon, B., Hollis, B., Sharkey, K., Marbutt, J., Windsor, R., & Hillar, G. C. (2010). *Professional visual basic 2010 and .net 4*. John Wiley & Sons.

Reference Books:

- 0 Randolph, N., Gardner, D., Anderson, C., & Minutillo, M. (2010). *Professional visual studio 2010*. John Wiley & Sons.

INTRODUCING ROUTING AND SWITCHING IN THE ENTERPRISE LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC421 | 0 | 0 | 2 | 1 |

Course Contents:

- 0 Application of Cisco Router and Switches in Enterprise Network with example design.
- 1 Enterprise level Switching techniques.
- 2 Creating LAN with swich and preventing loops with example.
- 3 Creating ,Managing and deleting different VLAN.
- 4 Creating Trunking and Intr-VLAN Routing.
- 5 Use of VLSM and CIDR for Hierarchical IP Network Address Scheme with some example scenario.
- 6 Configuration of NAT and PAT in router.
- 7 Configuring router with RIP Protocol.
- 8 Configuring router with EIGRP Protocol.
- 9 Configuration of ACL in router and use of Wildcard Mask.
- 10 Configuring router as gateway for traffic filtering with example scenario.
- 11 Troubleshooting Switching, Routing, WAN and ACL issues.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

INTRODUCTION TO OPEN SOURCE TECHNOLOGIES (PHP, MySql) LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC422 | 0 | 0 | 2 | 1 |

Course Contents:

- 0 Write the process of installation of web server.
- 1 Write programs to print all details of your php sever. Use phpinfo().
- 2 Write a program to give demo of ECHO and PRINT command.
- 3 Write a program sort ten number by using array.
- 4 Create a database in MySql and connect that database from PHP.
- 5 Write a program to Update, insert and delete the values of table in Question No – 9 database.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

PROGRAMMING IN VISUAL BASIC LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC423 | 0 | 0 | 2 | 1 |

Course Contents:

- 0 Write a program to calculate simple interest.
- 1 Write a program to calculate factorial of a given number.
- 2 Create a project for book sales. Make text boxes for quantity, title and price with labels. Calculate total price, discount (15%) and discounted price. Make command buttons for calculate, clear and exit.
- 3 Create a project for the local car rental agency that calculates rental charges. The agency charge \$15 per day + \$0.50 per km. use text boxes for customer name, address, city, state, zip code, beginning and ending audiometer reading and no. of days the car was used. Use labels to display the miles given and the total charges. Make command buttons for clear, exit and calculate.
- 4 Create a project that will input an employee salary. Calculate a gross salary, deduction and net salary. Each employee will receive a basic pay of \$900 + sales commission of 6% of sales. After calculating the net paid calculate the budget amount of each category based on the % given.

| | |
|------------|------------------------|
| Bank pays | \$900 |
| Commission | 6% of sales |
| Gross pay | Basic pay + Commission |
| Deduction | 18% of gross pay |
| Net pay | Gross pay - deduction |

Budeget:-

| | |
|-------------------|----------------|
| Housing | 30% of net pay |
| Food and clothing | 15% of net pay |
| Entertainment | 50% of net pay |
| Miscellaneous | 5% of net pay |

Use text boxes to input the employee name, amount of sales. Use labels to display the result and the calculation. Use calculates, clear and exit command buttons.

- 0 Write a program to create login form.
- 1 Create a project that contains a form for entering book information from controls.
 - 0 Text boxes for author and title.
 - 1 Option button for type fiction or non-fiction.
 - 2 Dropdown list for subject that will include bestseller, fantasy, religion, romance, humor, science fiction, business, philosophy, education, self-help and mystery.
 - 3 List box for shelf no. containing RC-111, RC-112, RC-113, and RC-114.
 - 4 Use command buttons display, clear and exit.
 - 5 Use labels to display information.
- 2 Create a list box, which contains names of all cinema halls of NCR. If you choose name of cinema hall, label display information regarding all movies running in the cinema halls.
- 3 Create a project that contains student's information
 - 0 Text boxes to display name and courses.
 - 1 Option buttons for semester/ year.
 - 2 Use list boxes for computers, business, humanities, Commerce, medical and engineering.
 - 3 A simple combo for name of college.
 - 4 Display information on a label.
 - 5 Make command buttons for display, clear and exit.
- 4 Write a program to check whether the number is even or odd.
- 5 Write a program, using recursive function to calculate Nth Fibonacci number.
- 6 Write a program, using recursive function to generate Fibonacci Series.
- 7 Write a program, using recursive function to calculate Power of a number.
- 8 Write a program, using recursive function to calculate GCD of a number.
- 9 Write a program, using recursive function for Tower of Hanoi, showing all the steps in a list box.
- 10 Write a program to division of two numbers. Also shows divide by zero error.

- 0 Write a program, to check whether a given number is prime number or not.
- 1 Write a program to generate first 10 prime numbers.
- 2 Write a program, to check whether a given string is palindrome or not.
- 3 Write a program to enter elements of an array in list box and update them by incrementing or decrementing them by 10 and store the results in other list.
- 4 Write a program to search an element in an array, using Linear Search.
- 5 Write a program to search an element in an array, using Binary Search.
- 6 Write a program to find out the no. of character, words and blank spaces in the given string.
- 7 Write a program to concatenate two strings.
- 8 Write a program to check whether the given string is in upper case or lower case and also convert it's case.
- 9 Write a program to calculate the sum of the digits of a given no. and also reverse the no.
- 10 Write a program to create a Pop Up Menu.
28. Design a project that has multiple forms, such that form1 is welcome form, form2 Contains personal details and form3 contains professional information and form4 display both personal as well as professional information of a employee.
- 0 Design a project for a MDI application, such that child1 contains no menu and child2 contains menu. With this demonstrate working of an MDI form.
- 1 Create a project that maintains a Publisher table in a Library database, having fields' pub id, name, company name, address, city, telephone. Allow Adds and Deletes to the database. Include command buttons for navigation.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

COMMUNICATION SKILLS - II

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BCS401 | 1 | 0 | 0 | 1 |

Course Objective:

To teach the participants strategies for improving academic reading and writing. Emphasis is placed on increasing fluency, deepening vocabulary, and refining academic language proficiency.

Course Contents:

Module I: Social Communication Skills

Small Talk
Conversational English
Appropriateness
Building rapport

Module II: Context Based Speaking

In general situations
In specific professional situations
Discussion and associated vocabulary
Simulations/Role Play

Module III: Professional Skills

Presentations
Negotiations
Meetings
Telephony Skills

Examination Scheme:

| Components | CT1 | CT2 | CAF | V | GD | GP | A |
|---------------|-----|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 25 | 10 | 10 | 10 | 5 |

CAF – Communication Assessment File

GD – Group Discussion

GP – Group Presentation

Text & References:

- 0 Essential Telephoning in English, Garside/Garside, Cambridge
- 1 Working in English, Jones, Cambridge
- 2 Business Communication, Raman –Prakash, Oxford
- 3 Speaking Personally, Porter-Ladousse, Cambridge
- 4 Speaking Effectively, Jermy Comfort, et.al, Cambridge
- 5 Business Communication, Raman –Prakash, Oxford

BEHAVIOURAL SCIENCE - IV

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BSS401 | 1 | 0 | 0 | 1 |

Course Objective:

To inculcate an elementary level of understanding of group/team functions To develop team-spirit and to know the importance of working in teams

Course Contents:

Module I: Group formation

Definition and Characteristics
Importance of groups
Classification of groups
Stages of group formation
Benefits of group formation

Module II: Group Functions

External Conditions affecting group functioning: Authority, Structure, Org. Resources, Organizational policies etc.
Internal conditions affecting group functioning: Roles, Norms, Conformity, Status, Cohesiveness, Size, Inter group conflict.
Group Cohesiveness and Group Conflict
Adjustment in Groups

Module III: Teams

Meaning and nature of teams
External and internal factors effecting team
Building Effective Teams
Consensus Building
Collaboration

Module IV: Leadership

Meaning, Nature and Functions
Self leadership
Leadership styles in organization
Leadership in Teams

Module V: Power to empower: Individual and Teams

Meaning and Nature
Types of power
Relevance in organization and Society

Module VI: End-of-Semester Appraisal

Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

| Components | SAP | A | Mid Term Test (CT) | VIVA | Journal for Success (JOS) |
|---------------|-----|----|--------------------|------|---------------------------|
| Weightage (%) | 20 | 05 | 20 | 30 | 25 |

Text & References:

- 0 Organizational Behaviour, Davis, K.
- 1 Hoover, Judhith D. Effective Small Group and Team Communication, 2002, Harcourt College Publishers
- 2 Dick, McCann & Margerison, Charles: Team Management, 1992 Edition, viva books
- 3 LaFasto and Larson: When Teams Work Best, 2001, Response Books (Sage), New Delhi
- 0 Smither Robert D.; The Psychology of Work and Human Performance, 1994, Harper Collins College Publishers 90

FRENCH - V

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLF401 | 2 | 0 | 0 | 2 |

Course Objective:

To enable students:

- 0 To develop strategies of comprehension of texts of different origin
- 1 To present facts, projects, plans with precision

Course Contents:

Module C: pp. 104 – 139: Unités 8,9

Contenu lexical: Unité 8: Découvrir le passé

- 0 parler du passé, des habitudes et des changements.
- 1 parler de la famille, raconter une suite d'événements/préciser leur date et leur durée.
- 2 connaître quelques moments de l'histoire

Unité 9: Entreprendre

- 0 faire un projet de la réalisation: (exprimer un besoin, préciser les étapes d'une réalisation)
- 1 parler d'une entreprise
- 2 parler du futur

Contenu grammatical:

- 1. Imparfait
- 0 Pronom « en »
- 1 Futur
- 2 Discours rapporté au présent
- 3 Passé récent
- 4 Présent progressif

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

0 le livre à suivre: Campus: Tome 1

GERMAN - IV

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLG401 | 2 | 0 | 0 | 2 |

Course Objective:

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany.

Introduction to Advanced Grammar Language and Professional Jargon

Course Contents:

Module I: Present perfect tense

Present perfect tense, usage and applicability

Usage of this tense to indicate near past

Universal applicability of this tense in German

Module II: Letter writing

To acquaint the students with the form of writing informal letters.

Module III: Interchanging prepositions

Usage of prepositions with both accusative and dative cases

Usage of verbs fixed with prepositions

Emphasizing on the action and position factor

Module IV: Past tense

Introduction to simple past tense

Learning the verb forms in past tense

Making a list of all verbs in the past tense and the participle forms

Module V: Reading a Fairy Tale

Comprehension and narration

☐ Rotkäppchen

☐ Froschprinzessin

☐ Die Fremdsprache

Module VI: Genitive case

Genitive case – Explain the concept of possession in genitive

Mentioning the structure of weak nouns

Module VII: Genitive prepositions

Discuss the genitive prepositions and their usage: (während, wegen, statt, trotz)

Module VIII: Picture Description

Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;

Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation, I – Interaction/Conversation Practice

Text & References:

0 Wolfgang Hieber, Lernziel Deutsch

1 Hans-Heinrich Wangler, Sprachkurs Deutsch

- 0 Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- 1 P.L Aneja, Deutsch Interessant- 1, 2 & 3
- 2 Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- 3 Braun, Nieder, Schmoe, Deutsch als Fremdsprache 1A, Grundkurs

SPANISH - IV

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLS401 | 2 | 0 | 0 | 2 |

Course Objective:

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

Course Contents:

Module I

Revision of earlier semester modules
Introduction to Present Continuous Tense (Gerunds)

Module II

Translation with Present Continuous Tense
Introduction to Gustar, Parecer, Apetecer, doler

Module III

Imperatives (positive and negative commands of regular verbs)

Module IV

Commercial/business vocabulary

Module V

Simple conversation with help of texts and vocabulary
En la recepciondelhotel
En el restaurante
En la agencia de viajes
En la tienda/supermercado

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

0 Español Sin Fronteras (Nivel – Elemental)

CHINESE – IV

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLC401 | 2 | 0 | 0 | 2 |

Course Objective:

How many characters are there? The early Qing dynasty dictionary included nearly 50,000 characters the vast majority of which were rare accumulated characters over the centuries. An educate person in China can probably recognize around 6000 characters. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I

Dialogue Practice
 Observe picture and answer the question
 Pronunciation and intonation
 Character writing and stroke order.
 Electronic items

Module II

Traveling – The Scenery is very beautiful
 Weather and climate
 Grammar question with – —bushi Ma?||
 The construction —yao ... le|| (Used to indicate that an action is going to take place)
 Time words —yiqian||, —yiwai|| (Before and after).
 The adverb —geng||.

Module III

Going to a friend house for a visit meeting his family and talking about their customs.
 Fallen sick and going to the Doctor, the doctor examines, takes temperature and writes prescription.
 Aspect particle —guo|| shows that an action has happened some time in the past.
 Progressive aspect of an actin —zhengzai|| Also the use if —zhe|| with it.
 To welcome someone and to see off someone I cant go the airport to see you off... etc.

Module IV

Shipment. Is this the place to checking luggage?
 Basic dialogue on – Where do u work?
 Basic dialogue on – This is my address
 Basic dialogue on – I understand Chinese
 Basic dialogue on – What job do u do?
 Basic dialogue on – What time is it now?

Module V

Basic dialogue on – What day (date) is it today?
 Basic dialogue on – What is the weather like here.
 Basic dialogue on – Do u like Chinese food?
 Basic dialogue on – I am planning to go to China.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

Text & References:

0 —Elementary Chinese Reader, Part-2|| Lesson 31-38

JAVA PROGRAMMING

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC501 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of the course is to give proficiency in developing applications and applets in Java, in-depth knowledge of object oriented concepts, developing GUI applications in Java, creation of packages, Event Handling, Layout Manager, SWING and String handling in Java

Course Contents:

Module I: Introduction

Concepts of OOP, Features of Java, How Java is different from C++, Data types, Control Statements, identifiers, arrays, operators. Variables, Applications and Applets

Module II: Java Programming

Classes and methods, Constructor, Types of constructor, method overloading

Inheritance: Single Inheritance, Multilevel hierarchy, method overriding, Abstract classes, Interface, Final classes, Garbage Collection, String classes

Module III: AWT and Event Handling

Introduction to AWT, Layout Manager, Event handling Mechanism, Event Model, Event Classes, Sources of Events, Event Listener Interfaces

AWT: Working with Windows, AWT Controls

Html basic tags, Applet Classes, Graphics,

Module IV: Exception Handling and Multithreading

Exception handling, fundamentals exception types, uncaught exceptions, throws, throw, try and catch, final, built in exception, creating your own exception

Multithreading fundamentals, Creating, Implementing and Extending thread, thread priorities, synchronization suspending, resuming and stopping Threads

Module V: Java Packages

Package creation, Additional Packages, Input Output Exploring java.io, Swing classes and controls, Advantages of Swing over AWT.

Examination Scheme:

| Components | CT1 | PR. | ATTD. | EE |
|---------------|-----|-----|-------|----|
| Weightage (%) | 10 | 15 | 5 | 70 |

Text & References:

Text:

0 Naughton, Schidt —The Complete Reference JAVA 2 — TMH

References:

- 0 Balaguruswamy —Programming in JAVA
- 1 Comer —Computer Networks & Internet
- 2 Deitel&Deitel —Java™ How to Program, 6/E
- 3 Frouzan —Data communications and Networking
- 4 Gary Cornell —Core Javal The Sun Micro Systems Series

SYSTEMS SOFTWARE

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC502 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this course is to expose the student to the fundamentals of System Software. The topics include design and implementation of various system software's such as assembler, compiler, macro processors, Loaders, Linkers and operating systems. Also included is brief overview of software program development tools like editors, debug monitors and database management systems.

Course Contents:

Module I

System Software and Machine Architecture, Evolution of the components of a programming System-Assemblers, Loaders, Macros, Compilers and Formal Systems.

Assemblers-basic assembler functions, Machine-Dependent Assembler Functions, Machine-Independent Assembler Functions, Design of Two Pass Assembler. Implementation Examples-SPARC.

Module II

Macros & Macro Processors-Macro Instructions, Macro calls and Expansion, Machine-Independent Macro Processor Features, Macro Processor Design Options, Implementation-A two pass algorithm, Implementation Examples-ANSI C Macro Processor

Module III

Loaders & Linkers, Basic Loader Functions, Machine-Dependent Loader Features, Machine-Independent Loader Features, Compile & Go-Loaders, General Loader Scheme, Absolute Loaders, Self- Relocating Loaders, Direct-Linking Loaders, Binders, Overlays, Dynamic Linking, Bootstrap Loaders, Design of Direct Linking Loader, Implementation Examples-MS-DOS Linker.

Module IV

Compilers, Basic Compiler Functions, Machine-Dependent Compiler Features, Machine-Independent Features, Compiler Design Options-Division into passes, Interpreters, P-code Compilers, Compilers-Compilers, Implementation Example-YACC Compiler-Compiler.

Module V

Basic Operating System Functions, Machine-Dependent Operating System Features, Machine-Independent Operating System Features, Types of Operating System, Implementation Example-Unix. Software Tools for Program Development, Editors, Debug Monitors, User Interfaces, and Database Management Systems-basic concepts, levels of data description, use of DBMS.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 10 | 15 | 5 | 70 |

Text & References:

Text:

0 Leland L. Beck, System Software-An Introduction to Systems Programming, Addison Wesley.

References:

0 D.M. Dhamdhare,, Systems Programming & Operating Systems, McGraw Hill

1 John J. Donovan, Systems Programming, McGraw Hill.

GRAPH THEORY & COMBINATORICS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC503 | 2 | 1 | 0 | 3 |

Course Objective:

We will study basic concepts in combinatorial graph theory and see how graphs serve as models for many standard problems, which have applications in science, business and industry. Syllabus includes mathematical logic, algebraic structure, graph, tree and Combinatorics.

Course Contents:

Module I: Mathematical Logic

Statements and notations, connectives, Conditional Statements, Compound Statements, Truth Tables, Statement Formula, Well Formed Formula, Equivalence of Formula, Tautology, Rules of inference.

Module II: Algebraic Structure

Algebraic Systems, General properties, Semi Group, Monoid and group, Boolean algebra, Boolean function, Representation and Minimization of Boolean function, Applications of Boolean Algebra, Lattices.

Module III: Graph Theory

Basic Terminology, Walks, paths, circuits, connectedness, Handshaking Lemma, Isomorphism, Sub graphs, and Union of Graphs, Reach ability, Eulerian Graph and Union of Graphs, Reachability, Eulerian Graph, Flurry's Algorithm, Shortest path problem, Chinese postman problem, Hamiltonian graph, Traveling Salesman Problem, Bipartite graphs.

Module IV: Trees

Introduction to trees, Rooted trees, path length in rooted trees, spanning trees, Fundamental circuits, spanning trees of a weighted graph, cut sets and cut vertices, Fundamental cut-set, Minimum spanning tree.

Module V: Directed Graph

Directed graphs and connectedness, directed trees, Network Flows, Max Flow-MinCut Theorem, Matrix representation of a graph, Planar graphs: Combinational and Geometric Duals, Kuratowskills graphs, Detection of planarity, thickness and crossing.

Module VI: Combinatorics

Partitions, counting functions, number of partitions into odd or unequal parts. Necklaces, Euler's function, set of symmetries, enumeration in the odd and even cases.

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|----------------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

- 0 Discrete Mathematical Structures with Application to Computer Sciences, JP Trembly& Manohar, TMH.
- 1 Elements of Discrete Mathematics, CL Lire, TMH

References:

- 0 Discrete Mathematical Structures, SernardKolman and Others, PHI
- 1 Applied Discrete Structures for Computer Science, AlenDoerr&Lvasseur, Galgotia

MATHEMATICAL FOUNDATION TO COMPUTER SCIENCE

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC504 | 2 | 1 | - | 3 |

Course Objective:

The aim of the course is to introduce the mathematical underpinnings of theoretical computer science and the theory of computation. Fundamental concepts in discrete mathematics with emphasis on their applications to computer science will be taught.

Course Contents:

Module I

Set Theory: Definition, Types of sets, equality of sets, Subset, Power Set, Universal set, Union, intersection and complement of sets, Algebra of sets, Venn diagram, Application of set theory, Cartesian product of sets, Cardinality. Mathematical Induction: Peano's axioms, Mathematical Induction, Discrete Numeric Functions and Generating Functions, Recurrence Relation.

Module II

Relation: Relation as Cartesian product of sets, types of relations, Composition of relations, Pictorial representation of relations, equivalence relation, Partial order relation.

Functions: Definition, Types of Functions (one-one function, onto function, one-one into function, one-one onto function, inverse of a function), Composite of functions, Recursive Defined Function, Mathematical Functions and Computer Science.

Module III

Algebraic Functions: Properties, Semi group, Monoid, Group, Abelian group, properties of group, Subgroup, Cyclic group, Permutation group, Homomorphism, Isomorphism and Automorphism of groups.

Module IV

Matrix: Definition, Types of Matrices, Algebra of Matrices, Multiplication of Matrices, Transpose of Matrix, Elementary Operations, System of Linear Equations, Inverse of Matrix, Gauss Elimination Method, Determinant, Minors, Cofactors, Cramer's Rule for Solution of Linear Equations.

Propositional Logic: Proposition, First order logic, Basic Logical operations, Tautologies, Contradictions, Algebra of Proposition. Logical implications and Double implications, Arguments.

Module V

Counting Principle: Counting Principle, Factorial Function, Binomial Theorem and Binomial Coefficient, Pascal's Triangle, Permutations, Permutation with Repetition, Combinations, Ordered and Unordered Permutations, Tree Diagram.

Examination Scheme:

| | | | | |
|----------------------|-----------|---------------|-------------|-----------|
| Components | CT | HA/V/Q | Attd | EE |
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 Liptschutz, Seymour, —Discrete Mathematics, TMH.

References:

- 0 Trembley, J.P & R. Manohar, —Discrete Mathematical Structures with Application to Computer Science, TMH
- 1 Kenneth H. Rosen, —Discrete Mathematics and its applications, TMH.
- 2 Doerr Alan & Lefvasseur Kenneth, —Applied Discrete Structure for Computer Science. Galgotia Pub Pvt Ltd.
- 3 Gersting, —Mathematical Structure for Computer Science, WH Freeman & M Macmillan.
- 4 Kumar Rajendra, —Theory of Automata : Language and Computation, PPM.
- 5 C.L. Liu, —Elements of Discrete Mathematics, McGraw Hill.
- 6 Peter Grossman, —Discrete Mathematics for Computer —, Palgrave Macmillan.

SUMMER PROJECT – II (EVALUATION)

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC560 | 0 | 0 | 0 | 6 |

Guidelines:

There are certain phases of every Intern's professional development that cannot be effectively taught in the academic environment. These facets can only be learned through direct, on-the-job experience working with successful professionals and experts in the field. The internship program can best be described as an attempt to institutionalize efforts to bridge the gap between the professional world and the academic institutions. Entire effort in internship is in terms of extending the program of education and evaluation beyond the classroom of a university or institution. The educational process in the internship course seeks out and focuses attention on many latent attributes, which do not surface in the normal classroom situations. These attributes are intellectual ability, professional judgment and decision-making ability, inter-disciplinary approach, skills for data handling, ability in written and oral presentation, sense of responsibility etc.

In order to achieve these objectives, each student will maintain a file (**Internship File**). The Internship File aims to encourage students to keep a personal record of their learning and achievement throughout the Programme. It can be used as the basis for lifelong learning and for job applications. Items can be drawn from activities completed in the course modules and from the workplace to demonstrate learning and personal development.

The File will assess the student's analytical skills and ability to present supportive evidence, whilst demonstrating understanding of their organization, its needs and their own personal contribution to the organization.

The **layout guidelines** for the Project & Seminar Report:

0 File should be in the following

specification: A4 size paper

Font: Arial (10 points) or Times New Roman (12 points)

Line spacing: 1.5

Top & bottom margins: 1 inch/ 2.5 cm

Left & right margins: 1.25 inches/ 3 cm

1 Report Layout:

The report should contain the following

components: Front Page

Table of Content

Acknowledgement Student

Certificate Company

Profile (optional)

Introduction

Main Body

References / Bibliography

The File will include **five sections** in the order described below. The content and comprehensiveness of the main body and appendices of the report should include the following:

0 **The Title Page**--Title - An Internship Experience Report For (Your Name), name of internship organization, name of the Supervisor/Guide and his/her designation, date started and completed, and number of credits for which the report is submitted.

1 **Table of Content**--an outline of the contents by topics and subtopics with the page number and location of each section.

2 **Introduction**--short, but should include how and why you obtained the internship experience position and the relationship it has to your professional and career goals.

3 **Main Body**--should include but not be limited to daily tasks performed. Major projects contributed to, dates, hours on task, observations and feelings, meetings attended and their purposes, listing of tools and materials and their suppliers, and photographs if possible of projects, buildings and co-workers.

4 **References / Bibliography** --This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system

ASSESSMENT OF THE INTERNSHIP FILE

The student will be provided with the Student Assessment Record (SAR) to be placed in front of the Internship File. Each item in the SAR is ticked off when it is completed successfully. The faculty will also assess each item as it is completed. The SAR will be signed by the student and by the faculty to indicate that the File is the student's own work. It will also ensure regularity and meeting the delaines.

STUDENT ASSESSMENT RECORD (SAR)

0 Range of Research Methods used to obtain information

1 Execution of Research

2 Data Analysis

0 Analyse Quantitative/ Qualitative information

1 Control Quality

3 Draw Conclusions

Examination Scheme:

| Components | V | S | R | FP |
|---------------|----|----|----|----|
| Weightage (%) | 20 | 20 | 20 | 40 |

V – Viva, S – Synopsis, FP – Final Presentation, R - Report

JAVA PROGRAMMING LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC520 | 0 | 0 | 2 | 1 |

List of Programs

- 0 Create a —Hello, World program that simply prints out that statement.
- 1 Write a program that prints three arguments taken from the command line.
- 2 Write a program that prints values from 1 to 100.
- 3 Create a class with a default constructor (one that takes no arguments) that prints a message. Create an object of this class.
- 4 Write Java assignment statements to evaluate the following equations:
 - 0 Energy = mass(acceleration*height+(velocity)sqr(2)/2)
 - 1 Torque = 2m1m2/m1+m2 * g
- 5 Design and write a Java program to define a class called Rectangle that contains members for representing its length and breadth. Provide members to get and set these attributes.
- 6 Design a class to represent a bank account. Include the following members:

Data members:
 Name of the depositor
 Account number Type
 of account
 Balance amount in the account

Methods:
 To assign initial values
 To deposit an amount
 To withdraw an amount after checking
 balance To display the name and balance
- 7 Write simple program to calculate the sum of digits of any number.
- 8 Write a simple program to display a —* I triangle shape.
 Output will be like this


```

      *
      0 * *
      1 ****
      
```
- 9 Write a simple program to call a method called simple from a main function. The method simple should accept an integer as an argument and calculate the square of the number in the method simple.
- 10 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 method overloading to achieve this.
- 11 Write a program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MultDiv that extends from AddSub class to use the member data of the superclass. MultDiv should have methods to multiply and divide. A main method should access the method and perform the mathematical operations.
- 12 Write an interface with a method called display. Implement this method I a class to display two names.
- 13 Write an interface that has two methods called push and pop of a stack. Write a class to implement the two methods for a fixed size stack creation.
- 14 Write a small program to catch Negative Array Size Exception. This exception is caused when the array is initialized to negative values.
- 15 Write a program to handle Null Pointer Exception and use the finally clause to display a message to the user.
- 16 Write a Java program that takes a string and converts it into uppercase and lowercase letters.
- 17 Write a Java program to find the volume of a sphere and a cone.
- 18 Write a Java program to convert rupees to dollars.

- 0 Write a Java program to find x to the power y. Use overloading for different cases when x and y are combinations of integer and floating point numbers.
- 1 Create an abstract class called Figure that has an abstract method called draw (). Make the subclasses called Filled_Rectangle, Filled_Arc and override the draw method in which you would print the message regarding the current object.
- 2 Write a Java program that has integer variables a, b, c and result as float. Store some values in them and apply the formula $result = a/(b-c)$. Catch the probable exception.
- 3 Write a Java program that accepts two strings as command line arguments. It checks for the number of command line arguments. If they are less or more it throws an exception giving an appropriate message.
- 4 Write applets to draw the following shapes:
 - 0 Cone
 - 1 Cylinder
 - 2 Cube
 - 3 Square inside a circle
 - 4 Circle inside a square
- 5 Write an applet to display the following figure:
- 6 Write an applet to display a face.
- 7 Write an applet to display five buttons.
- 8 Write an applet to illustrate BorderLayout.
- 9 Write a Java program to create 5 threads by extending Thread class.
- 10 Write a Java program to create 5 threads by implementing Runnable interface.

DESIGNING AND SUPPORTING COMPUTER NETWORK

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC530 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of the course is to give an overview how to design and support computer network.

Course Contents:

Module I: Introducing Network Design Concepts

Discovering Network Design Basics, Investigating Core Layer Design Considerations
 Investigating Distribution Layer Consideration, Investigating Access Layer Design Considerations, Investigating Server Farms and Security, Investigating Wireless Network Considerations, Supporting WANs and Remote Workers

Module II: Gathering Network Requirements

Introducing Cisco Lifecycle Services, Explaining the Sales Process, Preparing for the Design Process, Identifying Technical Requirements and Constraints, Identifying Manageability Design Considerations

Module III: Characterizing the Existing Network

Documenting the Existing Network, Updating the Existing Cisco IOS, Upgrading Existing Hardware, Performing a Wireless Site Survey, Documenting Network Design Requirements

Module IV: Identifying Application Impacts on Network Design

Characterizing Network Applications, Explaining Common Network Applications
 Introducing Quality of Service (QoS), Examining Voice and Video Options, Documenting Applications and Traffic Flows

Module V: Creating the Network Design

Analyzing the Requirements, Selecting the Appropriate LAN Topology, Designing the WAN and Remote Worker Support, Designing Wireless Networks, Incorporating Security

Module VI: Using IP Addressing in the Network Design

Creating an Appropriate IP Addressing Design, Creating the IP Address and Naming Scheme, Describing IPv4 and IPv6

Module VII: Prototyping the Campus Network

Building a Prototype to Validate a Design, Prototyping the LAN, Prototyping the Server Farm

Module VIII: Prototyping the WAN

Prototyping Remote Connectivity, Prototyping WAN Connectivity, Prototyping Remote Worker Support

Module IX: Preparing the Proposal

Assembling the Existing Proposal Information, Developing the Implementation Plan
 Planning for the Installation, Creating and Presenting the Proposal

Examination Scheme:

| Components | CT1 | A/C/Q | ATTD. | EE |
|---------------|-----|-------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 CCNA-Discovery 4.0, module 4, Cisco Certified Networking Academy

References:

- 0 Data Communication and Computer Network, Forozoun, TMH Publication
- 1 Data Communication and Network, Stallings, PHI
- 2 Computer Network, Tanenbaum, PHI

WEB PROGRAMMING

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC531 | 2 | 1 | 0 | 3 |

Course Objective:

This course is aimed to provide a fundamental understanding of web site creation. HTML is the language used for designing most basic web pages. Syllabus include basic and advanced features of HTML which includes images, links, tables, frames and forms etc. It also gives an overview of XML.

Course Contents:

Module I: Introduction to HTML programming

History of HTML, Structure of HTML, Adding Comments, Formatting Text, Creating List, Creating Definition List, Creating Hyper Text Links, Creating Link Lists, Inserting Inline Images, Creating Image Links, Horizontal Rules, Address Tag, Working with Text
Changing font Sizes and Colors, Using Background Image, Marquee Tag.

Module II

Tables and frames, Creating Tables, Table Element, Adding Border, Adding Column Headings, Adding Spacing and Padding, Adding a Caption, Setting the table Width and Height, Add Row Headings, Aligning Cell contents, Setting Column Width, Centering a Table, Inserting and Image, Spanning Columns, Spanning Rows Assigning Background Colors, Frame Elements, Creation of Frame Based Pages, Noframes Element.

Module III

Forms and Java Script Introduction to Forms, Form Elements, Front level validations using JavaScript

Module IV

Cascading style sheets, Overview of style sheets, Different ways to use style sheets, Selectors DIV and SPAN Elements, Adding style to a Document, Use id Classes and Ids, Style Sheet Properties.

Module V: XML

Introduction to XML, XML Basics, XML Structure, Developing a DTD from XML code, Viewing XML, Viewing XML using the XML Data Source Object, Viewing XML using Style Sheets.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

- 0 Harvey & Paul Deitel & Associates, Harvey Deitel and Abbey Deitel, —Internet and World Wide Web - How To Program, Fifth Edition, Pearson Education, 2011.
- 1 Achyut S Godbole and Atul Kahate, —Web Technologies, Second Edition, Tata McGraw Hill, 2012.
- 2 Thomas A Powell, Fritz Schneider, —JavaScript: The Complete Reference, Third Edition, Tata McGraw Hill, 2013.
- 3 David Flanagan, —JavaScript: The Definitive Guide, Sixth Edition, O'Reilly Media, 2011

DATA WAREHOUSING & DATA MINING

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC532 | 2 | 1 | 0 | 3 |

Course Objective:

This course unit is divided into two parts: one on Data Warehousing and one on Data Mining. Both data warehousing and data mining are advanced recent developments in database technology which aim to address the problem of extracting information from the overwhelmingly large amounts of data which modern societies are capable of amassing. Data warehousing focuses on supporting the analysis of data in a multidimensional way. Data mining focuses on inducing compressed representations of data in the form of descriptive and predictive models. Course gives an in-depth knowledge of both the concepts.

Course Contents:

Module I: Data Warehousing

Introduction to Data Warehouse, its competitive advantage, Data warehouse Vs Operational Data, Things to consider while building Data Warehouse

Module II: Implementation

Building Data warehousing team, Defining data warehousing project, data warehousing project management, Project estimation for data warehousing, Data warehousing project implementation

Module III: Techniques

Bitmapped indexes, Star queries, Read only table spaces, Parallel Processing, Partition views, Optimizing extraction process

Module IV: Data Mining

Introduction to Data Mining, benefits of Data Mining, How it helps in decision making, Data mining techniques, Introduction to Data Mart, Data Mart Tools, Data warehouse vs Data Mart, OLAP and its need, MOLAP and ROLAP

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

0 Data Warehousing in the real world, Sam Anchory and Dennis Murray

References:

0 Data Mining, Pieter Adrians and Doif Zantinge

DESIGNING AND SUPPORTING COMPUTER NETWORK LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC521 | 0 | 0 | 2 | 1 |

Course Contents:

- 0 Process of Core Layer Design Consideration
- 1 Process of Access Layer Design Consideration
- 2 Preparing the Design Process, technical requirements.
- 3 Documentation Design of Existing Network in the Enterprise.
- 4 Document ation Design of Network Design Requirements.
- 5 Documenting application and traffic flow in Enterprise network.
- 6 Selection of the Appropriate LAN Topology
- 7 Designing WAN and Wireless Network and Incorporating Security.
- 8 Creating an IP addressing Design with example enterprise network.
- 9 Prototype Design of LAN, Server Farm and WAN Connectivity.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

WEB PROGRAMMING LAB

| Course Code | L | T | P | Credit |
|--------------------|----------|----------|----------|---------------|
| UBC522 | 0 | 0 | 2 | 1 |

- 0 Create a web page with the following using HTML5 (i) To embed an image map in a web page (ii) To fix the hot spots (iii) Show all the related information when the hot spots are clicked.
- 1 Create a web page with all types of Cascading style sheets.
- 2 Implement Client Side Scripts for Validating Web Form Controls using JavaScript.
- 3 Designing Quiz Application Personal Information System/ Using JavaScript
- 4 Write a JavaScript for Loan Calculation.
- 5 Develop and demonstrate a HTML file that includes JavaScript that uses functions for the following problems: a) Parameter: A string Output: The position in the string of the left-most Parameter vowel
b): A number Output: The number with its digits in the reverse order
- 6 Develop PHP program using Arrays, control structures, looping structures and Form Handling
- 7 Using PHP and MySQL, develop a program to accept book information viz. Accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search results with proper headings.
- 8 Write an AJAX program for parsing a JSON file and formatting the output.
- 9 Develop a web application for Airline Reservation System using PHP & AJAX.

DATA WAREHOUSING AND DATA MINING LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC523 | 0 | 0 | 2 | 1 |

Software Required: Informatica Tool, Cognos, Todd.

List of Programmes:

- 0 Write a program to implement text mining.
- 1 Write a program to implement web mining.
- 2 Write a program to develop snowflake schema.
- 3 Write a program to develop the tree schema with the help of binary tree.
- 4 Write a program to implement BFS and DFS with respect to 2-D modeling.
- 5 Write a program to implement the basic step of informatics tool.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

COMMUNICATION SKILLS - III

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BCS501 | 1 | 0 | 0 | 1 |

Course Objective:

To equip the participant with linguistic skills required in the field of science and technology while guiding them to excel in their academic field.

Course Contents:

Module I

Reading Comprehension
Summarising
Paraphrasing

Module II

Essay Writing
Dialogue Report

Module III

Writing Emails
Brochure
Leaflets

Module IV: Introduction to Phonetics

Vowels
Consonants
Accent and Rhythm
Accent Neutralization
Spoken English and Listening Practice

Examination Scheme:

| Components | CT1 | CT2 | CAF | V | GD | GP | A |
|---------------|-----|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 25 | 10 | 10 | 10 | 5 |

CAF – Communication Assessment File

GD – Group Discussion

GP – Group Presentation

Text & References:

- 0 Effective English for Engineering Students, B Cauveri, Macmillan India
- 1 Creative English for Communication, Krishnaswamy N, Macmillan
- 2 A Textbook of English Phonetics, Balasubramanian T, Macmillan

BEHAVIOURAL SCIENCE - V

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| BSS501 | 1 | 0 | 0 | 1 |

Course Objective:

This course aims at enabling students towards:

- 0 Understand the importance of individual differences
- 1 Better understanding of self in relation to society and nation
- 2 Facilitation for a meaningful existence and adjustment in society
- 3 To inculcate patriotism and National pride.
- 4 To enhance personal and professional excellence

Course Contents:

Module I: Individual differences & Personality

Personality: Definition & Relevance

Importance of nature & nurture in Personality Development

Importance and Recognition of Individual differences in Personality

Accepting and Managing Individual differences (Adjustment Mechanisms)

Intuition, Judgment, Perception & Sensation (MBTI)

BIG5 Factors

Module II: Socialization

Nature of Socialization

Social Interaction

Interaction of Socialization Process

Contributions to Society & Nation

Module III: Patriotism and National Pride

Sense of Pride and Patriotism

Importance of Discipline and hard work

Integrity and accountability

Module IV: Human Rights, Values and Ethics

Meaning of Human Rights

Human Rights Awareness

Importance of human rights

Values and Ethics- Learning based on project work on Scriptures like Ramayana, Mahabharata, Gita etc

Module V: Personal and Professional Excellence

Personal excellence:

Identifying Long-term choices and goals

Uncovering talent, strength and style

Alan P. Rossiter's eight aspects of Professional Excellence

Resilience during challenge and loss

Continued Reflection (Placements, Events, Seminars, Conferences, Projects, Extracurricular Activities, etc.)

Module VI: End-of-Semester Appraisal

Viva based on personal journal

Assessment of Behavioural change as a result of training

Exit Level Rating by Self and Observer

Examination Scheme:

| Components | SAP | A | Mid Term Test (CT) | VIVA | Journal for Success (JOS) |
|---------------|-----|----|--------------------|------|---------------------------|
| Weightage (%) | 20 | 05 | 20 | 30 | 25 |

Text & References:

- 0 Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour
- 1 Dressler, David and Cans, Donald: The Study of Human Interaction
- 2 Lapiere, Richard. T – Social Change
- 3 Rose, G.: Oxford Textbook of Public Health, Vol.4, 1985.
- 4 Robbins O.B.Stephen;. Organizational Behaviour

FRENCH - V

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLF501 | 2 | 0 | 0 | 2 |

Course Objective:

To furnish some basic knowledge of French culture and civilization for understanding an authentic document and information relating to political and administrative life

Course Contents:

Module D: pp. 131 – 156 Unités 10,11

Contenu lexical: Unité 10: Prendre des décisions

1. Faire des comparaisons

0 décrire un lieu, le temps, les gens, l'ambiance

0 rédiger une carte postale

Unité 11: faire face aux problèmes

0 Exposer un problème.

1 parler de la santé, de la maladie

2 interdire/demander/donner une autorisation

3 connaître la vie politique française

Contenu grammatical:

0 comparatif - comparer des qualités/ quantités/actions

1 supposition: Si + présent, futur

2 adverbe - caractériser une action

3 pronom "Y"

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

0 le livre à suivre: Campus: Tome 1

GERMAN - V

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLG501 | 2 | 0 | 0 | 2 |

Course Objective:

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Genitive case

Genitive case – Explain the concept of possession in genitive

Mentioning the structure of weak nouns

Module II: Genitive prepositions

Discuss the genitive prepositions and their usage: (während, wegen, statt, trotz)

Module III: Reflexive verbs

Verbs with accusative case

Verbs with dative case

Difference in usage in the two cases

Module IV: Verbs with fixed prepositions

Verbs with accusative case

Verbs with dative case

Difference in the usage of the two cases

Module V: Texts

A poem 'Maxi'

A text Rocko

Module VI: Picture Description

Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;

Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

- 0 Wolfgang Hieber, Lernziel Deutsch
- 1 Hans-Heinrich Wangler, Sprachkurs Deutsch
- 2 Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- 3 P.L Aneja, Deutsch Interessant- 1, 2 & 3
- 4 Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- 5 Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

SPANISH - V

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLS501 | 2 | 0 | 0 | 2 |

Course Objective:

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

Course Contents:

Module I

Revision of earlier semester modules

Module II

Future Tense

Module III

Presentations in English on Spanish speaking countries'

Culture

Sports

Food

People

Politics

Society

Geography

Module IV

Situations:

En el hospital

En la comisaria

En la estacion de autobus/tren

En el banco/cambio

Module V

General revision of Spanish language learnt so far.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

0 Español Sin Fronteras, Greenfield

CHINESE – V

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| FLC501 | 2 | 0 | 0 | 2 |

Course Objective:

What English words come from Chinese? Some of the more common English words with Chinese roots are ginseng, silk, dim sum, fengshui, typhoon, yin and yang, Tai chi, kung-fu. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I

Drills

Dialogue practice

Observe picture and answer the question.

Pronunciation and intonation.

Character writing and stroke order

Module II

Intonation

Chinese foods and tastes – tofu, chowmian, noodle, Beijing duck, rice, sweet, sour...etc. Learning to say phrases like – Chinese food, Western food, delicious, hot and spicy, sour, salty, tasteless, tender, nutritious, good for health, fish, shrimps, vegetables, cholesterol is not high, pizza, milk, vitamins, to be able to cook, to be used to, cook well, once a week, once a month, once a year, twice a week.....

Repetition of the grammar and verbs taught in the previous module and making dialogues using it.

Compliment of degree —del.

Module III

Grammar the complex sentence —suiran ... danshi....||

Comparison – It is colder today than it was yesterday.....etc.

The Expression —chule...yiwai||. (Besides)

Names of different animals.

Talking about Great Wall of China

Short stories

Module IV

Use of —huozhell and —haishill

Is he/she married?

Going for a film with a friend.

Having a meal at the restaurant and ordering a meal.

Module V

Shopping – Talking about a thing you have bought, how much money you spent on it? How many kinds were there? What did you think of others?

Talking about a day in your life using compliment of degree —del. When you get up? When do you go for class? Do you sleep early or late? How is Chinese? Do you enjoy your life in the hostel?

Making up a dialogue by asking question on the year, month, day and the days of the week and answer them.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|------------|------------|----------|----------|----------|----------|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

0 —Elementary Chinese Reader II Part-II Lesson 39-46

MULTIMEDIA & ITS APPLICATIONS

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC601 | 3 | 1 | 0 | 4 |

Course Objective:

The objective of the course is to give an overview of different multimedia technologies like audio and video including multimedia devices. The course also includes some practical sessions on these technologies.

Course Contents:

Module I: Introduction

Multimedia and personalized computing, a tour of emerging applications, multimedia systems, computer communication, and entertainment products, a framework of multimedia systems.

Module II: Digital Audio Representation and Processing

Uses of audio in computer applications, digital representation of sound, transmission of digital sound, digital audio signal processing, digital audio and the computer.

Module III: Video Technology

Raster scanning principles, sensors for T.V. cameras, color fundamentals, color video, video equipment, worldwide television standards.

Module IV: Digital Video and Image Compression

Evaluating a compression system, redundancy and visibility, video compression techniques, the JPEG image compression standards, the MPEG motion video compression standard, DVI technologies, Time Based Media Representation and Delivery.

Module V: Multimedia Devices, Presentation Services and the User Interface

Introduction Multimedia services and Window systems, client control of continuous media, device control, temporal co ordination and composition, hyper application.

Module VI: Application of Multimedia

Intelligent multimedia system, desktop virtual reality, multimedia conferencing.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 10 | 15 | 5 | 70 |

Text & References:

0 Multimedia systems John F. Koegal Buford Addison- Wesley

Fundamentals of E-Commerce

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC603 | 2 | 1 | - | 3 |

Course Objective:

To make a student familiar with the mechanism of conducting business transactions through electronic media. To understand the scenario in India.

Module 1: Introduction to E-Commerce

Introduction to e-commerce, e-commerce opportunities, e-com framework, recent developments, new trends, Introduction to e-business, What is the difference between e-commerce and e-business?, How significant are e-commerce and e-business?, Business adoption of digital technologies for e-commerce and e-business, Introduction to B2B, B2C and C2C models and companies

Module 2: Internet Protocols

Development & growth, DNS, commercialization of internet, planning for network infra-structure and web architecture, introduction to internet protocols- layers and networking, Internet Protocol suite, Desktop TCP/IP, Mobile TCP/IP based networking, Multicast IP, Focus on web service and service and service-oriented, Focus on new access devices

Module 3: Website Hosting

Principles of website hosting and promotion, decision on website design, legal issues, Domain Name Registration, website hosting, website registration, online and offline promotion

Module 4: E-Commerce Business Models

Difference between e-commerce and e-business, business models: brokerage model, advertising model, infomediary model, merchant model, manufacturer model, affiliate model, community model, subscription model, utility model, tried & true models

Module 5: Electronic Payment

Auctions as a price setting mechanism, pricing information, versioning information, cyber laws, digital cash, e-wallet, concept of https, IVR transactions, payment through net banking, digital signature

Module 6: E-business strategy & M-Commerce

Introduction, Strategic analysis, Strategic objectives, Strategy definition, Strategy implementation, Focus on information systems strategy and e-business strategy, e-procurement, e-governance, e-marketing, change management

Introduction to m-commerce: Emerging applications, different players in m-commerce, m-commerce life cycle Mobile financial services, mobile entertainment services, and proactive service management, Management of mobile commerce services: Content development and distribution to hand-held devices, content caching, pricing of mobile commerce services, the emerging issues in mobile commerce: The role of emerging wireless LANs and 3G/4G wireless networks, personalized content management, implementation challenges in m-commerce, futuristic m-commerce services

Examination Scheme:

| Components | CT | HA/V/Q | ATTD. | EE |
|---------------|----|--------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

- 0 Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

References:

- 0 E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, John Wiley.
- 1 E-Commerce, S.Jaiswal – Galgotia.
- 2 E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang

PROJECT WORK/DISSERTATION

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC660 | 0 | 0 | 0 | 12 |

GUIDELINES FOR PROJECT FILE

Research experience is as close to a professional problem-solving activity as anything in the curriculum. It provides exposure to research methodology and an opportunity to work closely with a faculty guide. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation. Research is genuine exploration of the unknown that leads to new knowledge, which often warrants publication. But whether or not the results of a research project are publishable, the project should be communicated in the form of a research report written by the student.

Sufficient time should be allowed for satisfactory completion of reports, taking into account that initial drafts should be critiqued by the faculty guide and corrected by the student at each stage.

The File is the principal means by which the work carried out will be assessed and therefore great care should be taken in its preparation.

In general, the File should be comprehensive and include:

- 0 A short account of the activities that were undertaken as part of the project;
- 1 A statement about the extent to which the project has achieved its stated goals.
- 2 A statement about the outcomes of the evaluation and dissemination processes engaged in as part of the project;
- 3 Any activities planned but not yet completed as part of the project, or as a future initiative directly resulting from the project;
- 4 Any problems that have arisen that may be useful to document for future reference.

Report Layout

The report should contain the following components:

0 File should be in the following specification:

- 0 A4 size paper
- 1 Font: Arial (10 points) or Times New Roman (12 points)
- 2 Line spacing: 1.5
- 3 Top & bottom margins: 1 inch/ 2.5 cm
- 4 Left & right margins: 1.25 inches/ 3 cm

1 Report Layout: The report should contain the following components

Front Page
Table of Contents
Acknowledgement
Student Certificate
Company Profile
Introduction Chapters
Appendices References /
Bibliography

□ Title or Cover Page or Front Page

The title page should contain the following information: Project Title; Student's Name; Course; Year; Supervisor's Name.

□ Table of Contents

Titles and subtitles are to correspond exactly with those in the text.

□ Acknowledgement

Acknowledgment to any advisory or financial assistance received in the course of work may be given.

□ Student Certificate

Given by the Institute.

□ Company Certificate & Profile

This is a certificate, which the company gives to the students. A Company Profile corresponds to a file with company-specific data. Company data can be stored there and included in a booking when needed.

□ Introduction

Here a brief introduction to the problem that is central to the project and an outline of the structure of the rest of the report should be provided. The introduction should aim to catch the imagination of the reader, so excessive details should be avoided.

□ Chapters

All chapters and sections must be appropriately numbered, titled and should neither be too long nor too short in length.

The first chapter should be introductory in nature and should outline the background of the project, the problem being solved, the importance, other related works and literature survey. The other chapters would form the body of the report. The last chapter should be concluding in nature and should also discuss the future prospect of the project.

□ Appendices

The Appendix contains material which is of interest to the reader but not an integral part of the thesis and any problem that have arisen that may be useful to document for future reference.

□ References / Bibliography

This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system.

ASSESSMENT OF THE PROJECT FILE

Essentially, marking will be based on the following criteria: the quality of the report, the technical merit of the project and the project execution. Technical merit attempts to assess the quality and depth of the intellectual efforts put into the project. Project execution is concerned with assessing how much work has been put in. The File should fulfill the following *assessment objectives*:

0 Range of Research Methods used to obtain information

1 Execution of Research

2 Data Analysis

0 Analyze Quantitative/ Qualitative information

1 Control Quality

4. Draw Conclusions

Examination Scheme:

| Components | MRP | V | S | FP | R |
|---------------|-----|----|----|----|----|
| Weightage (%) | 20 | 20 | 20 | 20 | 20 |

MRP – Mid Report Presentation, V – Viva, S – Synopsis, FP – Final Presentation, R - Report

MULTIMEDIA & ITS APPLICATIONS LAB

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC620 | 0 | 0 | 2 | 1 |

Course Contents:

- 0 Create the animation of flying bird in flash.
- 1 Create the animation of walking man with his arms and legs moving.
- 2 Create the animation of Virtual typewriter.
- 3 Show an example of Masking in flash.
- 4 Make an animation of bouncing ball using flash.
- 5 Create the animation of moving Car in flash.
- 6 Make the blinking colorful text in flash.
- 7 Make a scenery showing rising sun in it using flash.
- 8 Show a flower growing in a flower pot.
- 9 Create the animation to show an accident of two cars coming from opposite direction using flash
- 10 Create the animation to show an accident of two cars going in the same direction with variation in the speed.
- 11 Create the animation to show the 9/11 attack in U.S.A.
- 12 Create the animation to show a Gardner watering the flower.
- 13 Make an animation to show a charismas tree growing step by step.
- 14 Create the animation to show the lightening of charismas tree using more than one layer.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

NETWORK SECURITY

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC630 | 2 | 1 | 0 | 3 |

Course Objective:

This subject is very important for students because Security of data in transit over the Internet becomes increasingly necessary because of steadily growing data volume and importance. Nowadays, every user of a public network sends various types of data, from email to credit card details daily, and he would therefore like them to be protected when in transit over a public network. To this end, a practical SSL protocol has been adopted for protection of data in transit that encompasses all network services that use TCP/IP to support typical application tasks of communication between servers and clients. In this subject student will learn all security method for securing public & private network by configuring different protocols.

Course Contents:

Module I: Threats and Cryptography

Introduction: Attacks, Services and Mechanism, Model for Internetwork Security.

Cryptography: Notion of Plain Text, Encryption, Key, Cipher Text, Decryption and cryptanalysis; Public Key Encryption, Conventional Encryption Techniques, Steganography, Modern Techniques – DES, DES chaining, Triple DES, RSA Algorithm.

Module II: Network Security

Authentication Application: Kerberos, X.509, Directory Authentication Service, Pretty Good Privacy, S/Mime, Digital Signature & Digital Signature Standard.

Module III: Network Security Applications

IP security Architecture: Overview, Authentication header, Encapsulating Security Pay Load, combining Security Associations, Key Distribution & Management.

Web Security: Requirements, Secure Socket Layer, Transport Layer Security, and Secure Electronic Transactions.

Module IV: System Security

Firewalls and protocols, Design Principles of Firewalls, Trusted systems, Virus & Intruders, IT act and cyber laws (Global Standards), Virtual Private Network – Issues relating to network security, Recent attacks on networks.

Examination Scheme:

| Components | CT1 | PR. | ATTD. | EE |
|---------------|-----|-----|-------|----|
| Weightage (%) | 10 | 15 | 5 | 70 |

Text & References:

Text:

- 0 W. Stallings, Networks Security Essentials: Application & Standards, Pearson Education, 2000
- 1 W. Stallings, Cryptography and Network Security, Principles and Practice, Pearson Education, 2000.

References:

- 0 Network Security: The Complete Reference by Roberta Bragg, Mark Rhodes-Ousley, Keith Strassberg, et al - Tata McGraw-Hill presents
- 1 Network Security: The Complete Reference by Roberta Bragg, Mark Rhodes-Ousley, Keith Strassberg, et al - Tata McGraw-Hill presents

WEB TECHNOLOGIES

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC631 | 2 | 1 | 0 | 3 |

Course Objective:

This course is aimed to provide a fundamental understanding of web site creation. HTML is the language used for designing most basic web pages. Syllabus include basic and advanced features of HTML which includes images, links, tables, frames and forms etc. It also gives an overview of XML.

Course Contents:

Module I: Introduction to html programming

History of HTML, Structure of HTML, Adding Comments, Formatting Text, Creating List, Creating Definition List, Creating Hyper Text Links, Creating Link Lists, Inserting Inline Images, Creating Image Links, Horizontal Rules, Address Tag, Working with Text, Changing font Sizes and Colors, Using Background Image, Marquee Tag.

Module II: Tables and frames

Creating Tables, Table Element, Adding Border, Adding Column Headings, Adding Spacing and Padding, Adding a Caption, Setting the table Width and Height, Add Row Headings, Aligning Cell contents, Setting Column Width, Centering a Table, Inserting and Image, Spanning Columns, Spanning Rows Assigning Background Colors, Frame Elements, Creation of Frame Based Pages, Noframes Element.

Module III: Forms and JavaScript

Introduction to Forms, Form Elements, Front level validations using JavaScript

Module IV: Cascading style sheets

Overview of style sheets, Different ways to use style sheets, Selectors DIV and SPAN Elements, Adding style to a Document, Use id Classes and Ids, Style Sheet Properties.

Module V: XML

Introduction to XML, XML Basics, XML Structure, Developing a DTD from XML code, Viewing XML, Viewing XML using the XML Data Source Object, Viewing XML using Style Sheets.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 10 | 15 | 5 | 70 |

Text & References:

Text:

0 HTML, DHTML, JavaScript, Perl, CGI, Ivan Bayross, BPB Publication.

References:

0 HTML Complete Reference, BPB Publication.

1 Internet for everyone, Alexis Leon and Mathew Leon, Leon Tech world.

MOBILE COMPUTING

| Course Code | L | T | P | Credit |
|-------------|---|---|---|--------|
| UBC632 | 2 | 1 | 0 | 3 |

Course Objective:

The objective of this subject is to make students familiar about the basic concepts mobile technology, computing and market

Course Contents:

Module I:

Global System for Mobile Communication (GSM) system overview: GSM Architecture, Mobility management, Network signalling. GSM Additional services: Teletext, Facsimile, Videotext services.

Module II: (Wireless) Medium Access Control

Motivation for a specialized

MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA.

Mobile Network Layer: Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).

Module III: Mobile Transport Layer: Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

Module IV: Mobile Data Communication

W LANs (Wireless LANs) IEEE 802.11 standard, Mobile IP.

Third Generation (3G) Mobile Services: Introduction to International Mobile Telecommunications 2000 (IMT 2000) vision, Wideband Code Division Multiple Access (W-CDMA), and CDMA 2000, Quality of services in 3G.

Module V: Global Mobile Satellite Systems

Mobile Satellite Systems (GEO, MEO and LEO), case studies of the IRIDIUM and GLOBALSTAR systems.

Examination Scheme:

| Components | A | CT | S/V/Q | HA | EE |
|----------------------|---|----|-------|----|----|
| Weightage (%) | 5 | 10 | 8 | 7 | 70 |

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:

0 —Mobile Communications, 2nd Edition, [Jochen Schiller, 2003](#)

References:

—Wireless and Mobile Networks Architectures, by Yi-Bing Lin & Imrich Chlamtac, John Wiley & Sons, 2001.

—Mobile and Personal Communication systems and services, by Raj Pandya, Prentice Hall of India, 2001.

—Third Generation Mobile Telecommunication systems, by P. Stavronlakis, Springer Publishers, 2001.

EMBEDDED SYSTEMS

| CODE | L | T | P/FW | CREDITS |
|------------|---|---|------|---------|
| UBC21 4 | 2 | 1 | - | 3 |

Module 1 INTRODUCTION

Introduction: Evolution of Computers, Technological Trends, Measuring performance Speed up, Computer organization: von Neumann Machine Architecture, Functional units and components, Program development tools. Instruction pipelining and parallel processing: Instruction pipeline, hazards, Data forwarding paths, RISC vs. CISC processors.

Module2:INTRODUCTION of EMBEDDED SYSTEM

Introduction of embeddes system, Processor: Embedded Processors in a System, Microprocessor, Microcontroller, Single Purpose Processors and Application specific system processors (ASSPs) in embedded systems. Embedded hardware units and devices

Module 3:INTERRUPTS HANDLER, EMBEDDED SOFTWARE

Interrupts handler, Embedded software, Final Machine Implement-able Software for a System, Coding of Software in Machine Codes, software in Processor Specific Assembly Language, Software in High Level Language, Program Models for Software Designing, Software for Concurrent Processing and Scheduling of Multiple Tasks and ISRs Using an RTOS, Software for the Device Drivers and Device Management using an Operating System, Software tools in designing of an Embedded System, Needed Software Tools in the Exemplary cases. Examples of Embedded System

Module 4: The Embedded Computing Platform

Embedded Computing Platform ,CPU Bus, Memory Devices, I/O Devices, Component Interfacing

Module 5: Real-Time Operating Systems

Inter Process Communication & Synchronization of Processes, task and threads, multiple processes in an application, multiple threads in an application, task and states, task and data clear cut distinction between functions, ISRs and Tasks by their Characteristics.

Module 6:CONCEPT OF SEMAPHORES

Concept of semaphores, Use of a Single Semaphore as an event signaling variable or notifying variable (event flag), Use of a Single Semaphore as resource key and in critical Section, Mutex, Use of Multiple Semaphores, Use of Mutex, Counting Semaphores, P and V semaphores shared data: Problem of Sharing Data by Multiple Tasks and Routines, Shared Data, Deadlock Situations ,inter process Communication semaphores, Message Queues, Mailboxes, Pipes, Sockets, Remote Procedure Calls (RPCs).

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

COMMUNICATION SKILLS - IV

| CODE | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| BCS601 | 1 | - | - | 1 |

Course Objective:

To enhance the skills needed to work in an English-speaking global business environment.

Course Contents:

Module I: Business/Technical Language Development

Advanced Grammar: Syntax, Tenses, Voices

Advanced Vocabulary skills: Jargons, Terminology, Colloquialism

Individualised pronunciation practice

Module II: Social Communication

Building relationships through Communication

Communication, Culture and Context

Entertainment and Communication

Informal business/ Technical Communication

Module III: Business Communication

Reading Business/ Technical press

Listening to Business/ Technical reports (TV, radio)

Researching for Business /Technology

Module IV: Presentations

Planning and getting started

Design and layout of presentation

Information Packaging

Making the Presentation

Examination Scheme:

| Components | CT1 | CT2 | CAF | V | GD | GP | A |
|---------------|-----|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 25 | 10 | 10 | 10 | 5 |

CAF – Communication Assessment File

GD – Group Discussion

GP – Group Presentation

Text & References:

Business Vocabulary in Use: Advanced Mascull, Cambridge

Business Communication, Raman –Prakash, Oxford

Business Communications, Rodgers, Cambridge

Working in English, Jones, Cambridge

New International Business English, Jones/Alexander, Cambridge

**BEHAVIOURAL SCIENCE - VI
(STRESS AND COPING STRATEGIES)**

| CODE | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| BSS601 | 1 | - | - | 1 |

Course Objective:

To develop an understanding the concept of stress its causes, symptoms and consequences.
To develop an understanding the consequences of the stress on one's wellness, health, and work performance.

Course Contents:

Module I: Stress

Meaning & Nature
Characteristics
Types of stress

Module II: Stages and Models of Stress

Stages of stress
The physiology of stress
Stimulus-oriented approach.
Response-oriented approach.
The transactional and interactional model.
Pressure – environment fit model of stress.

Module III: Causes and symptoms of stress

Personal
Organizational
Environmental

Module IV: Consequences of stress

Effect on behaviour and personality
Effect of stress on performance
Individual and Organizational consequences with special focus on health

Module V: Strategies for stress management

Importance of stress management
Healthy and Unhealthy strategies
Peer group and social support
Happiness and well-being

Module VI: End-of-Semester Appraisal

Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

| Components | SAP | A | Mid Term Test (CT) | VIVA | Journal for Success (JOS) |
|---------------|-----|----|--------------------|------|---------------------------|
| Weightage (%) | 20 | 05 | 20 | 30 | 25 |

Text & References:

Blonna, Richard; Coping with Stress in a Changing World: Second edition
Pestonjee, D.M, Pareek, Udai, Agarwal Rita; Studies in Stress And its Management
Pestonjee, D.M.; Stress and Coping: The Indian Experience
Clegg, Brian; Instant Stress Management – Bring calm to your life now

FRENCH - VI

| CODE | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLF601 | 2 | - | - | 2 |

Course Objective:

To strengthen the language of the students both in oral and written so that they can:
express their sentiments, emotions and opinions, reacting to information, situations;
narrate incidents, events;
perform certain simple communicative tasks.

Course Contents:

Module D: pp. 157 – 168 – Unité 12

Unité 12: s'évader

présenter, caractériser, définir

- 0 parler de livres, de lectures
- 1 préparer et organiser un voyage
- 2 exprimer des sentiments et des opinions
- 3 téléphoner
- 4 faire une réservation

Contenu grammatical:

proposition relative avec pronom relatif "qui", "que", "où" - pour caractériser
0 faire + verbe

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

le livre à suivre: Campus: Tome 1

GERMAN - VI

| CODE | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLG601 | 2 | - | - | 2 |

Course Objective:

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Adjective endings

Adjective endings in all the four cases discussed so far

Definite and indefinite articles

Cases without article

Module II: Comparative adverbs

Comparative adverbs as and like

Module III: Compound words

To learn the structure of compound words and the correct article which they take

Exploring the possibility of compound words in German

Module IV: Infinitive sentence

Special usage of _to‘ sentences called zu+ infinitive sentences

Module V: Texts

A Dialogue: _Ein schwieriger Gast‘

A text: _Abgeschlossene Vergangenheit‘

Module VI: Comprehension texts

Reading and comprehending various texts to consolidate the usage of the constructions learnt so far in this semester.

Module VII: Picture Description

Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;

Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

Wolfgang Hieber, Lernziel Deutsch

Hans-Heinrich Wangler, Sprachkurs Deutsch

Schulz Griesbach, Deutsche Sprachlehre für Ausländer

P.L Aneja, Deutsch Interessant- 1, 2 & 3
Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
Braun, Nieder, Schmoe, Deutsch als Fremdsprache 1A, Grundkurs

SPANISH – VI

| CODE | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLS601 | 2 | - | - | 2 |

Course Objective:

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations in Present as well as in Present Perfect Tense with ease.

Course Contents:

Module I

Revision of the earlier modules

Module II

Present Perfect Tense

Module III

Commands of irregular verbs

Module IV

Expressions with **Tener que** and **Hay que**

Module V

En la embajada

Emergency situations like fire, illness, accident, theft

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

Español, En Directo I A

Español Sin Fronteras

CHINESE – VI

| CODE | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLC601 | 2 | - | - | 2 |

Course Objective:

Chinese emperor Qin Shi Huang – Ti who built the great wall of China also built a network of 270 palaces, linked by tunnels, and was so afraid of assassination that he slept in a different palace each night. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I

Drills
 Dialogue practice
 Observe picture and answer the question.
 Pronunciation and intonation.
 Character writing and stroke order.

Module II

Going out to see a science exhibition
 Going to the theatre.
 Train or Plane is behind schedule.
 Indian Economy-Chinese Economy
 Talking about different Seasons of the Year and Weather conditions. Learning to say phrases like-spring, summer, fall, winter, fairly hot, very cold, very humid, very stuffy, neither hot nor cold, most comfortable, pleasant etc.

Module III

Temperature – how to say – What is the temperature in May here?
 How is the weather in summer in your area?
 Around 30 degrees
 Heating, air-conditioning
 Is winter in Shanghai very cold?
 Talking about birthdays and where you were born?
 The verb —shuoll (speak) saying useful phrases like speak very well, do not speak very well, if speak slowly then understand if speak fast then don't understand, difficult to speak, difficult to write, speak too fast, speak too slow, listen and can understand, listen and cannot understand ... etc.
 Tell the following in Chinese – My name is I was born in ... (year). My birthday is Today is (date and day of the week). I go to work (school) everyday. I usually leave home at . (O'clock). In the evening, I usually (do what)? At week end, I On Sundays I usually It is today..... It will soon be my younger sisters birthday. She was born in (year). She lives in (where). She is working (or studying)..... where... She lives in (where.)

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation
 I – Interaction/Conversation Practice

Text & References:

COMPUTER GRAPHICS

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC701 | 2 | 1 | - | 3 |

Course Objective:

The course provides the necessary theoretical background for introductory computer graphics and demonstrates the application of computer science to graphics. It also offers an opportunity for students to formulate and implement applications of computer graphics. This course further allows students to develop programming skills in computer graphics by programming assignments.

Course Contents:

Module I

Overview of Graphics System :Video Display Devices, Raster Scan Display, Random Scan Display, Input Devices, Graphic Software

Output Primitives :Points and Lines, Line-Drawing Algorithm, Circle Generation Algorithms, Ellipse Generation Algorithm, Conic Section, Polynomial and Spline Curves, Pixel Addressing, Filled Area Primitives, Fill Area Functions.

Module II

Two Dimensional Geometric Transformation :Basic Transformations, Motion Representation, Composite Transformation, Translation, Rotation, Scaling, General Pivot-Point Rotation, General Fixed Point Scaling, General Scaling Directions, Reflection, Shear, Transformation between Co-ordinate System, Affine Transformations, Raster Methods for Transformations

Two-Dimensional Viewing :The Viewing Pipeline, Viewing Co-ordinate Reference Frame, Window to New Port Co-ordinate Transformation, Two Dimensional Viewing Functions, Clipping Operations, Line Clipping, Polygon Dipping.

Module III

Three Dimensional Concepts :Three Dimensional Display Methods.Parallel Projection,Perspective Projection, Depth Cueing, Visible Line and Surface Identification, Surface Rendering

Three Dimensional Geometric and Modeling Transformations :Translation, Rotation, Scaling, Other Transformations, Composite Transformer.

Three Dimensional Viewing :Viewing Pipeline, Viewing Co-ordinate, Projections, Clipping

Module IV

Visual- Surface Detection Methods :Classification of Visiting Surface Detection Algorithm, Back Pace Detection, Depth-Buffer Method, A Buffer Method, Scan-Line Method

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Computer Graphics, Donald Hearn, M Pauline Baker, 2nd Edition, PHI 1999
Schaum Series, Computer Graphics

References:

Computer Graphics, N. Krishnamurthy, TMH

OBJECT ORIENTED PROGRAMMING WITH C++

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC702 | 2 | 1 | - | 3 |

Course Objective:

This course is aimed at developing Programming skills using Object Oriented Technology in C++. This purpose of this subject is to improve the programming approach and development of software using OOPS technology. The Subject involves various concepts of Object Oriented Programming such as Classes, Objects, Polymorphism, Inheritance, Templates, Exception Handling etc. needed for a better approach towards software development.

Course Contents:

Module I: Basic Concepts of OOPS

Introduction of C++, Features of OOPS, Distinction between procedural and oops programming, definitions of class and objects, Concepts of inheritance, encapsulation Abstraction, and Polymorphism. Dynamic Binding, Message Passing. Characteristics of Object-Oriented Languages.

Module II: Overview of OOP Using C++

Basic Program Construction: Main And Functions, Program Statements, Class Declaration, Comments, Starting, Compiling and Executing C++ Programs, Elements of C++ Language, Variables & Constants, Data Types Operators, Control Statements, Loops, Arrays

Module III: Functions

Simple Functions, Passing Arguments & Returning Values, Reference variables and arguments, Function Overloading, Inline Functions, Programming Style, Access Specifiers.

Module IV: Classes and Objects

Object & classes, attributes, methods, C++ class declaration, Local Class and Global Class, Structures and Classes, Scope resolution operator, Friend Functions, Constructors and destructors, instantiation of objects, Types of Constructors, Static Class Data, Array of Objects, Constant member functions and Objects.

Module V: Inheritance

Inheritance, Types of Inheritance, access modes – public, private & protected, Abstract Classes, Ambiguity resolution using scope resolution operator and Virtual base class, Overriding inheritance methods, Constructors in derived class. Nesting of Classes

Module VI: Polymorphism

Polymorphism, Type of Polymorphism – Compile time and runtime, Function Overloading, Operator Overloading. Overloading unary operator, Overloading binary operator, Pitfalls of Operator Overloading, Data Conversion from one data type to another. Pointers and Arrays, Pointers and Functions, Pointer to objects, this pointer, Virtual Functions, pure virtual functions. Memory management Operators.

Module VII: Files and Streams

Files and Streams: streams, string I/O, character I/O, object I/O, file pointer, error handling, command line arguments. formatted and Unformatted Input output

Module VIII: Template and Exception handling

Generic Programming – function template, class Template Standard Template Library: Overview of Standard Template Library, Containers, Algorithms, Iterators, Other STL Elements, The Container Classes. Overview of Exception handling.

Examination Scheme:

| Components | CT1 | PR. | ATTD. | EE |
|---------------|-----|-----|-------|----|
| Weightage (%) | 10 | 15 | 5 | 70 |

Text & References:

Text:

Object Oriented Programming in Turbo C++ , E. Balaguruswamy, Tata McGrahill

References:

Object Oriented Programming with C++, Robert Lafore, Galgotia Publication
C++ Programming, Yashavant Karnitkar, BPB Publications

CORE JAVA

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC703 | 2 | 1 | - | 3 |

Course Objective:

This course will introduce the essential topics of Internet Programming predominately with the Java programming language. Students will design and write interactive WWW pages using Java, HTML, CGI, VRML programming languages. Students will develop software that manipulates different forms of data such as hypertext, graphics, video, and sound. Advanced interactive/executable web pages will be developed.

Course Contents:

Module I: Introduction

Basics of computer communication, OSI Model of ISO, LAN, WAN, Internet, Evolution of Internet, Internet Applications, TCP/IP, Introduction to RFC, Addressing in Internet – IP and Domains, Internet Service Providers, Types of connectivity such as dial-up, leased, VSAT etc., Internet Server and Client modules on various Operating Systems

Module II: Introduction to World Wide Web

Evolution of World Wide Web, Basic features, WWW browsers, WWW servers, HTTP & URL's

Module III: WWW Browsers

Basic features, Netscape Communicator, Internet Explorer, Internet Explorer

Module IV: HTML

Document Overview, Header Element, Lists Hypertext Links, Visual Markup, URLs Images, Forms, Tables, Special Characters

Module V: Introduction to JAVA Programming

Introduction to Java, Java features, An Overview of Java, Data Types, Variables, Arrays, Operators, and Control Statements.

Module VI: Java with Object Orientated Features

Introducing Classes, A Closer look at Methods and Classes, Inheritance, Packages and Interfaces, Exception Handling, Multithreaded Programming, I/O, and Applets.

Module VII: The Java Library

String Handling, Exploring java lang, Input/Output: Exploring java. io, Networking, and Event Handling.

Module VIII: GUI in Java

Introducing the AWT: Working with Windows, Layout Managers, and Images.

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Patrick Naughtn and Herbert Schildt The Complete Reference, Java 2, TMH
Douglas E.Cmer, Computer Networks & Internet, Pearson.

References:

The Internet :By- Douglas E.Cmer: TMH

SUMMER PROJECT- I

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC760 | - | - | - | 6 |

Guidelines:

There are certain phases of every Intern's professional development that cannot be effectively taught in the academic environment. These facets can only be learned through direct, on-the-job experience working with successful professionals and experts in the field. The internship program can best be described as an attempt to institutionalize efforts to bridge the gap between the professional world and the academic institutions. Entire effort in internship is in terms of extending the program of education and evaluation beyond the classroom of a university or institution. The educational process in the internship course seeks out and focuses attention on many latent attributes, which do not surface in the normal classroom situations. These attributes are intellectual ability, professional judgment and decision-making ability, inter-disciplinary approach, skills for data handling, ability in written and oral presentation, sense of responsibility etc.

In order to achieve these objectives, each student will maintain a file (**Internship File**). The Internship File aims to encourage students to keep a personal record of their learning and achievement throughout the Programme. It can be used as the basis for lifelong learning and for job applications. Items can be drawn from activities completed in the course modules and from the workplace to demonstrate learning and personal development.

The File will assess the student's analytical skills and ability to present supportive evidence, whilst demonstrating understanding of their organization, its needs and their own personal contribution to the organization.

The **layout guidelines** for the Project & Seminar Report

0 File should be in the following specification

- A4 size paper
- Font: Arial (10 points) or Times New Roman (12 points)
- Line spacing: 1.5
- Top & bottom margins: 1 inch/ 2.5 cm
- Left & right margins: 1.25 inches/ 3 cm

Report Layout: The report should contain the following components

Front Page

Table of Content

Acknowledgement Student

Certificate Company

Profile (optional)

Introduction

Main Body

References / Bibliography

The File will include **five sections** in the order described below. The content and comprehensiveness of the main body and appendices of the report should include the following:

The Title Page--Title - An Internship Experience Report For (Your Name), name of internship organization, name of the Supervisor/Guide and his/her designation, date started and completed, and number of credits for which the report is submitted.

Table of Content--an outline of the contents by topics and subtopics with the page number and location of each section.

Introduction--short, but should include how and why you obtained the internship experience position and the relationship it has to your professional and career goals.

Main Body--should include but not be limited to daily tasks performed. Major projects contributed to, dates, hours on task, observations and feelings, meetings attended and their purposes, listing of tools and materials and their suppliers, and photographs if possible of projects, buildings and co-workers.

References / Bibliography --This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system

ASSESSMENT OF THE INTERNSHIP FILE

The student will be provided with the Student Assessment Record (SAR) to be placed in front of the Internship File. Each item in the SAR is ticked off when it is completed successfully. The faculty will also assess each item as it is completed. The SAR will be signed by the student and by the faculty to indicate that the File is the student's own work. It will also ensure regularity and meeting the delaines.

STUDENT ASSESSMENT RECORD (SAR)

Range of Research Methods used to obtain information

Execution of Research

Data Analysis

0 Analyse Quantitative/ Qualitative information

1 Control Quality

Draw Conclusions

Examination Scheme:

| Components | V | S | R | FP |
|----------------------|----------|----------|----------|-----------|
| Weightage (%) | 20 | 20 | 20 | 40 |

V – Viva, S – Synopsis, FP – Final Presentation, R - Report

COMPUTER GRAPHICS LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC720 | - | - | 2 | 1 |

Course Contents:

List of Computer Graphics Programmes

- Write a program to change the working mode from text to graphics and plot a pixel.
- Write a program to draw a line of same dimension in three different graphics mode.
- Write a program to display line, rectangle, circle and polyline using graphics command.
- Write a program to draw a line of slope between 0 and 1 using DDA algorithm.
- Write a program to draw a line of slope between 1 and ∞ using DDA algorithm.
- Write a program to draw a line of slope between 0 and 1 using midpoint algorithm.
- Write a program to draw a line of slope between 1 and ∞ using midpoint algorithm.
- Write a program to draw a dashed line of slope 1 using any line algorithm.
- Write a program to draw a dotted line of slope 1 using DDA algorithm.
- Write a program to draw a line of slope between 0 and -1 using midpoint algorithm.
- Write a program to draw a line of slope between -1 and $-\infty$ using midpoint algorithm.
- Write a program to draw an octant of a circle with its center at point (0,0) using midpoint circle drawing.
- Write a program to draw a circle with its center at point (0, 0) and radius r using midpoint circle drawing.
- Write a program to draw an octant of a circle with its center at point (a, b) and radius r using midpoint circle drawing.
- Write a program to draw a circle with its center at point (a, b) and radius r using midpoint circle drawing.
- Write a program to fill a polygon using flood-fill method.
- Write a program to fill a polygon using boundary-fill method.
- Write a program to reflect a point in X and Y-axis both.
- Write a program to rotate a point (100, 50) about origin in anti-clock wise direction.
- Write a program to rotate a point (100,150) about point (30, 40) in clock wise direction..

OBJECT ORIENTED PROGRAMMING WITH C++ LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC721 | - | - | 2 | 1 |

Write a program to display diamond of stars (*'s).

WAP to print Fibonacci series of `_n'` numbers, where n is given by the programmer.

WAP to read a set of numbers in an array & to find the largest of them.

WAP to sort a list of names in ascending order.

WAP to sort an array of integers using functions.

WAP to exchange contents of two variables using call by value.

WAP to exchange contents of two variables using call by reference.

WAP to do the following using inline functions:

0 Generate the following menu:

0.0 Add two numbers.

0.1 Subtract two numbers.

0.2 Multiply two numbers.

0.3 Divide two numbers.

0.4 Exit.

1 Ask the user to input two integers and then input a choice from the menu. Perform all the arithmetic operations which have been offered by the menu. Checks for errors caused due to inappropriate entry by user and output a statement accordingly.

WAP to add two complex numbers using friend function.

Write a program to exchange values between two classes using friend function.

Calculate area of different geometrical figures (circle, rectangle, square, triangle) using function overloading.

Write a program to overload a function and create a situation such that the compiler does internal conversion.

Create a class Complex for performing all arithmetic operations with complex numbers.

WAP to maintain the student record which contains Roll number, Name, Marks1, Marks2, Marks3 as data member and `getdata()`, `display()` and `setdata()` as member functions.

Write a class bank, containing data member: Name of Depositor, A/c type, Type of A/c, Balance amount.

Member function: To assign initial value, To deposit an amount, to withdraw an amount after checking the balance (which should be greater than Rs. 500), To display name & balance.

Write a program to add & multiply two matrices by overloading + and * operators respectively.

Design three classes: Student, Test & Result. The Student class has its data members such as roll no, name etc.

Create a Test class by inheriting the Student class. The Test class adds its own data members representing the marks scored in four subjects. Design one more class named as Sports which has a single data member representing sports marks. Derive the Result from class Test & Sports. What type of relationship this model belongs to? Write a program to model this relationship.

Write a class string to compare two strings, overload (==) operator.

Declare a class of vehicle. Derived classes are two-wheeler, three-wheeler & four-wheeler. Display the properties of each type of vehicle using member functions of classes.

Create two classes namely Employee and Qualification. Using multiple inheritance derive two classes Scientist and Manager. Take suitable attributes & operations. WAP to implement this class hierarchy.

Consider an example of book shop which sells books and video tapes. These two classes are inherited from base class called media. The media class has command data members such as title and publication. The Book class has data members for storing number of pages in a book and tape class has playing time in a tape. Each class will have member functions such as `read()` and `show()`. In the base class, these members have to be defined as virtual functions. Write a program to model the class hierarchy for book shop and process objects of these classes using pointers to base class.

Write a program to create template to perform bubble sort for an array of any data type.

WAP to read data from keyboard & write it to the file. After writing is completed, the file is closed. The program again opens the same file and reads it.

WAP to reverse a string using pointers and arrays.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

CORE JAVA LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC722 | - | - | 2 | 1 |

Write a Java Program to compute & print factorial of any given number.

Write a Java Program to compute the sum of digits of a given integer.

Write a Java Program to calculate & print first n Fibonacci numbers.

Write a Java Program to reverse the digits of a numbers.

Assume that a bank maintains two kinds of account for its customers, one called saving and other current. The saving account provides compound interest and withdrawal facilities but not cheque book. The current account provides cheque book but no interest. Current account holders should also maintain a min balance & if the balance falls below, a service charge is imposed. Create a class Account that stores customer name, account number & type of account. From this derive the classes Curr-acc & Sav-acc to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks:

- 0 Accept deposit from a customer and update the balance
- 1 Display the balance.
- 2 Compute and deposit interest
- 3 Permit withdrawal and update the balance.
- 4 Check for the minimum balance, impose penalty. If necessary, and update the balance

Write a Java Program to sort element of the array.

Write a Java Program to read marks out of 100 declare result as follows:

- a. 60 or more 1st class
- b. 50-59 2nd class
- c. 40-49 pass
- d. Less than 40 fail

Write a java program to check whether a year is a leap year or not.

Write a Java Program to read string from console and display the number of occurrence of each word

Write a Java Program to demonstrate use of Inheritance through vehicle, two wheeler, four wheeler and three-wheeler class.

Write a Java Program to demonstrate runtime polymorphism with the help of abstract classes.

Write a Java Program to demonstrate runtime polymorphism with the help of interfaces.

Write a java program to display the use of all access modifiers with the help of two packages

Write a Java Program to take a filename as command line argument and display its contents.

Write a Java Program that reads a file and then displays it, with a line number before each line.

Write a Java Program that displays number of characters, lines and words in a text file.

Write a Java Program that appends the contents of one file to another.

Write a Java Program to demonstrate how we can make sure that the main thread gets executed after the child threads finishes.

Write a Java Program to show exception handling. Also demonstrate the use of finally.

Write a Java program which takes as input a number and throws a user defined exception when number is greater than 10.

Write a Java Program to demonstrate the use of throws. Also show what happens if a parent exception class precedes a child exception class in the throws class.

Write a Java Program to demonstrate the Applet Life Cycle.

Develop an applet that displays the received integer in one text box and then on pressing the compute button, displays the factorial in another text box.

Write a Java Program to demonstrate a working chat applet (Create both server and client).

Write a Java Program to roll a given string diagonally in an Applet. Make use of <param> tag for setting the width and height of the applet.

Write a Java Program a program to show how interface can be used to support multiple inheritances in java.

Create an applet that will have a text area and a Frame. When any mouse event occurs on the frame, make an entry of that event into the text area. For example, add —Mouse Dragged when the mouse is dragged.

Write a Java program in which Server and client communicate using UDP sockets.

Write a Java program in which Server and client communicate using TCP/IP sockets.

Create an applet with Border Layout, with a button in each of the border layout component.

Examination Scheme:

| IA | | | | EE | |
|-----------|-----------|-----------|----------|-----------|----------|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Fundamentals of E-Commerce

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC710 | 2 | 1 | - | 3 |

Course Objective:

To make a student familiar with the mechanism of conducting business transactions through electronic media. To understand the scenario in India.

Module 1: Introduction to E-Commerce

Introduction to e-commerce, e-commerce opportunities, e-com framework, recent developments, new trends, Introduction to e-business, What is the difference between e-commerce and e-business?, How significant are e-commerce and e-business?, Business adoption of digital technologies for e-commerce and e-business, Introduction to B2B, B2C and C2C models and companies

Module 2: Internet Protocols

Development & growth, DNS, commercialization of internet, planning for network infra-structure and web architecture, introduction to internet protocols- layers and networking, Internet Protocol suite, Desktop TCP/IP, Mobile TCP/IP based networking, Multicast IP, Focus on web service and service and service-oriented, Focus on new access devices

Module 3: Website Hosting

Principles of website hosting and promotion, decision on website design, legal issues, Domain Name Registration, website hosting, website registration, online and offline promotion

Module 4: E-Commerce Business Models

Difference between e-commerce and e-business, business models: brokerage model, advertising model, infomediary model, merchant model, manufacturer model, affiliate model, community model, subscription model, utility model, tried & true models

Module 5: Electronic Payment

Auctions as a price setting mechanism, pricing information, versioning information, cyber laws, digital cash, e-wallet, concept of https, IVR transactions, payment through net banking, digital signature

Module 6: E-business strategy & M-Commerce

Introduction, Strategic analysis, Strategic objectives, Strategy definition, Strategy implementation, Focus on information systems strategy and e-business strategy, e-procurement, e-governance, e-marketing, change management

Introduction to m-commerce: Emerging applications, different players in m-commerce, m-commerce life cycle Mobile financial services, mobile entertainment services, and proactive service management, Management of mobile commerce services: Content development and distribution to hand-held devices, content caching, pricing of mobile commerce services, the emerging issues in mobile commerce: The role of emerging wireless LANs and 3G/4G wireless networks, personalized content management, implementation challenges in m-commerce, futuristic m-commerce services

Examination Scheme:

| Components | CT | HA/V/Q | ATTD. | EE |
|---------------|----|--------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

References:

E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, John Wiley.

E-Commerce, S.Jaiswal – Galgotia.

E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang

ACCOUNTING & FINANCIAL MANAGEMENT

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC711 | 2 | 1 | - | 3 |

Course Objective:

This course is designed to provide a basic understanding of financial accounting, including introductory accounting theory, concepts, principles and procedures. Specific attention will be devoted to the preparation and understanding of the financial statements.

Course Contents:

Module I: Accounting

Principles, concepts and conventions, double entry system of accounting, introduction to basic books of accounts of sole proprietary concern, closing of books of accounts and preparation of trial balance.

Final Accounts: Trading, Profit and Loss accounts and Balance Sheet of sole proprietary concern (Without adjustments).

Module II: Financial Management

Meaning, scope and role, A brief study of functional areas of financial management. Introduction to Various FM Tools: Ratio Analysis, Fund flow statement & Cash flow statement. Introduction to Cost Accounting Nature, Importance & Basic Principles. Brief Introduction to methods of Costing & Elements of Cost, Unit Costing.

Module III: Computerized Accounting

Meaning & advantages, limitations of computerised accounting, manual accounting verses computerised accounting, Source documents, Balancing Accounts, Trial Balance & Final A/Cs in Computerised. Accounting. Modules of Computerised Accounting Systems. Developing computerised accounting systems, control & Audit in computerised accounting.

Module IV: Financial Systems

Business Systems, Production Control System, Inventory System, Payroll System

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Financial Accounting, P. C. Tulsian
Principles A Book - Keeping, J.C. Katyal
Financial Management, I.M. Pandey, Vikas Publications,
Computerized Accounting, P.H. Bassett, BPB.

References:

Financial Management, P.V. Kulkarni, Himalaya Publishing House.
Management Accounting, Sharma, Gupta & Bhalla
Business Computer Systems: Design, Programming & Maintenance, Charlotte Eudy McConn, PHI

PARALLEL PROCESSING

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC712 | 2 | 1 | - | 3 |

Course Objective:

This is an introductory course in parallel computing. We will examine parallel architectures, parallel programming, and parallel algorithms and distributed programming. The course is software oriented with applications in high performance computing and scientific computing.

Course Contents:

Module I: Basic Concepts

Introduction to parallel processing, parallel processing terminology, decomposition, complexity, throughout, speedup, measures, data dependence, resource dependence, Bernstein's conditions levels of parallelism in programs. Program flow-control flow, data flow, Distributed systems – Introduction, advantages, tightly-coupled loosely-coupled systems. Hardware and software requirements, design issues.

Module II: Parallel Processing – Structure & Organization

Taxonomy of parallel processes: granularity, basic architectures, multiprocessors, vector processors, pipeline, array, systolic, wave front array, cube architecture, hypercube, CCC, pyramid, prism, network architecture – binary tree, hypertree butterfly, shuffle exchange, dataflow architecture, connection machine.

Distributed Systems: Review of networks, layered protocols – Physical, data link network, transport, application, Network operating system, Distributed Operating System, Resource sharing, Message passing, example system, Synchronization aspects, clocks, algorithms, Mutual exclusion, coroutines, CSP, DP, Deadlocks, Distributed deadlock detection, Modelling – Petri Nets.

Module III: Parallel Algorithms

PRAM model of computation, Elementary parallel algorithms – Broadcast, prefix sums, permutation, parallel selection, merging, sorting, Odd-even, bitonic merge, dictionary operations, elliss, Algorithm Graph Algorithms, Matrix-transportation, multiplication, solving linear systems.

Module IV: Parallel & Distributed Programming

Parallel Programming environments, models, synchronous asynchronous programming, modulla-2, occamm, FORTRAN, DAP FORTRAN, Actus, data flow programming, VAL.

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

- Michael J. Quinn, —Parallel Computing – Theory and Practice, 2nd Edition, McGraw Hill, 1994
Kai Hwang, —Advanced Computer Architecture – Parallelism, Scalability, Programmability, McGraw Hill Inc, 1993
S. G. Akl, —The Design and Analysis of parallel algorithms, Englewood Cliffs, NJ, 1989

References:

- A. S. Tanenbaum, —Modern Operating System, PHI, 1996.
R. H. Perrott, —Parallel Programming, Addison Wesley, 1987.
T. G. Lewie and H. Ele-Revini, —Introduction to Parallel computing, PHI, NJ, 1992.

ADVANCED DATABASE CONCEPTS

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC713 | 2 | 1 | - | 3 |

Course Objective:

The purpose of this course is to provide students with a strong foundation in advanced database concepts from an industry perspective. The course covers advanced data modeling concepts like query processing, transaction and concurrency control techniques. Students also learn object-oriented and object-relational database, distributed database concepts as well as the growing relationship between databases and the World Wide Web.

Course Contents:

Module I: Query Processing

Basic concepts of query processing, converting SQL queries into Relational Algebra, Basic Algorithms for executing query operations, Query tree and query graph, Heuristic optimization of query tree.

Module II: Transaction & Concurrency Control

Basic definitions, ACID properties, schedules, Serializability of schedules, deadlocks, and concurrency control techniques, locking techniques, time-stamp based techniques, Multi-version techniques, validation techniques.

Module III: Object Oriented and Extended Relational Database Technologies

Overview of Object oriented database, OO Concepts, Encapsulation of Operations and methods, Inheritance, Object Model, Object definition language, object Query Language, Object Relational Concepts.

Module IV: Distributed Database

Introduction, Distributed databases principles, architectures, design, implementation. Fragmentation, Transparencies in Distributed Databases, Transaction control in Distributed Database, Query Processing in Distributed Database

Module V: Emerging Database Trends

Object oriented databases, Data warehousing and Data Mining, Active database, Spatial Database, Deductive database, Temporal database, Multimedia database, Distributed Database.

Examination Scheme:

| Components | CT1 | PR. | ATTD. | EE |
|---------------|-----|-----|-------|----|
| Weightage (%) | 10 | 15 | 5 | 70 |

Text & References:

Text:

Fundamental of Database Systems, Elmasri & Navathe, Pearson Education, Asia
Database System Concepts, Korth & Sudarshan, TMH

References:

Data Base Management System, Leon & Leon, Vikas Publications
Introduction to Database Systems, Bipin C Desai, Galgotia

THEORY OF COMPUTATION

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC714 | 2 | 1 | - | 3 |

Module I: Automata

Introduction to formal proof – Additional forms of proof – Inductive proofs – Finite Automata (FA) – Deterministic Finite Automata (DFA) – Non-deterministic Finite Automata (NFA) – Finite Automata with Epsilon transitions.

Module II: Regular expressions and languages

Regular Expression – FA and Regular Expressions – Proving languages not to be regular – Closure properties of regular languages – Equivalence and minimization of Automata.

Module III: Context-free grammars and languages

Context-Free Grammar (CFG) – Parse Trees – Ambiguity in grammars and languages – Definition of the Pushdown automata – Languages of a Pushdown Automata – Equivalence of Pushdown automata and CFG – Deterministic Pushdown Automata.

Module IV: Properties of context-free languages

Normal forms for CFG – Pumping Lemma for CFL – Closure Properties of CFL – Turing Machines – Programming Techniques for TM.

Module V: Undecidability

A language that is not Recursively Enumerable (RE) – An undecidable problem that is RE – Undecidable problems about Turing Machine – Post's Correspondence Problem – The classes P and NP.

Text Book:

J.E. Hopcroft, R. Motwani and J.D. Ullman, —Introduction to Automata Theory, Languages and Computations, second Edition, Pearson Education, 2007.

References:

H.R. Lewis and C.H. Papadimitriou, —Elements of the theory of Computation, Second Edition, Pearson Education, 2003.

Thomas A. Sudkamp, —An Introduction to the Theory of Computer Science, Languages and Machines, Third Edition, Pearson Education, 2007.

Raymond Greenlaw and H. James Hoover, —Fundamentals of Theory of Computation, Principles and Practice, Morgan Kaufmann Publishers, 1998.

Michael Sipser, —Introduction of the Theory and Computation, Thomson Brokecole, 1997.

J. Martin, —Introduction to Languages and the Theory of computation, Third Edition, Tata Mc Graw Hill, 2007

C# (C Sharp) with GUI

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC730 | 2 | 1 | - | 3 |

Course Objective:

- To understand .NET technology and .NET framework
- To gain ability to work in Visual Studio 2008 Team System IDE
- To recap Object Oriented Concept and its use in C#
- To gain ability to work with windows programming and event handling
- Usage of built-in testing and code analysis tools in Visual Studio 2008 Team System in .NET framework

Course Contents:

Module I

Introduction to OOPs: Introduction to OOPs, Features of OOPs: Encapsulation, Abstraction, Inheritance, Polymorphism, Concept of Classes and Objects, Introduction to compilers, Introduction to .Net framework, Introduction to Visual Studio IDE

Introduction to C#: Define classes in C#, Introduction to Namespaces, Defining Access Specifiers, Declare variables, Data-types in C#, Writing, compiling & executing programs in C#, Use various operators: Arithmetic operators, Arithmetic assignment operators, Unary operators, Comparison operators, Logical operators, Use conditional constructs, Use looping constructs, Working with arrays and multi-dimensional arrays

Working with Methods : Use methods, using methods with parameters, using static variables and static functions, main method: its parameters and using options, constructors: types of constructors (instance & static), using default and parameterized constructors, static block, using destructors

Module II

Working with Classes and Objects : Describe memory allocation, Use structures, Use enumerations, Use collections, life cycle of an object, Relationship between classes: Inheritance relationship, Composition relationship, Utilization relationship, Instantiation relationship, Implement Encapsulation by using Access Specifiers. Using abstract classes, using abstract methods, using sealed classes, using interfaces, implementing polymorphism: function overloading & overriding, constructor overloading, operator overloading

Module III

File Handling: Implementing the file input and output operations, File Stream class, implementing read & write operations in text and binary files, Implement the Windows File System: DirectoryInfo class, FileInfo class

Exception Handling : Describing exceptions, types of errors, exception classes, Exception Super class, handling exceptions, implementing the user-defined exceptions, use of throw & throws keywords

Module IV

Working with Threads: Concept of threading, implementing threads, defining the life cycle of a thread, understanding and implementing multi-threading, identifying and modifying thread priority, using synchronization between threads, working with delegates

Module V

GUI : Introduction to GUI, identify the controls of GUI, use of Visual Studio GUI for developing windows applications, Working with form controls, validate user inputs using controls and events, working with CommonDialog class, working with menus, working with MDI applications, using ToolStrip control, using crystal reports

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Troelsen, Andrew, —C# and the .NET Platform, Apress

Archer, Tom , —Inside C#, Wrox Publication

Sharp, John, —Microsoft Visual C# 2005 Step by Step, Microsoft, 2005

References:

Microsoft.com .NET site (<http://www.microsoft.com/net>)

.NET Framework 3.0 (formerly WinFX) <http://www.netfx3.com>

Virtual labs at <http://msdn.microsoft.com/virtuallabs/netframe/default.aspx>

Learn .NET 3.5 at <http://msdn2.microsoft.com/en-us/netframework/default.aspx>

MSDN® Online .NET Information (<http://msdn.microsoft.com/net>): A rich source of information for developers worldwide who want to use .NET technologies and tool

Visual Studio.NET home page (<http://msdn2.microsoft.com/en-us/vstudio/default.aspx>.) Product information for the rapid application development environment Visual Studio.NET.

www.msdn.com

<http://www.c-sharpcorner.com/>

PHOTOSHOP

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC731 | 2 | 1 | - | 3 |

Course Objective:

The course provides the introduction to using Adobe Photoshop for the purposes of working with digital images, restoring photographs, creating professional advertisements, Graphic design techniques.

Course Contents:

Module I

Basics of Adobe Photoshop :About Photoshop, Navigating Photoshop, Menus and panels, Opening new files, Opening existing files, Exploring the Toolbox, Applications Bar & the Options Bar, Creating & Viewing a New Document, Customizing the Interface, Setting Preferences, using the tools, basic workflow, creating effective storing, batch renaming, how to save your photos, digital asset management, File types, File sizes, Color types

Layers :Layer styles, opacity, adjustment layers, Understanding the Background Layer, Creating, Selecting, Linking & Deleting Layers, Locking & Merging Layers, Copying Layers, Using Perspective & Layer Styles, Filling & Grouping Layers, Introduction to Blending Modes, Blending Modes, Opacity & Fill, Creating & Modifying Text

Module II

Retouching :Color manipulations, Levels, Curves, Seeing Color accurately, Patch tool, Cropping, Reading your palettes, Dust and scratches, smoothing skin, smoothing wrinkles, special color effects: black and white, sepia, grainy, Color Spaces & Color Modes, The Variations Command, The Auto Commands, Adjusting Levels, Adjust Curves, Non-Destructively with Adjustment Layers

Module III

Working with images :Zooming & Panning an Image, Working with Multiple Images, Rulers, Guides & Grids, Undoing Steps with History, Adjusting Color with the New Adjustments Panel, The New Masks Panel & Vibrance Color Correction Command, The New Note Tool & the Save for Web & Devices Interface, The New Auto-Blend & Auto-Align Layers Commands, The New 3D Commands, Understanding Pixels & Resolution, The Image Size Command, Interpolation Options, Resizing for Print & Web, Cropping & Straightening an Image, Adjusting Canvas Size & Canvas Rotation, Printing basics, emailing basics, making cards, making collages, cataloging your images

Module IV

Working with pictures :The Red Eye Tool, The Clone Stamp Tool, The Patch Tool & the Healing Brush Tool, The Spot Healing Brush Tool, The Color Replacement Tool, The Toning & Focus Tools, Painting with History, editing your photoshoot, naming your shoot, automating your shoot, batch processing, introduction to actions

Module V

Working with tools and Special Effects:Selecting with the Elliptical Marquee Tool, Using the Magic Wand & Free Transform Tool, Selecting with the Regular & Polygonal Lasso Tools, Combining Selections, Using the Magnetic Lasso Tool, Using the Quick Selection Tool & Refine Edge, Modifying Selections, Using the Brush Tool, Working with Colors & Swatches, Creating Using Gradients, Creating & Working with Brushes, Using the Pencil & Eraser Tools, Painting with Selections, Quick Mask Options, Painting a Selection, Saving & Removing a Selection from the Background, Understanding Paths & the Pen Tool, Creating Straight & Curved Paths, Creating Combo Paths, Creating a Clipping Path, Getting Started with Photoshop Filters, Smart Filters, Creating Text Effects, Applying Gradients to Text

Examination Scheme:

| | | | | |
|----------------------|-----------|---------------|-------------|-----------|
| Components | CT | HA/V/Q | Attd | EE |
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Adobe Photoshop CS4 Classroom in a Book , By Adobe Creative Team

References:

UNDERSTANDING ADOBE PHOTOSHOP: Digital Imaging Concepts and Techniques, by Richard Harrington

DATA WAREHOUSING AND DATA MINING

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC732 | 2 | 1 | - | 3 |

Course Objective:

This course unit is divided into two parts: one on Data Warehousing and one on Data Mining. Both data warehousing and data mining are advanced recent developments in database technology which aim to address the problem of extracting information from the overwhelmingly large amounts of data which modern societies are capable of amassing. Data warehousing focuses on supporting the analysis of data in a multidimensional way. Data mining focuses on inducing compressed representations of data in the form of descriptive and predictive models. Course gives an in-depth knowledge of both the concepts.

Course Contents:

Module I: Data Warehousing

Introduction to Data Warehouse, its competitive advantage, Data warehouse vs Operational Data, Things to consider while building Data Warehouse

Module II: Implementation

Building Data warehousing team, Defining data warehousing project, data warehousing project management, Project estimation for data warehousing, Data warehousing project implementation

Module III: Techniques

Bitmapped indexes, Star queries, Read only tablespaces, Parallel Processing, Partition views, Optimizing extraction process

Module IV: Data Mining

From Data ware housing to Data Mining, Objectives of Data Mining, the Business context for Data mining, Process improvement, marketing and Customer Relationship Management (CRM), the Technical context for Data Mining, machine learning, decision support and computer technology.

Module V: Data Mining Techniques and Algorithms

Process of data mining, Algorithms, Data base segmentation or clustering, predictive Modeling, Link Analysis, Data Mining Techniques, Automatic Cluster Detection, Decision trees and Neural Networks.

Module VI: Data Mining Environment

Case studies in building business environment, Application of data ware housing and Data mining in Government, National Data ware houses and case studies.

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Data Warehousing, Data Mining & OLAP, Alex Berson, Stephen J. Smith, Tata McGraw-Hill Edition 2004.
Data Mining: Concepts and Techniques, J. Han, M. Kamber, Academic Press, Morgan Kaufman Publishers, 2001
Data Ware housing: Concepts, Techniques, Products and Applications, C.S.R. Prabhu, Prentice Hall of India, 2001.

References:

Mastering Data Mining: The Art and Science of Customer Relationship Management, Berry and Lin off, John Wiley and Sons, 2001.
Data Mining, Pieter Adrians, Dolf Zantinge, Addison Wesley, 2000.
Data Mining with Microsoft SQL Server, Seidman, Prentice Hall of India, 2001.

NETWORK FUNDAMENTALS

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC733 | 2 | 1 | - | 3 |

Course Objective:

The goal of CCNA Exploration Network Fundamentals course is to introduce you to fundamental networking concepts and technologies. This course will assist you in developing the skills necessary to plan and implement small networks across a range of applications.

Course Contents:

Module I: Living in a Network Centric World

Networks supporting the way we live, Examples of today's popular communication tools, Communication, Network as platform, The Elements of Network, Converged network The Architecture of Internet, Trends in Networking.

Module II: Communicating over the Network

Introduction, LANs, WANs and Internetworks, Network Addressing

Module III: Application Layer Functionality and Protocols

Introduction, making provision for applications and services, Application layer protocols and services.

Module IV: OSI Transport Layer

Introduction, The TCP protocol –communicating with reliability, Managing TCP sessions, The UDP protocol communicating with low overheads

Module V: OSI Network Layer

Introduction, Networks-dividing host into groups, Routing –How our data packets are handled, Routing process.

Module VI: Addressing the Network - IPv4

Introduction, Address for different purpose, Assigning address, Calculating address, testing the Network layer.

Module VII: Data Link Layer

Introduction, Data Link Layer-Accessing the media .Media Access Control Techniques, Media Access Control Addressing and Framing Data.

Module VIII: OSI Physical Layer

Introduction, The Physical Layer-Communication Signals, Physical Signaling and Encoding, Representing Bits, Physical Media-Connecting Communication.

Module IX: Ethernet

Overview of Ethernet, Ethernet –Communication through the LAN, The Ethernet Frame ,Ethernet Media Access Control, Ethernet Physical Layer, Hubs and Switches, Address Resolution Protocol(ARP)

Module X: Planning and Cabling Networks

Introduction, LANs-Making the Physical connections, Device Selection Factors, Device Interconnecting ,Developing an Addressing Scheme, Calculating the subnets, Device Interconnections.

Module XI: Configuring and Testing Your Network

Configuring CISCO devices –IOS basics, applying a Basic Configuration using CISCO IOS, Verifying Connectivity, Monitoring and Documenting of Networks.

CCNA Exploration: Network Fundamentals (Guided Case Study)

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Cisco Networking Academy Programme CCNA 1 & 2 Companion Guide, 3rd Edn by Pearson Education
Cisco Networking Academy Programme CCNA 1 & 2 Lab Companion, 3rd Edn by Pearson Education
Cisco Networking Academy Programme CCNA 1 & 2 Engineering General, 3rd Edn by Pearson Education
CISCO CCNA-Exploration 4.0, Module 1, Pearson Education.

Data Communicatios and Networking by Behrouz Forouzan, 3e, Tata McGraw-Hill
Computer Networks by Andrews S. Tanenbaum, 4e, Pearson Education

Note: This is an online course of Cisco. Online materials provided by Cisco are studied.

C# WITH GUI LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC723 | - | - | 2 | 1 |

- WAP to display the size of all the 13 inbuilt data types. (Hint: use `_sizeof`)
- WAP to demonstrate explicit typecasting.
- WAP to demonstrate implicit typecasting.
- WAP to accept any number from the user and display it in reverse order.
- WAP to establish that unreachable code generates a warning. (Hint: Use `_return`).
- WAP to demonstrate the working of bitwise AND, bitwise OR & bitwise NOT operator.
- Take two integers A and B and calculate the remainder when A is divided by B. Remember that B might assume the value zero. WAP to test the working of short circuit logical operator (AND) in this context.
- WAP to observe what happens when a switch case falls through. Also notice if the last case is allowed to fall through.
- WAP to implement `_break` and `_continue`. Eg: A program to only display the even numbers up to ten.
- WAP to demonstrate the working of `_break` keyword to show that it breaks only the innermost loop.
- WAP to implement a single parameterized constructor. Also try to observe what if the constructor is not public.
- WAP which will try to invoke the destructor/ garbage collector by destroying, say 1000 objects.
- WAP to implement `_this` keyword.
- WAP to create a 1-D array of integers of size ten and find out the largest value.
- WAP to create a 2-D array of size 4X3 and display the sum of all elements using `_for each`.
- WAP to create implicitly typed 1-D array, initialize it with integers and display the second largest value.
- WAP to demonstrate that objects are passed by reference.
- WAP to pass an integer argument using reference. (Hint: Use `_ref`).
- WAP that implements a function `Max()` which accepts multiple arguments of type integer. This function displays the largest value among the arguments provided. (Hint: Use `_params`)
- WAP in C# to create a method `Absolute()` which returns the absolute value of arguments passed to it which may be of type integer, float or double.
- WAP to demonstrate the invoking of overloaded constructors through `_this` keyword.
- WAP to accept 2 strings from the user and display them in dictionary order.
- WAP to accept two strings from the user and display if they are equal using:
- 0.0 Compare Method
 - 0.1 Equals Method
 - 0.2 `==` operator
- WAP to demonstrate the difference between `Ordinal` and `Current Culture Comparison` methods.
- WAP to accept a string and a character from the user and display the index of the first and last operand of the character in the string.
- WAP to create two object having data member x and y respectively. Implement a function `_Swap` which swaps the two objects.
- WAP to create a method named `Copy()` which accepts an object as argument and returns a copy of that object.
- Write a console application to pass 3 integers as arguments to `Main` through the command line and display their sum.
- WAP to implement a recursive function which calculates the factorial of a given integer argument.
- WAP to overload the binary operator `+` which is used to calculate the sum of 2 complex numbers which are implemented as objects. (Hint: a complex number is of the form $X+iY$, where i is $\sqrt{-1}$)
- WAP to overload the 'true' operator and apply it on an object of type `Rectangle`. This operator would return true when both the sides of the rectangle object are equal.
- WAP to use indexers for displaying the sum five integers.
- WAP to implement property such that it accepts the age of a couple who wants to get married. The property must be designed such that the age of male should be ≥ 21 and of female should be ≥ 18 .
- WAP to show that when a virtual method is not overridden the base class method is called.
- WAP to use the sealed modifier to:
- 0 Prevent derivation of the class
 - 1 Prevent method over riding.
- WAP to design a single class which implements an interface and also inherits a class. Both the interface and the base class have members of their own. Create derived class objects and call methods using it. Make suitable assumptions.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

PHOTOSHOP- LAB

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC724 | - | - | 2 | 1 |

Course objectives: The goal of this course is to explore fundamental techniques in Photoshop. Ideal for students eager to explore Photoshop, work with layer techniques, gain an understanding of how to do basic photo repairs and color enhancements. Group critiques are also included.

- Mastering the effects of the clone and healing brush tools
- Understanding and working with Layers and the Adjustments Panel
- Understanding the basics of Masking
- Transforming and maximizing Smart Objects
- Employing Smart Filters to create interesting effects
- Color correction
- Working with text and vector shapes in PSD
- File formats, resizing, and saving
- Actions and Batch Processing

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

DATA WAREHOUSING AND DATA MINING LAB

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC725 | - | - | 2 | 1 |

Software Required: Informatica Tool, Cognos, Todd.

List of Programmes:

- Write a program to implement text mining.
- Write a program to implement web mining.
- Write a program to develop snowflake schema.
- Write a program to develop the tree schema with the help of binary tree.
- Write a program to implement BFS and DFS with respect to 2-D modeling.
- Write a program to implement the basic step of informatics tool.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

NETWORK FUNDAMENTALS LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC726 | - | - | 2 | 1 |

Course Contents:

1.0 Data Stream Capture

Capture or download an audio stream
Record the characteristics of the file
Examine data transfer rates associated with the file

2.0 Observing TCP and UDP using Netstat

Explain common **netstat** command parameters and outputs.
Use **netstat** to examine protocol information on a pod host computer.

3.0 TCP/IP Transport Layer Protocols, TCP and UDP

Identify TCP header fields and operation using a Wireshark FTP session capture.
Identify UDP header fields and operation using a Wireshark TFTP session capture

4.0 Application and Transport Layer Protocols Examination

Configure the host computer to capture Application layer protocols.
Capture and analyze HTTP communication between the pod host computer and a web server.
Capture and analyze FTP communication between the pod host computer and an FTP server.
Observe TCP establish and manage communication channels with HTTP and FTP connections

5.0 Examining a Device's Gateway

Understand and explain the purpose of a gateway address.
Understand how network information is configured on a Windows computer.
Troubleshoot a hidden gateway address problem

6.0 Examining a Route

Use the **route** command to modify a Windows computer routing table.
Use a Windows Telnet client command **telnet** to connect to a Cisco router.
Examine router routes using basic Cisco IOS commands.

7.0 Ping and Traceroute

Use the **ping** command to verify simple TCP/IP network connectivity.
Use the **tracert/traceroute** command to verify TCP/IP connectivity.

8.0 Examining ICMP Packets

Understand the format of ICMP packets.
Use Wireshark to capture and examine ICMP messages.

9.0 IPv4 Address Subnetting Scenario

When given an IP address, network mask, and subnetwork mask, you will be able to determine other information about the IP address such as:

- The subnet address of this subnet
- The broadcast address of this subnet
- The range of host addresses for this subnet
- The maximum number of subnets for this subnet mask
- The number of hosts for each subnet
- The number of subnet bits
- The number of this subnet

10.0 Subnet and Router Configuration

Subnet an address space per given requirements.
Assign appropriate addresses to interfaces and document.
Configure and activate Serial and FastEthernet interfaces.
Test and verify configurations.
Reflect upon and document the network implementation

11.0 Frame Examination

Explain the header fields in an Ethernet II frame.
Use Wireshark to capture and analyze Ethernet II frames

12.0 Media Connectors Lab Activity

Test cables using a Fluke620 LAN CableMeter and a Fluke LinkRunner
Become familiar with the most common functions of a cable tester.
Test different cables for type and wiring problems

13.0 Address Resolution Protocol (ARP)

Use Windows **arp** command.
Use Wireshark to examine ARP exchanges.

14.0 Cisco Switch MAC Table Examination

Use the Telnet protocol to log into a Cisco Switch.
Use the Cisco IOS **show mac-address-table** command to examine MAC address and port associations.

15.0 Intermediary Device as an End Device

Use Wireshark to capture and analyze frames originating from network nodes.
Examine the origination of frames in a small network

16.0 Establishing a Console Session with HyperTerminal

Connect a router and computer using a console cable.
Configure HyperTerminal to establish a console session with a Cisco IOS router.
Configure HyperTerminal to establish a console session with a Cisco IOS switch.

17.0 Basic Cisco Device Configuration

Configure Cisco router global configuration settings.

Configure Cisco router password access.
Configure Cisco router interfaces.
Save the router configuration file.
Configure a Cisco switch

18.0 Final Case Study - Datagram Analysis with Wireshark

How a TCP segment is constructed, and explain the segment fields.
How an IP packet is constructed, and explain the packet fields.
How an Ethernet II frame is constructed, and explain the frame fields.
Contents of an ARP REQUEST and ARP REPLY

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

COMMUNICATION SKILLS - III

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| BCS701 | 1 | - | - | 1 |

Course Objective:

To initiate the learners with the basic mechanics of writing skills and facilitate them with the core skills required for communication in the professional world.

Course Contents:

Module I: Mechanics and Semantics of Sentences

Writing effective sentences
Style and Structure

Module II: Developing writing skills Inter - office communication: Business Letter; E mails; Netiquette Intra – office communication: Memos, Notices, Circulars, Minutes Report Writing

Module III: Business Presentations

Planning, design and layout of presentation
Information Packaging
Audience analysis
Audio visual aids
Speaking with confidence
Case Studies

Examination Scheme:

| Components | CT1 | CT2 | CAF | V | GD | GP | A |
|---------------|-----|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 25 | 10 | 10 | 10 | 5 |

CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:

Krishnaswamy, N, Creative English for Communication, Macmillan
Raman Prakash, Business Communication, Oxford.

BEHAVIOURAL SCIENCE – III (LEADING THROUGH TEAMS)

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| BSS701 | 1 | - | - | 1 |

Course Objective:

This course aims to enable students to Understand the concept and building of teams, Manage conflict and stress within team, Facilitate better team management and organizational effectiveness through universal human values.

Course Contents:

Module I: Teams: An Overview

Team Design Features: team vs. group
Effective Team Mission and Vision
Life Cycle of a Project Team
Rationale of a Team, Goal Analysis and Team Roles

Module II: Team & Sociometry

Patterns of Interaction in a Team
Sociometry: Method of studying attractions and repulsions in groups
Construction of sociogram for studying interpersonal relations in a Team

Module III: Team Building

Types and Development of Team Building
Stages of team growth
Team performance curve
Profiling your Team: Internal & External Dynamics
Team Strategies for organizational vision
Team communication

Module IV: Team Leadership & Conflict Management

Leadership styles in organizations
Self Authorized team leadership
Causes of team conflict
Conflict management strategies
Stress and Coping in teams

Module V: Global Teams and Universal Values

Management by values
Pragmatic spirituality in life and organization
Building global teams through universal human values
Learning based on project work on Scriptures like Ramayana, Mahabharata, Gita etc.

Module VI: End-of-Semester Appraisal

Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

| Components | SAP | A | Mid Term Test (CT) | VIVA | Journal for Success (JOS) |
|---------------|-----|----|--------------------|------|---------------------------|
| Weightage (%) | 20 | 05 | 20 | 30 | 25 |

Text & References:

Organizational Behaviour, Davis, K.
Hoover, Judith D. Effective Small Group and Team Communication, 2002, Harcourt College Publishers
LaFasto and Larson: When Teams Work Best, 2001, Response Books (Sage), New Delhi
Dick, Mc Cann & Margerison, Charles: Team Management, 1992 Edition, viva books
J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 2, Group (1996); Pfeiffer & Company
Smither Robert D.; The Psychology of Work and Human Performance, 1994, Harper Collins College Publishers

FRENCH - III

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLF701 | 2 | - | - | 2 |

Course Objective:

To provide the students with the know-how

- To master the current social communication skills in oral and in written.

To enrich the formulations, the linguistic tools and vary the sentence construction without repetition.

Course Contents:

Module B: pp. 76 – 88 Unité 6

Module C: pp. 89 to 103 Unité 7

Contenu lexical: Unité 6: se faire plaisir

acheter: exprimer ses choix, décrire un objet (forme, dimension, poids et matières) payer

parler de la nourriture, deux façons d'exprimer la quantité, commander un repas au restaurant

0 parler des différentes occasions de faire la fête

Unité 7: Cultiver des relations

maîtriser les actes de la communication sociale courante

(Salutations, présentations, invitations, remerciements)

annoncer un événement, exprimer un souhait, remercier,

s'excuser par écrit.

0 caractériser une personne (aspect physique et caractère)

Contenu grammatical:

accord des adjectifs qualificatifs

articles partitifs

Négations avec de, ne...rien/personne/plus

Questions avec combien, quel...

expressions de la quantité

0 ne...plus/toujours - encore

1 pronoms compléments directs et indirects

accord du participe passé (auxiliaire « avoir ») avec

l'objet direct

Impératif avec un pronom complément direct ou indirect

construction avec « que » - Je crois que/ Je pense que/ Je sais

que

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

le livre à suivre: Campus: Tome 1

GERMAN - III

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLG701 | 2 | - | - | 2 |

Course Objective:

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Course Contents:

Module I: Modal verbs

Modal verbs with conjugations and usage
Imparting the finer nuances of the language

Module II: Information about Germany (ongoing)

Information about Germany in the form of presentations or —Referat!— neighbors, states and capitals, important cities and towns and characteristic features of the same, and also a few other topics related to Germany.

Module III: Dative case

Dative case, comparison with accusative case
Dative case with the relevant articles
Introduction to 3 different kinds of sentences – nominative, accusative and dative

Module IV: Dative personal pronouns

Nominative, accusative and dative pronouns in comparison

Module V: Dative prepositions

Dative preposition with their usage both theoretical and figurative use

Module VI: Dialogues

In the Restaurant,
At the Tourist Information Office,
A telephone conversation

Module VII: Directions

Names of the directions
Asking and telling the directions with the help of a roadmap

Module VIII: Conjunctions

To assimilate the knowledge of the conjunctions learnt indirectly so far

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

Wolfgang Hieber, Lernziel Deutsch
Hans-Heinrich Wangler, Sprachkurs Deutsch
Schulz Griesbach, Deutsche Sprachlehre für Ausländer
P.L Aneja, Deutsch Interessant- 1, 2 & 3
Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

SPANISH – III

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLS701 | 2 | - | - | 2 |

Course Objective:

To enable students acquire knowledge of the Set/definite expressions (idiomatic expressions) in Spanish language and to handle some Spanish situations with ease.

Course Contents:

Module I

Revision of earlier semester modules

Set expressions (idiomatic expressions) with the verb *Tener, Poner, Ir....*

Weather

Module II

Introduction to *Gustar...* and all its forms. Revision of *Gustar* and usage of it

Module III

Translation of Spanish-English; English-Spanish. Practice sentences.

How to ask for directions (using *estar*)

Introduction to IR + A + INFINITIVE FORM OF A VERB

Module IV

Simple conversation with help of texts and vocabulary

En el restaurante

En el instituto

En el aeropuerto

Module V

Reflexives

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

Español, En Directo I A

Español Sin Fronteras -Nivel Elemental

CHINESE – III

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLC701 | 2 | - | - | 2 |

Course Objective:

Foreign words are usually imported by translating the concept into Chinese, the emphasis is on the meaning rather than the sound. But the system runs into a problem because the underlying name of personal name is often obscure so they are almost always transcribed according to their pronunciation alone. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I

Drills
Dialogue practice
Observe picture and answer the question.
Introduction of written characters.
Practice reading aloud
Practice using the language both by speaking and by taking notes.
Character writing and stroke order

Module II

Measure words
Position words e.g. inside, outside, middle, in front, behind, top, bottom, side, left, right, straight.
Directional words – beibian, xibian, nanbian, dongbian, zhongjian.
Our school and its different building locations.
What game do you like?
Difference between —hiill and —nengll, —keyill.

Module III

Changing affirmative sentences to negative ones and vice versa
Human body parts.
Not feeling well words e.g.; fever, cold, stomach ache, head ache.
Use of the modal particle —lell
Making a telephone call
Use of —jiull and —call (Grammar portion)
Automobiles e.g. Bus, train, boat, car, bike etc.
Traveling, by train, by airplane, by bus, on the bike, by boat..etc.

Module IV

The ordinal number —dill
—Meill the demonstrative pronoun e.g. mei tian, mei nian etc.
use of to enter to exit
Structural particle —del (Compliment of degree).
Going to the Park.
Description about class schedule during a week in school.
Grammar use of —lill and —congll.
Comprehension reading followed by questions.

Module V

Persuasion-Please don't smoke.
Please speak slowly
Praise – This pictorial is very beautiful
Opposites e.g. Clean-Dirty, Little-More, Old-New, Young-Old, Easy-Difficult, Boy-Girl, Black-White, Big-Small, Slow-Fast ... etc.
Talking about studies and classmates
Use of —it doesn't matterll
Enquiring about a student, description about study method.
Grammar: Negation of a sentence with a verbal predicate.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|------------|------------|----------|----------|----------|----------|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

—Elementary Chinese Reader Part I, Part-2|| Lesson 21-30

SOFTWARE ENGINEERING

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC801 | 2 | 1 | - | 3 |

Course Objective:

Students in this course should be able to explain and apply a broad range of concepts from software engineering, spanning all aspects the software engineering process. They should be able to recognize, define, and make correct use of generally accepted software engineering terminology.

Course Contents:

Module I: Introduction

Evolution of Software Engineering, Software Problems, Issues Involved In Software Engineering, Fundamental Qualities of a Software Product, Approaches to Software Engineering, Planning the development Process

Module II: Software Life Cycle Models

Development/Product Life-Cycle Model, Kinds of Software Life-Cycle Model Project Management Concepts, Project Management Activities

Module III: Software Requirement Specification

Requirement Engineering, Requirement elicitation, Requirement analysis, requirement documentation, Case Study.

Module IV: Software Project Planning

Size Estimation, Cost Estimation, Models, COCOMO, COCOMO II, Putnam Resource allocation model, Software Risk Management.

Module V: Software Design

Software Designing Principles Various Strategies, Module Level Concepts, Structured Design Methodologies

Module VI: Software Metrics

Software Metrics, Token Count, Data Structure Metrics, Information Flow Metrics and Metrics analysis.

Module VII: Software Reliability

Basic Concepts, Software quality, software reliability models, Capability maturity models, ISO 9000.

Module VIII: Software Testing

Testing Process, Some terminology, Functional Testing, Structural Testing, Levels of Testing, Debugging and Testing Tools.

Module IX: Software Maintenance

Maintenance Process, Maintenance Model, Estimation of maintenance cost, Regression Testing, Reverse Engineering, Software Re-engineering, Configuration Management and Documentation.

Examination Scheme:

| Components | CT | HA/V/Q | ATTD. | EE |
|---------------|----|--------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Software Engineering, A Practitioner's Approach, Roger S. Pressman,
Software Engineering, K.K. Agarwal, Yogesh Singh, New Age International Publishers
An Integrated Approach to Software Engineering, Pankaj Jalote, Narosa Publication

References:

Software Engineering Concepts, Richard Fairley

UNIX AND SHELL PROGRAMMING

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC802 | 2 | 1 | - | 3 |

Course Objective:

This course provides the students with the skills to use the UNIX operating system platform. Basic UNIX commands for editing and manipulating files, managing processes and interacting with the Bourne and BASH shell are presented via lecture and lab exercises. The course also teaches the participant how to use the programming constructs of the shell language to write shell scripts that may be used to simplify or automate tasks. UNIX commands and Shell Programming will prepare the participants to work on UNIX platform, which is the requirement of each industry. This course is designed to understand the concepts of Unix System for Research and Development.

Course Contents:

Module I: Introduction

History of the UNIX operating system, UNIX Family, Types of Operating Systems, Operating system services, Architecture of the UNIX operating system, Kernel Data Structure, Shell: Types of shells, Files and Directories, Absolute Path and Relative Path, root and hierarchical file structure of Unix, telnet .

Module II: The Buffer Cache

Buffer headers, Structure of the buffer pool, Scenarios for retrieval of a buffer, reading and writing disk blocks, advantages and disadvantages of the buffer cache

Module III: Internal Representation of files

Inodes, Structure of a regular file, directories, conversion of a path name to an inode, super block, inode assignment to a new file, allocation of disk blocks

Module IV: The Structure of a process and Process Control

Process state and transitions, the context of a process, saving the context of a process, manipulation of the process address space , Process creation, Signals, Process termination, Awaiting process termination, The user ID of a process, Changing the size of a process, System boot and init process, process scheduling

Interprocess Communication and I/O Subsystem

Process tracing, System vs IPC, Network Communication, Sockets, Driver interfaces, Disk Drivers, Terminal Drivers, Streams

Module V: UNIX Commands

Login, password, hostname; creating an account; Virtual consoles; shell and commands; logout; changing password; Files and Directories; pathname; Directory Tree; current working directory; relative pathname; referring to home directories; Commands to move around by path concept; creating new directories; copying files; moving files; Deleting files and directories; looking at files: cat, more, pg, less, head, tail; Comparing files, Searching and listing Files, Wildcards, hidden files; Standard input and output; redirecting input and output; filter; pipes; file permissions; user and group; Interpreting file permissions; Permission Dependencies; Changing permissions: chmod and umask commands; Managing file links; hard links; symbolic links; stopping and restarting jobs, Getting online help; manual pages, regular expression and pattern searching commands grep family; Command Substitution;

Module VI: UNIX Commands

jobs and process: process ID; Job control; foreground and background jobs; suspend and interrupt a process; Back grounding and killing jobs; print commands; system administrator commands- create user, create group, remove user , starting the system, shutting down the system, runlevels; mounting and unmounting a file system, disk management, environment initialization files, tar

Module VII: Vi Editor

Command mode, insert mode and last line mode; command to delete character, insert line; deleting text, command for moving the cursor; including other files; running shell commands; getting vi help; search and replace commands; changing and deleting text, Change word, Change line, Delete current line, Delete n lines, Delete remainder of Lines; copying and moving; Saving and Exiting.

Module VIII: Shell programming

Shell variables and keywords, User's Initialization file, The dot command, Interactive execution and command line arguments, Setting positional parameters (set command) (\$1,\$2 etc) Shift; Operators (&&, (), &, ||, ::, <, > etc),

Regular expressions and pattern matching, substitute shell variables, Test Command, Control Flow, for, if, while, case. string handling and computation using expr, bc; Shell scripts and execution methods.

Examination Scheme:

| Components | CT | HA/V/Q | ATTD. | EE |
|----------------------|-----------|---------------|--------------|-----------|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Kanetkar. —UNIX Shell Programming|| BPB

Sumitabha Das, —UNIX: Concepts and Application||, TMH.

Maurice J. Bach, —Design of the Unix operating System|| PHI.

References:

Prata. —Advanced UNIX-A Programmers Guidel|| BPB

Kate Wrightson and Joe Merlino , —Introduction to UNIX||- McGraw Hill

OPEN SOURCE TECHNOLOGY

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC803 | 2 | 1 | - | 3 |

Course Objective:

Write basic PHP scripts that process user input from a web form.
Use PHP variables, arrays, loops, conditional statements, and operators.
Create and incorporate PHP functions.
Integrate PHP scripts with email

Course Contents:

Module I

Introduction : Open Source, Free Software, Free Software vs. Open Source software, Public Domain Software, FOSS does not mean no cost. History : BSD, The Free Software Foundation and the GNU Project.

Module II

Open Source History, Initiatives, Principle and methodologies. Philosophy : Software Freedom, Open Source Development Model Licences and Patents: What Is A License, Important FOSS Licenses (Apache,BSD,GPL, LGPL), copyrights and copyleft, Patents Economics of FOSS : Zero Marginal Cost, Income-generation opportunities, Problems with traditional commercial software, Internationalization

Module III

Case Studies : Apache, BSD, Linux, Mozilla (Firefox), Wikipedia, Joomla, GCC, Open Office.

Module IV

Starting and Maintaining an Open Source Project, Open Source Hardware, Open Source Design, Open source Teaching. and Open source media.

Module V

Open source vs. closed source Open source government, Open source ethics. Social and Financial impacts of open source technology, Shared software, Shared source
Open Source History, Initiatives, Principle and methodologies. Philosophy : Software Freedom, Open Source Development Model Licences and Patents: What Is A License, Important FOSS Licenses (Apache,BSD,GPL, LGPL), copyrights and copyleft, Patents Economics of FOSS : Zero Marginal Cost, Income-generation opportunities, Problems with traditional commercial software, Internationalization

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Atkinson, Leon. *Core PHP Programming, 2nd Edition*. New York: Prentice Hall
Open Source Technology: Concepts, Methodologies, Tools, and Applications (4 Volumes) [Information Resources Management Association](#) (USA), 2015
'Open Source Technology and Policy' by Fadi P. Deek and James A.M. McHugh

DISTRIBUTED OPERATING SYSTEM

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC804 | 2 | 1 | - | 3 |

Course Objective:

This Subject provides students with an in-depth knowledge about the operating system. The former treats the standard principles of single processor system, including processes, synchronization, I/O, deadlocks, Memory Management, File Management systems, security and so on. This subject covers distributed operating system in detail, including communication process, file system and memory management synchronization and so on but this time in the context of distributed systems

Course Contents:

Module I

Modes of communication, System Process, Interrupt Handling, Handling Systems calls, Protection of resources & Resources Management Micro-Kernel Operating System. Distributed Operating System, Issue in the design of Distributed Operating System, Overview of Computer Networks. Inter process communication, Remote Procedure calls, RPC exception handling.

Module II: Clock Synchronization

Logical clocks, Physical clocks, clock synchronization algorithms, Mutual Exclusion, Election Algorithms, Dead locks in Distributed Systems. Thrashing, Heterogeneous DSM, Resource Management (Load Balancing approach, Load Sharing approach), Process Management: process Migration, Thread.

Module III

Overview of shared memory, consistency model, Page based Distributed Shared Memory, Shared –variable Distributed Memory, Object -based Distributed Memory.

Module IV

File models, File access, File sharing, file-caching, File Replication, fault Tolerance, Network File System, (case study, Security in Distributed File system.

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Distributed Operating Systems 1st Edition by [Andrew S. Tanenbaum](#)

Distributed Systems: Principles and Paradigms (2nd Edition) 2nd Edition, by [Andrew S. Tanenbaum, Maarten Van Steen](#)

SOFTWARE ENGINEERING LAB

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC820 | - | - | 2 | 1 |

Course Contents:

Week I: Introduce the lab environment and tools used in the software engineering lab: WebCT, Rational Rose for UML, MS Project, MS Source Safe (configuration management), Rational Requisite Pro (Software requirements and prerequisite pro), JUnit (Software Testing).

The key objectives are

- Discuss the Project & learn how to write project definition.
- Learn the cycle phases (project management, requirement engineering, software design, prototyping and testing software life).
- Practice the software phases using a project.
- Learn a number of CASE tools and use them in a project within a team work environment.
- Get familiar with UML (modeling language for analysis and design).

Week II: For a given dummy project given to a team, Software process overview must be done using MS source safe

Week III: For the above mentioned Project, Project planning must be done .Also the students should be taught how to write planning documentation using MS Project

For the above mentioned Project, Software requirements are found and also teach the students, how to write Planning document using Rational RequisitePro

Introduction to UML, Unified Modelling Language and use case diagrams using Rational Rose

Develop System modeling (DFD and ER) using Rational Rose

Design Flow of events and activity diagram using Rational Rose and how to write SRS document.

OO analysis: discovering Classes Interaction diagrams: sequence and collaboration diagrams using Rational Rose

Developing Version 1 of Software Design: software architecture and object-oriented design using Rational Rose

Developing State Transition Diagram using Rational Rose

Developing Component and deployment diagrams for Final Documented Project Report using Rational Rose.

Software testing using JUnit and other testing tools.

Note: The above steps should be followed for a given project to a team to teach the students how to write a project.

Examination Scheme:

| | | | | | |
|-----------|-----------|-----------|----------|-----------|----------|
| IA | | | | EE | |
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

UNIX AND SHELL PROGRAMMING LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC821 | - | - | 2 | 1 |

Sr. No. Shell Program

Write a shell script which ask your name, age, department, and course and lastly give the syntax to display all your information.

Write a shell script which asks your Enrolment no., name, name of 3 subjects and marks obtained. Display these fields by using echo and equal operator.

Write a shell script, declare 5 variables and assign values to them. Display the values in the given order:- 1,5,2,3,4

Write a shell script that creates a file containing the message that this file is created today i.e. on the current date followed are the users of Unix at this moment and show the list of users.

Write a shell script that accepts two file names from the command line, copies the first to second file and display the second file.

Write a shell script that accepts two parameters i.e. two files, append file1 to file2 and display file2.

Write a shell script that assigns execute permission to a file.

Write a shell script that accepts one file and directory name and move that file to the directory and show recursive listing and long listing.

Write a shell script where we create a directory, move to the directory, create a file. Show the present path and display the file.

Write a shell script that asks your name and invite you on current date for a party and append this message to a file name party.

a) Write a shell script that reads a file name from command line and changes name to filename.logname.

0 Display the number of links and size of the file given as the command line argument.

Write a shell script which displays the date in desired format i.e. Monday 25 September 2006.

Write a shell script by which you create a branch \usr directory till depth of d5 and using concept of assigning the path to the variables do the movements within this directory path and create two files in each directory from d1.

Write a shell script and declare two variables A and B. Take static value of A=5 and B=3. Perform all operations on it.

Write a shell script which accepts a number and checks whether the number is an odd or even number.

Write a shell script to give the result of student. Take marks of the five subjects, student name, roll no and percentage and show a message whether a student gets division as per the following rules: 70% <- > distinction

60%->1st division

50%->2nd division

<40%->Fail

Write a shell script which checks the age of the student for swimming. The condition are as follows: <10- not allowed

10-18- junior pool only

>18- swimming is allowed in depth also

Write a shell script to find out the gross salary of an employee when the given information is as under:-

If basic salary is less than Rs.1500/-

HRA = 10% of basic

DA = 90% of basic

If basic is greater than or equal to Rs.1500/-

HRA = 500/-

Write a shell script to enter a year and show a message whether the year is a leap year or not.

Write a shell script using concept of position parameters which copies one file and display destination file and it should also contain an error message if the source file does not exist.

Write a shell script to calculate the gross salary of an employee whose basic salary is entered through keyboard. His DA=40% of basic and HRA=20% of basic.

Write a shell script where distance between two cities is input through the keyboard in km. Convert and print this distance in meters, feet, inches and cm.

Write a shell script to find area and perimeter of rectangle.

Write shell scrip to find area and circumference of the circle.

Write a shell script to find sum of digits of a number and check whether the number is palindrome or not.

Pass a filename as command line argument to script which finds

- 0 Whether file exists or not.
- 1 Display the message what type of file it is.
- 2 (a) If the file is an ordinary file check its read permission. If available display the file else display message read permission denied. (b) Check its write permission and if available append that file by your name and course, else display error message. (c) Check execute permission & if available shows the output of that file.
- 3 (a) If it's a directory check its read permission, if available list the directory. (b) Check its write permission; if available make a sub-directory in that directory. Create two file in that sub-directory that you created just now.

Write a menu driven program:-

- 0.0 Place the pwd of user.
- 0.1 List the directory of user.
- 0.2 Long listing the directory of the user and at the same time this long listing is to be stored in a file.
- 0.3 Create a file in your directory and copy this file in your directory.
- 0.4 Move the specified file to your parent directory.
- 0.5 Rename the specified file in the current directory.
- 0.6 Make a sub directory in the current directory and change its permission by taking away all the permission of group and others.

Write a Menu driven program

- 0.0 Check the contents of /etc/passwd file.
- 0.1 List of users who have currently logged in.
- 0.2 Pwd
- 0.3 Exit

Write a shell script where you accept a character and you have to echo message whether the entered character is a small case, capital case or a digit or a special symbol. Display error message if more than one character is entered.

Write a shell script where you accept a word and echo the message

- 0.0 Whether the word begins with vowel, consonant or a digit.
- 0.1 Check whether the word begins with small case vowel or capital case vowel.
- 0.2 Checks whether the word ends with a digit.

Write a shell script where you check whether

- 0.0 The word begins with —a|| and ends with —t||
- 0.1 The word begins with —s|| and ends with —p||
- 0.2 Any word with fixed length of 4 characters.
- 0.3 Display the word starting with —z|| and ending with —l||

Write a shell script to print if its:

- 0.0 Morning time, print —Good Morning||
- 0.1 Afternoon time, print —Good Afternoon||
- 0.2 Evening time print —Good Evening||

Write a shell script for printing calendar. Accepts month, year and name as command line argument.

Write a shell script to find a total of

- 0.0 First 9 integers
- 0.1 Any five numbers
- 0.2 Do option (b) from command line

Write a shell script that takes a search string and filename from the terminal and display the result.

Write a shell script that takes pattern and filename as command line arguments and displays the results appropriately i.e. pattern found/pattern not found

Write a shell script that accepts only three arguments from command line. The first is the pattern string, the second is the filename in which the pattern is to be searched and the third is the filename in which result is to be stored.

Write a shell script that accepts a filename as a command line and finds out if it's a regular file or a directory. If it's regular file, then perform various tests to see if it's readable, writeable, executable etc.

Write a shell script that computes the factorial of a given number.

Write a shell script that works like a calendar reminding the user of certain things depending on the day of the week.

Write a shell script that changes the extension of group files from text to doc

Write a shell script which will redirect the output of the date command without the time into a file.

Write a shell script to execute endlessly a loop which displays contents of the current directory, disk space status, and sleep for 30seconds and display the users currently logged in on the screen.

Write a shell script that receives two filenames as arguments. It should check whether content of the two file is same or not. If they are same, second file should be deleted.

If a number is input through keyboard, write shell script to calculate sum of digits.

Write a shell script that performs a count down either from 10 or from the value that is entered by the user.

Write a shell script that examines each file in the current directory. Files whose names end in old are moved to a directory named old files and files whose name ends with .c are moved to directory named cprograms.

Write a shell script which takes a command line argument of kms and by default converts that number into meters. Also provide options to convert km to dm and km to cm.

Write a shell script for renaming each file in the directory such that it will have the current shell PID as an extension. The shell script should ensure that the directories do not get renamed.

Write a shell script to print Fibonacci series.

Write a shell script that will receive any number of filenames as arguments. The shell script should check whether such file already exists. If they do, then it should be reported. The files that do not exist should be created in a sub directory called mydir. The shell script should first check whether the subdirectory mydir exists in the current directory. If it doesn't then it should be created. If it does then it should be reported along with the number of files that are currently present in mydir.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

OPEN SOURCE TECHNOLOGIES LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC822 | - | - | 2 | 1 |

Write the process of installation of web server.

Write programs to print all details of your php sever. Use phpinfo().

Write a program to give demo of ECHO and PRINT command.

Write a program sort ten number by using array.

Create a database in MySql and connect that database from PHP.

Write a program to Update, insert and delete the values of table in Question No – 9 database

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

ENTERPRISE RESOURCE PLANNING

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC810 | 2 | 1 | - | 3 |

Course Objective:

The objective of the course is to give an introduction to Enterprise Resource Planning, its benefits, ERP systems, ERP Implementation Methodology, ERP Architectures. It also focuses on concepts of Extended ERP, Supply Chain Management and Customer Relationship Management.

Course Contents:

Module I: Introduction

Definition, Evolution of ERP, Characteristics, Features, Components and needs of ERP, ERP Vendors, BPR, System Benefits & Limitations of ERP Packages

Module II: Generic Model of ERP

Generic model of ERP system, Core Modules functionality, Types of ERP architecture, Client Server Architecture, Web-based Architecture, Service Oriented Architecture (SOA)

Module III: Implementation Methodology of ERP

Difficulty in selecting ERP, Approach to ERP selection, Request for Proposal approach, proof-of-concept approach, General Implementation approach of ERP, Vanilla Implementation, Evaluation Criteria of ERP packages, Project Implementation Team Structure

Module IV: Business Process Reengineering

Organizational Change Management, Business Process Change, BPR Methodology, Current BPR Tools, Enabling best technology practices, Benchmarking

Module V: Enterprise Modeling and Integration of ERP

Need to focus on Enterprise Integration/ERP, Information mapping, Role of common shared Enterprise database, System Integration, Logical vs. Physical System Integration, Benefits & limitations of System Integration, ERP's Role in Logical and Physical Integration

Module VI: Introduction to SAP, Oracle APPS

SAP, Integrated SAP Model, SAP Architecture, SAP R/3 System & mySAP, SAP Modules, Oracle Apps, Oracle AIM Methodology, Oracle APPS Modules

Module VII: Supply chain management and ERP

Definition, Supply Chain Council's SCOR Model, Stevens Model of Supply Chain Management, Aims of SCM, SCM Key Drivers, Collaborative Design & Product Development, Benefits of SCM, ERP Vs SCM, Key SCM Vendors

Module VIII: Customer Relationship Management and ERP

CRM Evolution, CRM Delivery Processes, CRM support Processes, CRM Analysis Processes, CRM Components, CRM Packages & Vendors

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Enterprise Systems For Management, Luvai F. Motiwalla, Jeff Thompson, Pearson Education.
Wikipedia Links for SAP, Oracle APPS

SOFTWARE PROJECT MANAGEMENT

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC811 | 2 | 1 | - | 3 |

Course Objective:

This module will introduce the area of software project management, presenting basic techniques and approaches and aiming to develop a critical awareness of the challenges and shortcomings of the area.

Course Contents:

Module I: Introduction of Software Project Management & Project Planning

What is Software? What is Project? What is Management? Activities covered by software project management, some ways of categorizing software projects, the project as a system, Problems with software projects, Management control, Requirement specification, Information and control in organization, Introduction of Step Wise project planning, Step: 0-4, Step: 5-10 of project planning.

Module II: Risk Management

The nature of Risk, Risk identification, Risk analysis, Risk Examination, Risk Assessment, Reducing Risk, Evaluating risks to the schedule.

Module III: Project Examination

Strategic assessment, Technical assessment, Cost-benefit analysis (no numerical), cost-benefit Examination techniques, Cash flow forecasting, risk Examination.

Module IV: Overview of Appropriate project approach & Software Effort Estimation

Project models, Examples of project models, the basis of software estimation, Problems with over and under estimates, where are estimates done? Software effort estimation techniques: LOC, Function Point (no numerical), COCOMO: a parametric model

Module V: Overview of Management

Levels of management, Management as a control system, Functions of Management, Objectives, Characteristics and Impact of management.

Module VI: Activity Planning & Resource Allocation

Objective of activity planning, when to Plan, Project Schedules, Projects and activities, Sequencing and scheduling activities, Nature of resources, Identifying resource requirements, Scheduling resources, Cost Schedules, Scheduling sequences.

Module VII: Monitoring and Control & Managing people and organizing team

Creating the framework, collecting the data, Visualizing progress and change control, Organizational structure and behaviour, selecting right person for a job, motivation, leadership, working in a group.

Module VIII: Software Quality

Place of s/w quality in project planning, importance of s/w quality, Defining s/w quality, ISO 9126, ISO 9000, ISO 9003, Practical s/w quality measures, Product versus process quality management, External standards, Techniques to help enhance s/w quality, CMM Model, Concept of Six Sigma

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Software Project Management (Second Edition), BOB Hughes and Mike Cotterell, TMH

References:

Software Engineering – David Gustafson (Schaum's Series)
Software Engineering – Pressmen

BUSINESS INTELLIGENCE AND ITS APPLICATIONS

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC812 | 2 | 1 | - | 3 |

Course Objective:

This course provides an introduction to Business Intelligence, including the processes, methodologies, infrastructure, and current practices used to transform business data into useful information and support business decision-making. Business Intelligence requires foundation knowledge in data storage and retrieval, thus this course will review logical data models for both database management systems and data warehouses.

Course Contents:

Module I: Introduction to Business Intelligence

Introduction to digital data and its types- structured, semi-structured and unstructured, Introduction to OLTP and OLAP (MOLAP, ROLAP, HOLOAP), BI Definitions and Concepts, BI Framework, Data Warehousing concepts and its role in BI, BI Infrastructure Components- BI Process, BI Technology, BI Roles & Responsibilities, Business Applications of BI, BI best practices

Module II: Basics of Data Integration (Extraction Transformation Loading)

Concepts of data integration, needs and advantages of using data integration, introduction to common data integration approaches, Meta data- types and sources, Introduction to data quality, data profiling concepts and application, Introduction to ETL using Kettle

Module III: Data Introduction to Multi-Dimensional Data Modeling

Introduction to data and dimension modeling, multidimensional data model, ER Modeling VS multi-dimensional modeling, concepts of dimension , facts, cubes, attribute, hierarchies, star and snowflake schemas, introduction to business metrics and KPIs, creating cubes using Microsoft Exce.

Module IV: Basics of Enterprise Reporting

A typical enterprise, Malcom Baldrige- quality performance framework, balanced scorecard, enterprise dashboard, balanced scorecard VS enterprise dashboard, enterprise reporting using MS Access/ MS Excel, best practices in the design of enterprise dashboards.

Examination Scheme:

| Components | CT | HA/V/Q | ATTD. | EE |
|---------------|----|--------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Fundamentals of Business Analytics – R. N. Prasad & Seema Acharya,

References:

Business Intelligence (2nd Edition), Efraim Turban, Ramesh Sharda, Dursun Delen, David King
Delivering Business Intelligence with Microsoft SQL Server 2012, Brian Larson

WINDOWS PROGRAMMING USING VC++

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC813 | 2 | 1 | - | 3 |

Course Objective:

To make the students to understand the windows programming concepts including Microsoft Foundation Classes.
 To introduce the concepts of windows programming
 To introduce GUI programming using Microsoft Foundation Classes
 To enable the students to develop programs and simple applications using Visual C++

Course Contents:

Module I: Windows Programming

Windows environment – a simple windows program – windows and messages – creating the window – displaying the window – message loop – the window procedure – message processing – text output – painting and repainting – introduction to GDI – device context – basic drawing – child window controls

Module II: Visual C++ Programming – Introduction

Application Framework – MFC library – Visual C++ Components – Event Handling – Mapping modes – colors – fonts – modal and modeless dialog – windows common controls – bitmaps

Module III: The Document and View Architecture

Menus – Keyboard accelerators – rich edit control – toolbars – status bars – reusable frame window base class – separating document from its view – reading and writing SDI and MDI documents – splitter window and multiple views – creating DLLs – dialog based applications

Module IV: Activex and Object Linking and Embedding (Ole)

ActiveX controls Vs. Ordinary Windows Controls – Installing ActiveX controls – Calendar Control – ActiveX control container programming – create ActiveX control at runtime – Component Object Model (COM) – containment and aggregation Vs. inheritance – OLE drag and drop – OLE embedded component and containers – sample applications

Module V: Advanced Concepts

Database Management with Microsoft ODBC – Structured Query Language – MFC ODBC classes – sample database applications – filter and sort strings – DAO concepts – displaying database records in scrolling view – Threading – VC++ Networking issues – Winsock – WinInet – building a web client – Internet Information Server – ISAPI server extension – chat application – playing and multimedia (sound and video) files.

Examination Scheme:

| Components | CT | HA/V/Q | A | EE |
|---------------|----|--------|---|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:

Charles Petzold, —Windows Programming, Microsoft press, 1996 (Unit I – Chapter 1-9)
 David J. Kruglinski, George Shepherd and Scot Wingo, —Programming Visual C++, Microsoft press, 1999 (Unit II – V)

References:

Steve Holtzner, —Visual C++ 6 Programming, Wiley Dreamtech India Pvt. Ltd., 2003.

REAL TIME SYSTEMS

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC814 | 2 | 1 | - | 3 |

The experiments will be based on the topics covered in the corresponding theory Course.
Introduction: Definition, Issues in Real Time Computing, Structure of a Real Time System. Task Classes

Module I: Characterizing Real Time Systems and Tasks

Introduction, Performance measures for real time systems: Traditional performance measures, Performability, Cost functions and hard Deadlines Task Assignment and Scheduling: Introduction , Classical

Module-II: Uniprocessor scheduling algorithms

Rate Monotonic, EDF algorithm, Task assignment, Fault tolerant Scheduling

Module-III: Real Time Databases

Basic definitions, Real time Vs General Purpose databases, Main Memory databases, concurrency control issues, databases for hard real time systems Real Time Communication: Introduction, Architectural Issues,

Module IV: Protocols

Contention based protocols,Token based protocols, Deadlines based protocols, Stop and Go Multihop protocol, The polled bus protocol, Hierarchical round robin protocol.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

Text & References:

Text:

Real - Time Systems Paperback – 2002 by [Jane W. S. Liu](#)

Reference Books

Real-Time Systems Design and Analysis: Tools for the Practitioner Hardcover – Import, 23 Dec 2011 by [Phillip A. Laplante](#) (Author), [Seppo J. Ovaska](#)

Real - Time Systems Paperback – 2006 by [Rajib Mall](#)

"Real Time Systems"-C. M. Krishna and Kang G. Shin

ASP.NET

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC830 | 2 | 1 | - | 3 |

Course Objective:

To create web based applications using ASP.NET.

Course Contents:

Module I: Introduction to .NET technologies

Features of .NET, .NET Framework, CLR, MSIL, .NET class library, .NET Languages, CTS, assemblies, manifest, and metadata, What is ASP.NET?, Difference between ASP and ASP.NET.

Module II: Controls in ASP.NET

Overview of Dynamic Web page, Understanding ASP.NET Controls, Applications, Web servers, Installation of IIS. Web forms, web form controls -server controls, client controls. Adding controls to a web form, Buttons, Text Box, Labels, Checkbox, Radio Buttons, List Box. Adding controls at runtime. Running a web Application, creating a multiform web project. Form Validation: Client side validation, server Side validation, validation Controls: Required Field Comparison Range. Calendarcontrol, Ad rotator Control, Internet Explorer Control.

Module III: Overview of ADO.NET and XML

What is ADO.NET, from ADO to ADO.NET. ADO.NET architecture, Accessing Data using Data Adapters and Datasets , using Command & Data Reader, binding data to data bind Controls, displaying data in data grid, XML basics, attributes, fundamental XML classes: Document, text writer, text reader. XML validations, XML in ADO.NET, The XML Data Document.

Module IV: ASP.NET Applications

Creating, tracking, caching, error handling, Securing ASP.NET applications- form based applications, window based application.

Module V: Web services

Introduction, State management- View state, Session state, Application state, Building ASP.NET web services, working with ASP.NET applications, creating custom controls.

Examination Scheme:

| Components | CT | HA/V/Q | A | EE |
|---------------|----|--------|---|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

ASP.NET Unleashed by Stephen Walther, SAMS publications

References:

ASP.NET, Wrox Publications

ASP.NET and VB.NET, Wrox Publication

ASP.NET and C#.NET, Wrox publication.

FLASH

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC831 | 2 | 1 | - | 3 |

Course Objective:

- Become familiar with the Flash authoring environment and Flash terminology
- Gain understanding of fundamental Flash paradigms (Stage, Symbols, Library, Timeline)
- Create simple, tasteful animation effects
- Use buttons and ActionScript 3.0 to enable basic user interaction
- Learn to export and deploy Flash content on the Web

Course Contents:**Module I:**

Introduction to Flash: Introduction to Flash, Features of Flash, Application System Requirement, Installation, Flash Interface, Work Area, Movie, Scenes, Layers, Frames, Importing, saving a file

Basic Shapes : Introduction to tools, creating Basic Shapes, Modifying Basic Shapes, Adding Colors (Color Mixture), Basic Lines & Curves, creating Lines, Features of Lines, Brush, Eyedropper, Eraser tools, Features in Brush & Dropper, Creating Curves Eraser Tools.

Module II:

Working with Text, Layers & Symbols: Introduction to text, working with text tools, features of text tool, exporting images, Introduction to Layer, Introduction to frames, working with Layers, Working with Frames, Working with Shapes, Working with Motion-Guide Layer, Layer Masking, Introduction to Symbols, Library in Flash, Creating Symbols, Features of Symbols, Effect to the symbol

Working With Sounds: Introduction, Importing Sounds, Adding Sounds to a movie, Adding Sound to a button, Editing sound, starting & stopping sounds at key-frames, compressing sounds for exports, exporting sound in flash movie

Module III:

Scripting in Flash : Introduction, Understanding Action Script, using action panel, Normal mode, Expert mode, using external editor, using debugger, using output windows, using movie explorer, where does action script go?, Action Script uses OOP, Variables and Data Types, Basic Action – Introduction, How to go to a frame & scene, playing & stopping movies, stopping all sounds, jumping to a URL, Loading & Unloading additional movies, checking whether a frame is loaded, mouse event, Conditional Operators – introduction, If-Else, If-Else-if, if-Else-if layer, Operators precedence, determining multiple responses (Game of quotes), Looping Handling Events – looping, Framework, calendar maker, mouse action & event, key press, Keyboard, Key Objects, Mouse objects, clip events, drag & drop a cursor, Properties, Functions and duplication of a movie – Introduction, Settings, Properties, Property text, functions, using sub-strings, user-defined functions, duplication a movie

Module IV:

Working with Movies : Publishing Flash Movie- Introduction, Testing movie, download performance, About generator, publishing a flash player movie, publishing HTML for flash player files, publishing GIF files, publishing JPEG files, Preview Publishing formats and setting, PNG sequence & PNG image, HTML publishing Templates, Creating an image map, editing HTML settings

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:**Text:**

Beginner's Guide to Adobe Flash/Text : wiki books

References:

Flash Professional CS5: Visual Quickstart Guide by Katherine Ulrich

Adobe Flash CS5 Professional Digital Classroom Fred Gerantabee - Wiley Publisher

ADVANCE JAVA

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC832 | 2 | 1 | - | 3 |

Course Objective:

The objective is to equip the students with the advanced feature of contemporary java which would enable them to handle complex programs relating to managing data and processes over the network. The major objective of this course is to provide a sound foundation to the students on the concepts, precepts and practices, in a field that is of immense concern to the industry and business.

Course Contents:

Module I

Introduction of Swing, Swing Components, Look and Feel for Swing Components, Introduction to Multimedia Programming

Module II

Introduction to Servlets, Servlet Life Cycle, Servlet based Applications, Servlet and HTML. JSP: Introduction to JSP, JSP implicit objects, JSP based Applications

Module III

ODBC and JDBC Drivers, Connecting to Database with the java.sql Package, Using JDBC Terminology; Evolving Nature of Area

Module IV

Enterprise Java Beans:-EJB roles—EJB Client-Object -container-Transaction Management—implementing a Basic EJB Object-Implementing session Beans-Implementing Entity Beans-Deploying an enterprise Java Beans Object-Changes in EJB1.1 specification.

Module V

The J2EE Platform, The J2EE connector Architecture, J2EE Packaging and Deployment
Overview of Other Java Technologies : Java Message Service (JMS), Java in small memory space (PDA), Distributed Computing (J2EE, CORBA, DCOM)

Examination Scheme:

| Components | CT | HA/V/Q | A | EE |
|---------------|----|--------|---|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

CT: Class Test, HA: Home Assignment, V/Q: Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:

- Java 2 Unleashed (Techmedia – SAMS) By Jamie Jaworski
- Professional Java Server Programming (a Press) By Allamaraju
- Developing Java Servlets (Techmedia – SAMS) By James Goodwill
- Using Java 1.2 Special Edition (PHI) By Webber

References:

David Flanagan, Jim Parley, William Crawford & Kris Magnusson , Java Enterprise in a nutshell- A desktop Quick reference -O'REILLY, 2003
Stephen Ausbury and Scott R. Weiner, Developing Java Enterprise Applications, Wiley-2001
Jaison Hunder & William Crawford, Java Servlet Programming, O'REILLY, 2002
Diatal and Deital, —JAVA 2|| PEARSON publication

ADVANCED DBMS

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC833 | 2 | 1 | - | 3 |

Course Objective:

The objective of this course is to expose the students to the implementation techniques of database system. This course explains techniques for query processing and optimization with transaction and concurrency control techniques.

Course Contents:

Module I: Database System Architectures and the System Catalog

System Architectures for DBMS, Catalogs for relational DBMS, System Catalog Information in ORACLE, Other catalog Information accessed by DBMS Software Modules, Data Dictionary and Data Repository Systems.

Module II: Data Storage and Indexing

Storage and File Structures: Overview of Physical Storage media, RAID, Storage access, file organization, Organization of records and files

Indexing & Hashing: Introduction, Ordered index, B+ tree Index files, B-Tree index files, static hashing, dynamic hashing, comparison of ordered indexing and hashing, multiple key access.

Module III: Query Processing and Optimization

Translating SQL Queries into Relational Algebra, Basic Algorithms for executing Query Operations, Using Heuristics in Query Optimization, Using Selectivity and Cost Estimates in Query Optimization, Overview of Query Optimization in ORACLE, Semantic Query Optimization,

Module IV: Transaction Processing Concepts

Introduction to Transaction Processing, Transaction and System Concepts, Characterizing Schedules, Concurrency Control Techniques, Database Recovery Concepts & Techniques. Transaction supports in SQL.

Module V: Parallel Databases

Introduction, I/O Parallelism, Interquery Parallelism. Intraquery Parallelism. Intraoperation, Parallelism, Interoperation, Parallelism, Design of Parallel Systems.

Module VI: Distributed Databases

Homogeneous and Heterogeneous Databases, Distributed Data Storage, Distributed Transaction, Commit Protocols, Concurrency Control in Distributed Databases, Availability, Distributed Query Processing, Heterogeneous Distributed Databases.

Module VII: Advanced Data Types and New Applications

Motivation Time in Databases, Spatial and Geographic Data, Multimedia Databases, Mobility and Personal Databases.

Examination Scheme:

| | | | | |
|----------------------|-----------|---------------|----------|-----------|
| Components | CT | HA/V/Q | A | EE |
| Weightage (%) | 15 | 10 | 5 | 70 |

Korth, Silbertz, Sudarshan, —Database Concepts. McGraw Hill.

References:

Elmasari, Navathe, —Fundamentals of Database Systems, Addison Wesley.
 Majumdar & Bhattacharya, —Database Management System, Tata McGraw Hill.
 Date C J. An Introduction to Database Systems, Addison Wesley

ROUTING PROTOCOLS AND CONCEPTS

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC834 | 2 | 1 | - | 3 |

Course Objective:

The goal of CCNA Exploration Routing Protocols and Concepts course is to develop an understanding of how a router learns about remote networks and determines the best path to those networks. This course includes both static routing and dynamic routing protocols.

Course Contents:

Module I: Intro to Routing and Packet Forwarding

Introduction, Inside the Router, CLI Configuration and Addressing, Building the Routing Tables, Path Determination and Switching Functions.

Module II: Static Routing

Introduction, Routers and Network, Router Configuration Review, Exploring Directly Connected Networks, Static Routes with —Next Hopl , Addresses ,Static Routes with Exit Interface, Summary and Default Static Routes, Managing and Troubleshooting Static Routes.

Module III: Introduction to Dynamic Routing Protocols

Introduction, Classifying Dynamic Routing Protocols, Metrics, Administrative Distance, Routing Protocols and Subnetting Activities.

Module IV: Distance Vector Routing Protocols

Introduction to Distance Vector Routing Protocols, Network Discovery, Routing Table Maintenance, Routing Loops, Distance Vector Routing Protocols Today.

Module V: RIP Version - I

Introduction, RIP v1,Distance Vector, Classful Routing Protocols, Basic RIPv1 Configuration, Verification and Troubleshooting, Automatic Summarization, Default Route and RIP v1.

Module VI: VLSM and CIDR

Introduction, Classful and Classless Addressing, VLSM, CIDR, VLSM and Route Summarization Activity.

Module VII: RIP Version - II

Introduction, RIPv1 Limitations, Configuration RIPv2, VLSM & CIDR, Verifying & Troubleshooting RIPv2.

Module VIII: The Routing Table – A Close Look

Introduction, the Routing Table Structure, Routing Table Lookup Process, Routing Behaviour.

Module IX: EIGRP

Introduction to EIGRP, Basic EIGRP Configuration, EIGRP Metric Calculation, DUAL, More EIGRP Configuration.

Module X: Link State Routing Protocols

Introduction, Link State Routing, Implementing Link State Routing Protocols.

Module XI: OSPF

Introduction to OSPF, Basic OSPF Configuration, The OSPF metric, OSPF and Multi-access Networks, More OSPF Configuration.

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:***Text***

Cisco Networking Academy Programme CCNA 1 & 2 Companion Guide, 3rd Edn by Pearson Education
Cisco Networking Academy Programme CCNA 1 & 2 Lab Companion, 3rd Edn by Pearson Education
Cisco Networking Academy Programme CCNA 1 & 2 Engineering General, 3rd Edn by Pearson Education
CISCO CCNA-Exploration 4.0, Module 2, Pearson Education.

Data Communications and Networking by Behrouz Forouzan, 3e, Tata McGraw-Hill
Computer Networks by Andrews S. Tanenbaum, 4e, Pearson Education

Note: This is an online course of Cisco. Online materials provided by Cisco are studied.

GAME PROGRAMMING USING GREENFOOT

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC835 | 2 | 1 | - | 3 |

Course Objective: The objective of the course is to enable students to develop graphical computer programs, such as simulations and games, using the Java Programming Language and the Greenfoot environment. Greenfoot allows us to play. And that does not only mean playing computer games; it means playing with programming: we can create objects, move them around on screen, call their methods, observe what they do, all interactively and easily.

Course Contents

Module 1: Getting to know Greenfoot

Objects and classes, Interacting with objects, Return types, Parameters, Greenfoot execution, Understanding the class diagram

Module 2: The first program: Little Crab

The Little Crab scenario, Making the crab move, Turning, Dealing with screen edges, Adding random behavior, Adding worms, Eating worms, Creating new methods, Adding a Lobster, Keyboard control, Ending the game, Adding sound

Module 3: Finishing the crab game

Adding objects automatically, Creating new objects, Animating images, Greenfoot images, Instance variables(fields), Using actor constructors, Alternating the images, The if/else statement, Counting worms

Module 4: Sharing your scenarios

Exporting your scenario, Export to application, Export to a web page, Publishing on the Greenfoot Gallery

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Texts & References:

Text:

Introduction to Programming with Greenfoot: Object-Oriented Programming in Java with Games and Simulations, Michael Kölling

References:

Java The Complete Reference (English) 8th Edition, McGraw Hill Education (India) Private Limited, Herb Schildt

Web Links:

<http://www.greenfoot.org/doc>

<http://www.greenfoot.org/doc/joy-of-code>

ASP.NET LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC823 | - | - | 2 | 1 |

Course Contents:

Use of Controls in creating web pages
Creating sessions
Creating Custom controls
Implementing security

List of Experiments

- Program to display the addition, subtraction, multiplication and division of two number using console applications.
- Program to display the first 10 natural numbers and their sum using console application.
- Program to display the addition using the windows application.
- Write a program to convert input string from lower to upper and upper to lower case.
- Write a program to simple calculator using windows application.
- Write a program working with Page using ASP.Net.
- Write a program working with forms using ASP.NET.
- Write a program to connectivity with Oracle database.
- Write a program to access data source through ADO.NET.
- Write a program to manage the session.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

FLASH LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC824 | - | - | 2 | 1 |

List of Programs:

- Create the animation of flying bird in flash.
- Create the animation of walking man with his arms and legs moving.
- Create the animation of Virtual typewriter.
- Show a example of Masking in flash.
- Make an animation of bouncing ball using flash.
- Create the animation of moving Car in flash.
- Make the blinking colorful text in flash.
- Make a scenery showing rising sun in it using flash.
- Show a flower growing in a flower pot.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

ADVANCE JAVA LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC825 | - | - | 2 | 1 |

Course Contents:

Programming Language: Java

Assignments:

WAP to display label on a frame with the help of JFrame

WAP to display six buttons on a panel using JFrame.

WAP. To display an image and a string in a label on the JFrame.

WAP that implement a JApplet that display a simple label

WAP that implement a JApplet and display the following frame

- 0 Customer name
- 1 Customer number
- 2 Age
- 3 Address

WAP to access a table Product Master from MS-Access using Java code.

WAP that implement a simple servlet program.

WAP for authentication, which validate the login-id and password by the servlet code.

WAP to connecting a database using user-id and password.

WAP to insert data into the database using the prepared statement.

WAP to read data from the database using the ResultSet.

WAP to read data send by the client (HTML page) using servlet.

WAP to include a HTML page into a JSP page.

WAP to handle the JSPEXception.

WAP to read data send by a client (HTML page) using JSP.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

ADVANCED DBMS LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC826 | - | - | 2 | 1 |

Course Contents:

Software Required: MS SQL Server

RDBMS Basics and SQL Server Installation

Transact-SQL = SQL Language on SQL Server

- Review of tables and SQL Server terminology
 - o Tables, data types and terminology
 - o Foreign Keys
- SQL Server data and metadata storage
- DDL: Create, Alter, Drop
- DML: Insert, Update, Delete, Select
- sp_help to display database and table structure

SQL – SELECT Statement variations on SQL Server

- SQL expressions
- Column aliases
- Views
- Joins
- Relationships

SQL - DDL and INSERT, UPDATE, DELETE on SQL Server

- CREATE TABLE and temporary tables
- Collation for the server, database and table column
- Accessing metadata programmatically
- INSERT statement
 - o IDENTITY property and UNIQUEIDENTIFIER data type
 - o Inserting from a SELECT statement
- UPDATE statement
- DELETE statement
 - o TRUNCATE TABLE

Security and Managing Databases

Creating new login using EM and command line
Managing SQL Server Databases

- o Creating a simple database
- o Renaming and dropping a database

Four ways to copy and entire database
Detach and attach a database
Using DBCC command for database maintenance

MSS Connectivity, Import and Export

- Connectivity to a SQL Server
 - o Database Drivers and Networking Components
- Importing and Exporting Data
 - o DTS - Data Transformation Services
- Concepts
 - o bcp and BULK INSERT

Transaction Control, Backup and Restore

- Emptying the Transaction Log = Truncate Log
- Restoring a Database
 - o Restore Dialog in EM
 - o RESTORE Command
- Select Into and Bulk Copy (bcp)
- Designing a Database For Recoverability
- Copy a Database using BACKUP

SQL Agent, Transact-SQL

- SQL Agent
- Configuring SQL Agent
- Dynamic SQL - Build an SQL statement as string

Stored Procedures, User Functions, Triggers

- Subprograms
 - o Creating Stored Procedure
 - o Using Query Analyzer Stored Procedure Debugger -- MSS 2000 QA
 - o Creating Cursors
- Creating User Defined Functions (UDFs)
- Creating Triggers

Performance - Indexes and SQL Profiler

- o Creating an Index
- o Testing the Index - Index Performance on Medium-sized Table

Examination Scheme:

| IA | | | | EE | |
|-----------|-----------|-----------|----------|-----------|----------|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

ROUTING PROTOCOLS AND CONCEPTS LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC827 | - | - | 2 | 1 |

Course Contents:

1.0 Cabling a Network and Basic Router Configuration

- Cable devices and establish console connections.
- Erase and reload the routers.
- Perform basic IOS command line interface operations.
- Perform basic router configuration.
- Verify and test configurations using show commands, ping and traceroute.
- Create a startup configuration file.
- Reload a startup configuration file.
- Install a terminal emulation program.

2.0 Basic Router Configuration

- Cable a network according to the Topology Diagram given by Lab Coordinator
- Erase the startup configuration and reload a router to the default state.
- Perform basic configuration tasks on a router.
- Configure and activate Ethernet interfaces.
- Test and verify configurations.
- Reflect upon and document the network implementation.

3.0 Challenge Router Configuration

- Subnet an address space given requirements.
- Assign appropriate addresses to interfaces and document.
- Cable a network according to the Topology Diagram.
- Erase the startup configuration and reload a router to the default state.
- Perform basic configuration tasks on a router.
- Configure and activate Serial and Ethernet interfaces.
- Test and verify configurations.
- Reflect upon and document the network implementation.

4.0 Basic Static Route Configuration

- Cable a network according to the Topology Diagram given by Lab Coordinator
- Erase the startup configuration and reload a router to the default state.
- Perform basic configuration tasks on a router.
- Interpret **debug ip routing** output.
- Configure and activate Serial and Ethernet interfaces.
- Test connectivity.
- Gather information to discover causes for lack of connectivity between devices.
- Configure a static route using an intermediate address.
- Configure a static route using an exit interface.
- Compare a static route with intermediate address to a static route with exit interface.
- Configure a default static route.
- Configure a summary static route.
- Document the network implementation.

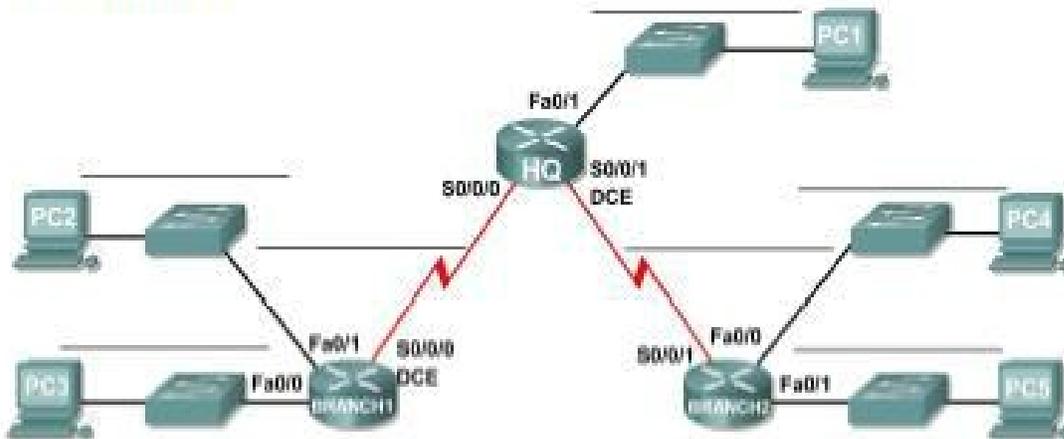
5.0 Challenge Static Route Configuration

- Subnet an address space given requirements.
- Assign appropriate addresses to interfaces and document.
- Cable a network according to the Topology Diagram.
- Erase the startup configuration and reload a router to the default state.
- Perform basic configuration tasks on a router.
- Configure and activate Serial and Ethernet interfaces.
- Determine appropriate static, summary, and default routes.
- Test and verify configurations.

Reflect upon and document the network implementation.

6.0 Subnetting Scenario 1

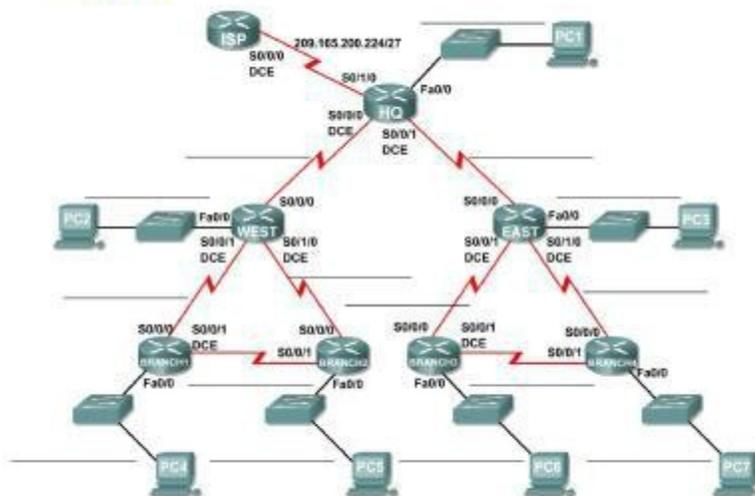
Topology Diagram



- Determine the number of subnets needed.
- Determine the number of hosts needed.
- Design an appropriate addressing scheme.
- Assign addresses and subnet mask pairs to device interfaces and hosts.
- Examine the use of the available network address space.
- Determine how static routing could be applied to the network.

7.0 Subnetting Scenario 2

Topology Diagram



- Determine the number of subnets needed.
- Determine the number of hosts needed.
- Design an appropriate addressing scheme.
- Assign addresses and subnet mask pairs to device interfaces and hosts.
- Examine the use of the available network address space.
- Determine how static routing could be applied to the network.

8.0 Routing Table Interpretation Lab

Given: The output from the HQ router
HQ#show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B – BGP
 D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 -
 OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
 E1 - OSPF external type 1, E2 - OSPF external type 2, E – EGP
 i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
 - candidate default, U - per-user static route, o – ODR
 P - periodic downloaded static route
 Gateway of last resort is not set
 10.0.0.0/30 is subnetted, 1 subnets
 C 10.10.10.252 is directly connected, Serial0/0/0
 172.16.0.0/30 is subnetted, 1 subnets
 C 172.16.100.0 is directly connected, Serial0/0/1
 R 192.168.1.0/24 [120/1] via 10.10.10.254, 00:00:03, Serial0/0/0
 R 192.168.2.0/24 [120/1] via 10.10.10.254, 00:00:03, Serial0/0/0
 R 192.168.3.0/24 [120/1] via 10.10.10.254, 00:00:03, Serial0/0/0
 C 192.168.4.0/24 is directly connected, Loopback0
 C 192.168.5.0/24 is directly connected, Loopback1 C
 192.168.6.0/24 is directly connected, Loopback2
 R 192.168.7.0/24 [120/1] via 172.16.100.2, 00:00:04, Serial0/0/1 R
 192.168.8.0/24 [120/1] via 172.16.100.2, 00:00:04, Serial0/0/1 R
 192.168.9.0/24 [120/1] via 172.16.100.2, 00:00:04, Serial0/0/1

Given: The output from the BRANCH1 router

BRANCH1#show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B – BGP
 D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 -
 OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
 E1 - OSPF external type 1, E2 - OSPF external type 2, E – EGP
 i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
 - candidate default, U - per-user static route, o – ODR
 P - periodic downloaded static route
 Gateway of last resort is not set
 10.0.0.0/30 is subnetted, 1 subnets
 C 10.10.10.252 is directly connected, Serial0/0/0
 R 172.16.0.0/16 [120/1] via 10.10.10.253, 00:00:04,
 Serial0/0/0 C 192.168.1.0/24 is directly connected, Loopback0
 C 192.168.2.0/24 is directly connected, Loopback1 C
 192.168.3.0/24 is directly connected, Loopback2
 R 192.168.4.0/24 [120/1] via 10.10.10.253, 00:00:04, Serial0/0/0 R
 192.168.5.0/24 [120/1] via 10.10.10.253, 00:00:04, Serial0/0/0 R
 192.168.6.0/24 [120/1] via 10.10.10.253, 00:00:04, Serial0/0/0 R
 192.168.7.0/24 [120/2] via 10.10.10.253, 00:00:04, Serial0/0/0 R
 192.168.8.0/24 [120/2] via 10.10.10.253, 00:00:04, Serial0/0/0 R
 192.168.9.0/24 [120/2] via 10.10.10.253, 00:00:04, Serial0/0/0

Given the output from the BRANCH2 router

BRANCH2#show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B – BGP
 D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 -
 OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
 E1 - OSPF external type 1, E2 - OSPF external type 2, E – EGP
 i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
 - candidate default, U - per-user static route, o – ODR
 P - periodic downloaded static route
 Gateway of last resort is not set
 R 10.0.0.0/8 [120/1] via 172.16.100.1, 00:00:19,
 Serial0/0/1 172.16.0.0/30 is subnetted, 1 subnets
 C 172.16.100.0 is directly connected, Serial0/0/1
 R 192.168.1.0/24 [120/2] via 172.16.100.1, 00:00:19, Serial0/0/1
 R 192.168.2.0/24 [120/2] via 172.16.100.1, 00:00:19, Serial0/0/1
 R 192.168.3.0/24 [120/2] via 172.16.100.1, 00:00:19, Serial0/0/1
 R 192.168.4.0/24 [120/1] via 172.16.100.1, 00:00:19, Serial0/0/1

R 192.168.5.0/24 [120/1] via 172.16.100.1, 00:00:19,
 Serial0/0/1 R 192.168.6.0/24 [120/1] via 172.16.100.1,
 00:00:19, Serial0/0/1 C 192.168.7.0/24 is directly connected,
 Loopback0 C 192.168.8.0/24 is directly connected, Loopback1
 C 192.168.9.0/24 is directly connected, Loopback2

Draw a diagram of the network based on your interpretation of the router outputs and do the following:

- Interpret router outputs.
- Identify the IP addresses for each router.
- Draw a diagram of the network topology.
- Cable and configure a network based on the topology diagram.
- Test and verify full connectivity.
- Reflect upon and document the network implementation.

9.0 Basic RIP Configuration

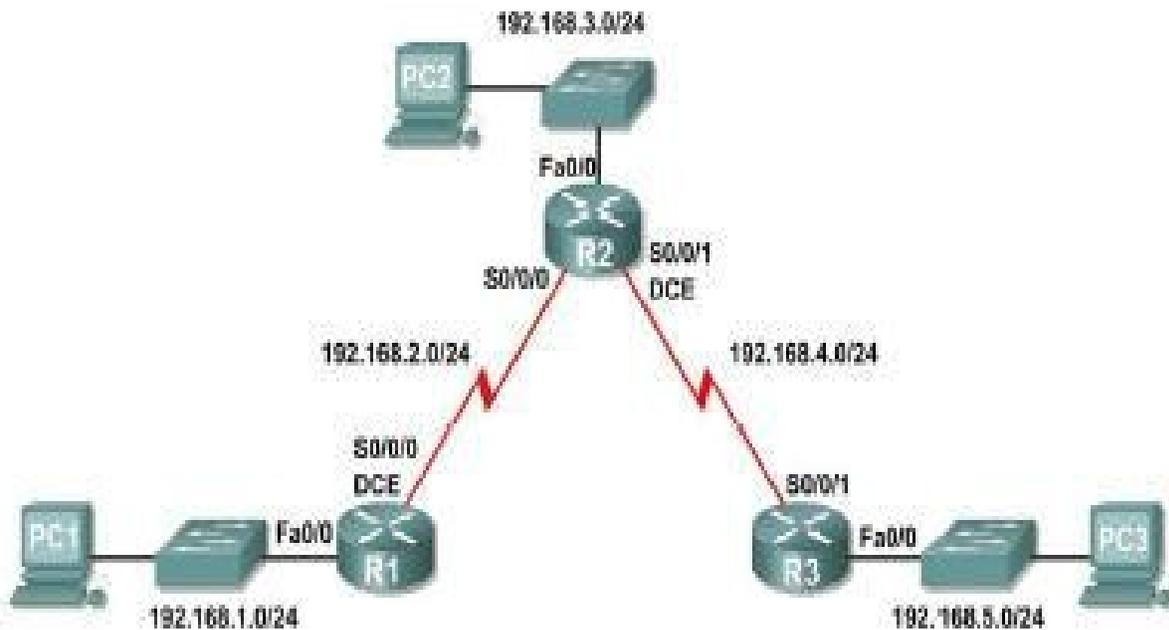
- Cable a network according to the Topology Diagram given below
- Erase the startup configuration and reload a router to the default state.
- Perform basic configuration tasks on a router.
- Configure and activate interfaces.
- Configure RIP routing on all routers.
- Verify RIP routing using **show** and **debug** commands.
- Reconfigure the network to make it contiguous.
- Observe automatic summarization at boundary router.
- Gather information about RIP processing using the **debug ip rip** command.
- Configure a static default route.
- Propagate default routes to RIP neighbors.
- Document the RIP configuration.

Scenarios

- Scenario A: Running RIPv1 on Classful Networks

Scenario A: Running RIPv1 on Classful Networks

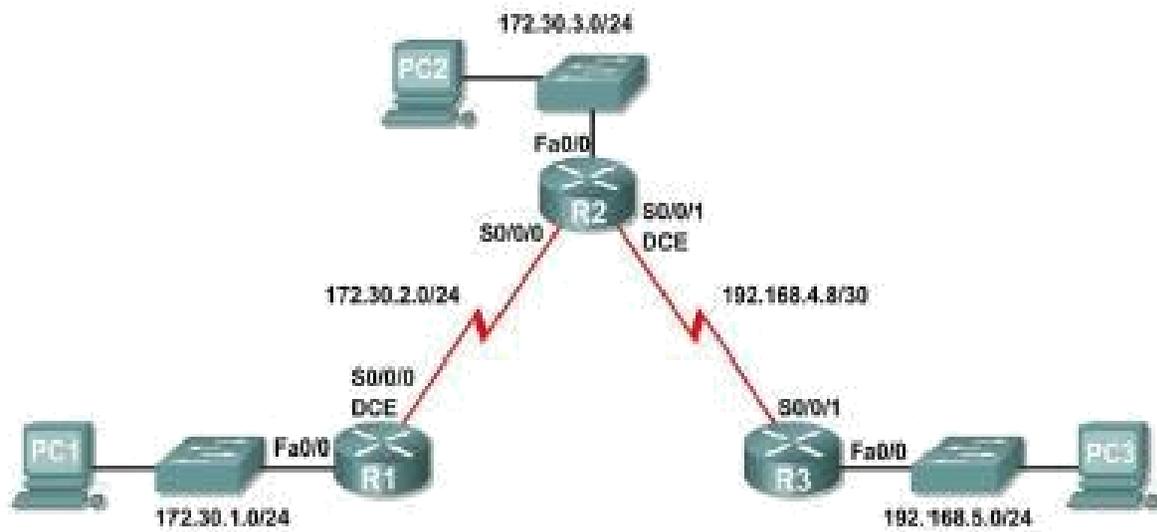
Topology Diagram



Scenario B: Running RIPv1 with Subnets and Between Classful Networks

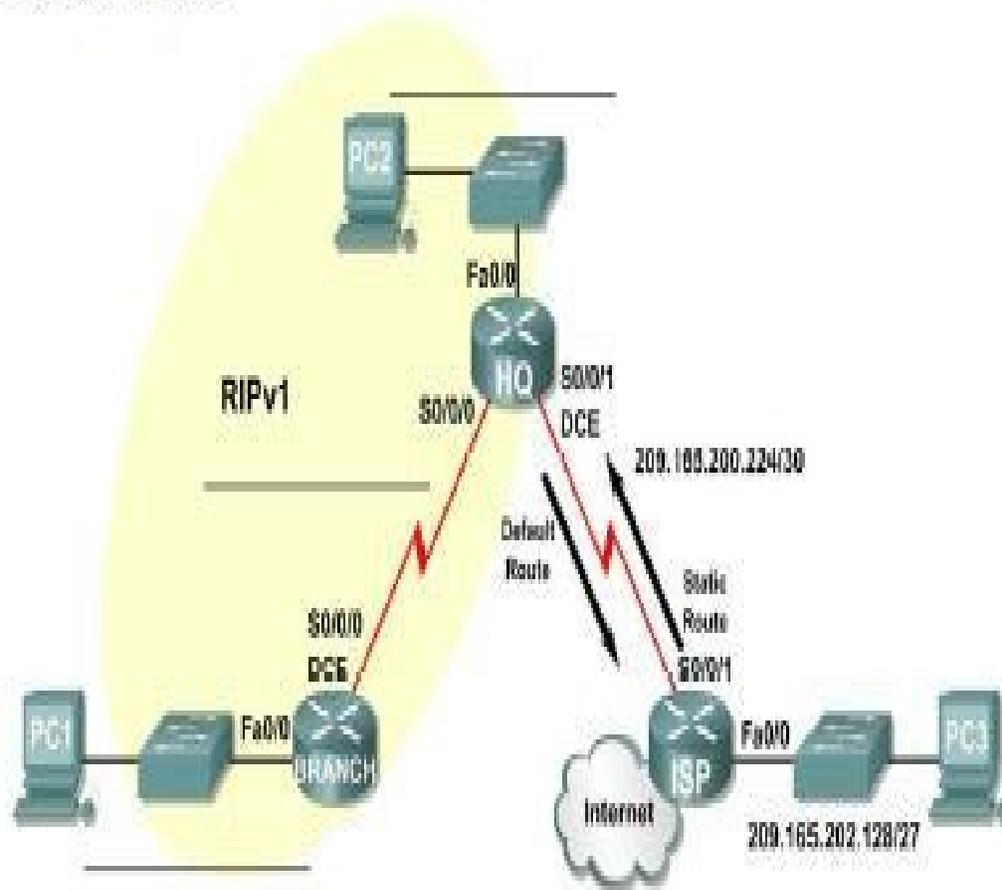
Scenario B: Running RIPv1 with Subnets and Between Classful Networks

Topology Diagram



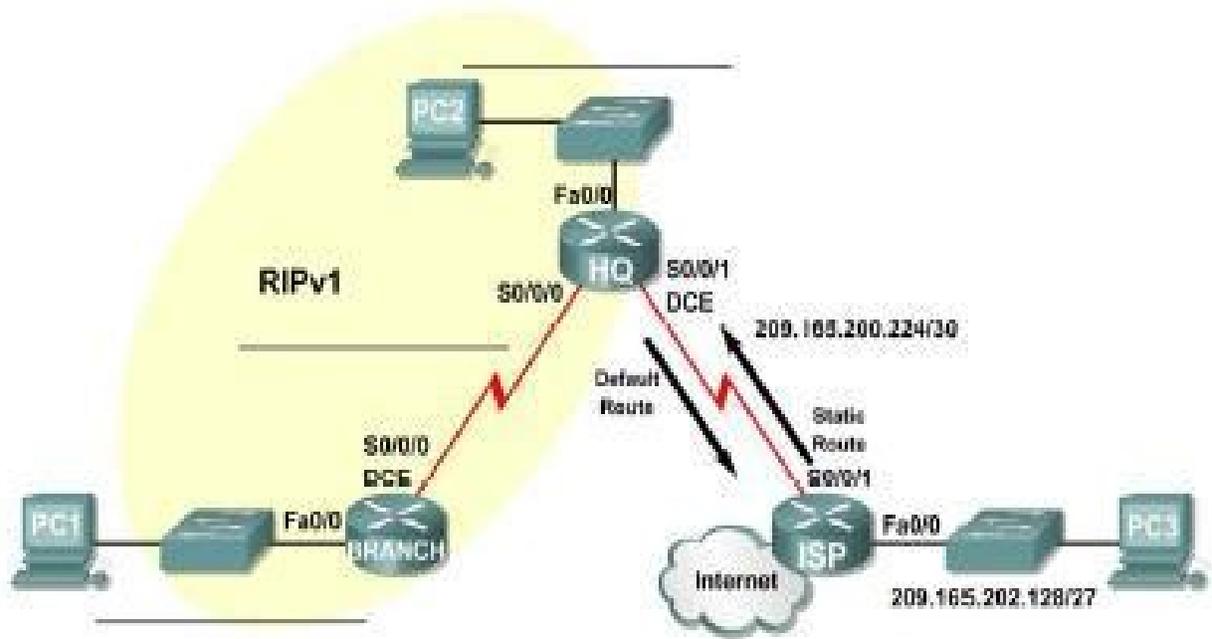
Scenario C: Running RIPv1 on a Stub Network

Topology Diagram



10.0 Challenge RIP Configuration

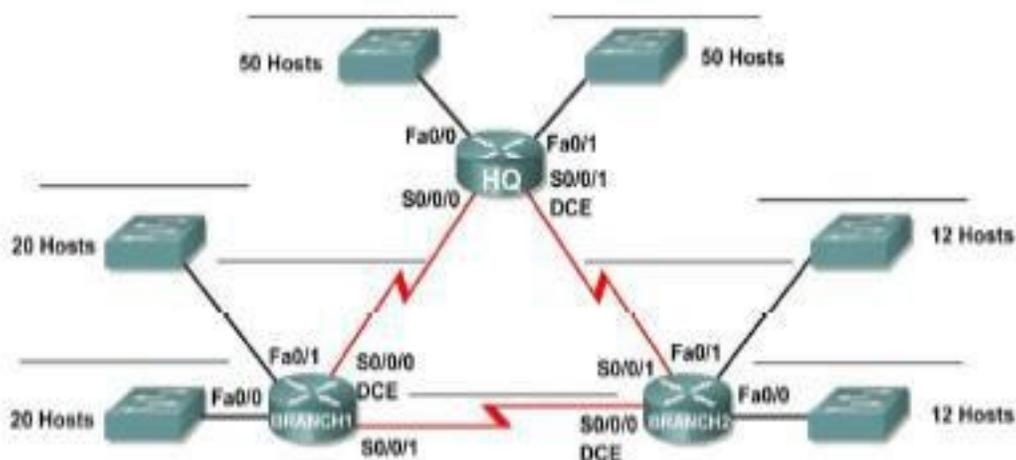
Topology Diagram



- Subnet an address space given requirements.
- Assign appropriate addresses to interfaces and document them in the Addressing Table.
- Cable a network according to the Topology Diagram.
- Erase the startup configuration and reload a router to the default state.
- Configure RIPv1 routing on all routers.
- Configure and propagate a static default route.
- Verify RIPv1 operation.
- Test and verify full connectivity.
- Reflect upon and document the network implementation.

11.0 Basic VLSM Calculation and Addressing Design

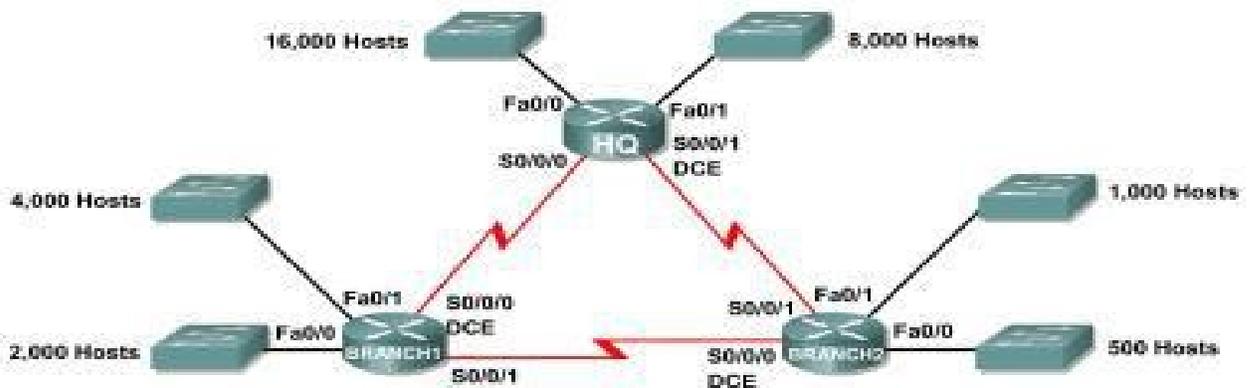
Topology Diagram



- Determine the number of subnets needed.
- Determine the number of hosts needed for each subnet
- Design an appropriate addressing scheme using VLSM.
- Assign addresses and subnet mask pairs to device interfaces.
- Examine the use of the available network address space.

12.0 Troubleshooting a VLSM Addressing Design

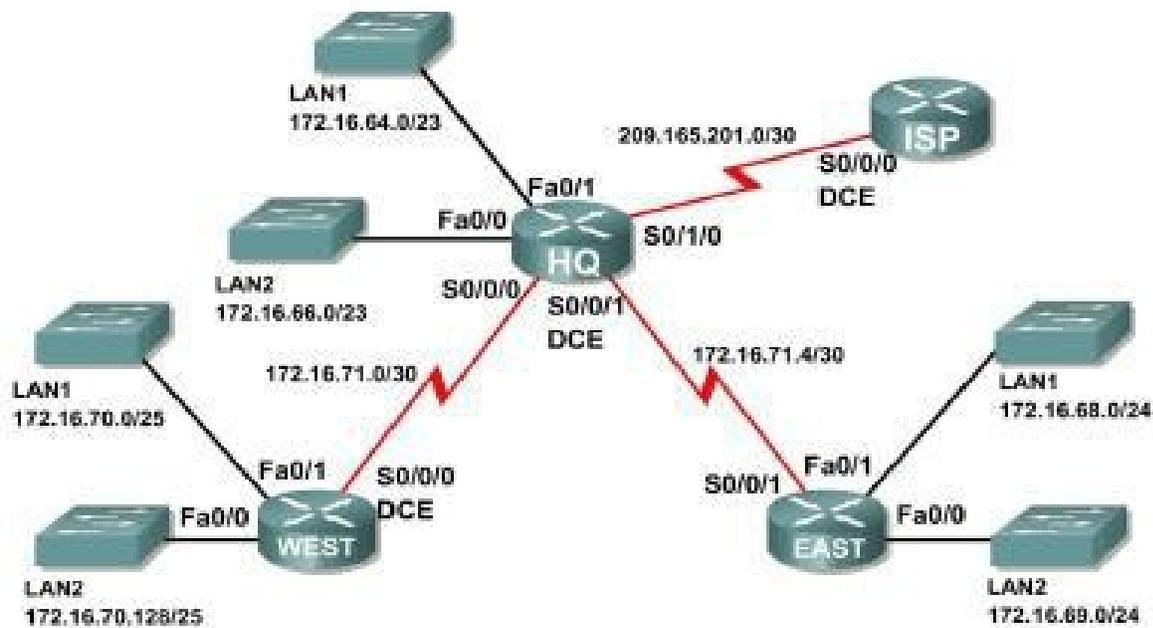
Topology Diagram



Discover errors in a VLSM design.
Propose solutions for VLSM design errors.
Document the corrected VLSM assignments.

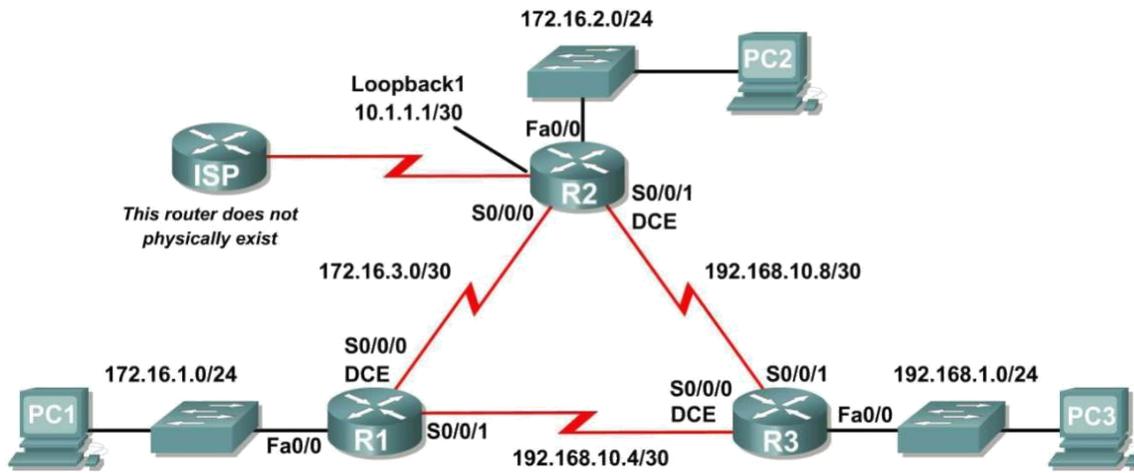
13.0 Basic Route Summarization

Topology Diagram



Determine summarized routes that can be used to reduce the size of routing tables

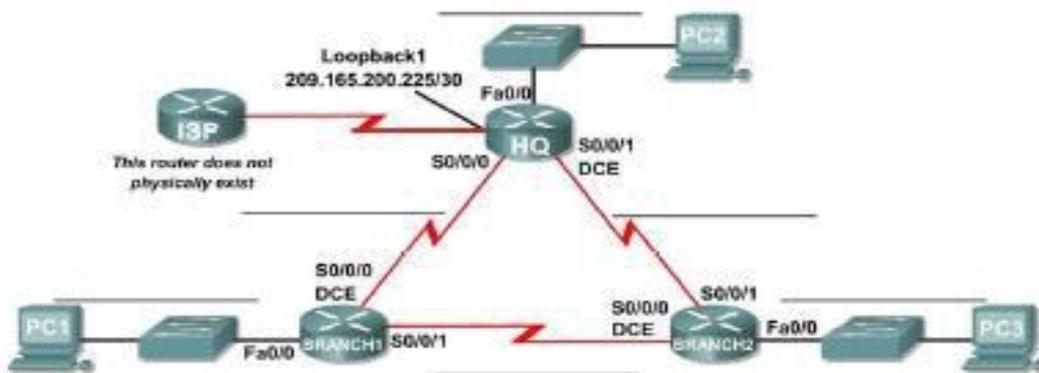
15.0 Basic EIGRP Configuration Lab



- Cable a network according to the Topology Diagram.
- Erase the startup configuration and reload a router to the default state.
- Perform basic configuration tasks on a router.
- Configure and activate interfaces.
- Configure EIGRP routing on all routers.
- Verify EIGRP routing using **show** commands.
- Disable automatic summarization.
- Configure manual summarization.
- Configure a static default route.
- Propagate default route to EIGRP neighbors.
- Document the EIGRP configuration.

16.0 Challenge EIGRP Configuration Lab

Topology Diagram

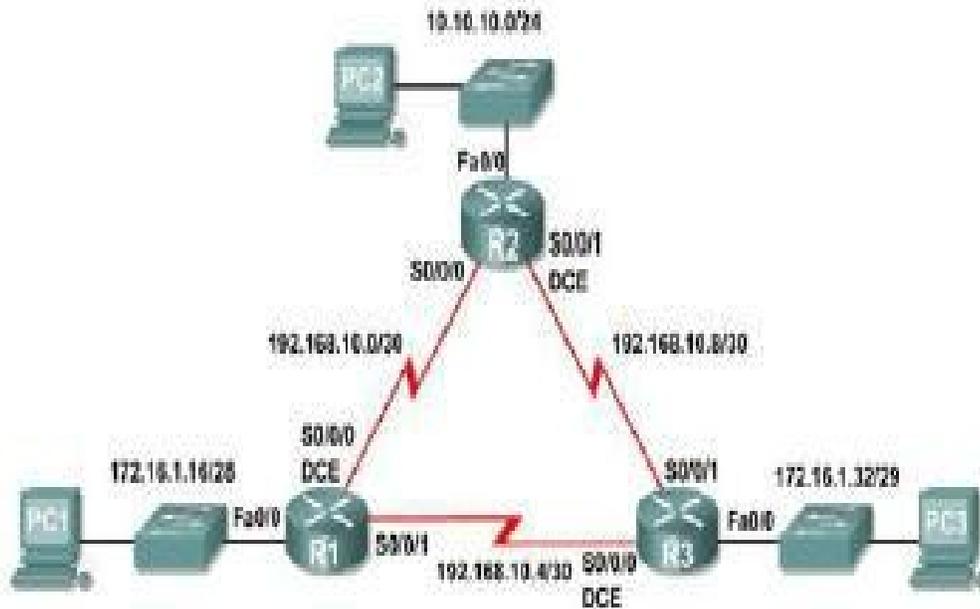


- Create an efficient VLSM design given requirements.
- Assign appropriate addresses to interfaces and document.
- Cable a network according to the Topology Diagram.
- Erase the startup configuration and reload a router to the default state.
- Configure routers including EIGRP.
- Configure and propagate a static default route.
- Verify EIGRP operation.
- Test and verify full connectivity.
- Reflect upon and document the network implementation.

17.0 Basic OSPF Configuration Lab

Cable a network according to the Topology Diagram

Topology Diagram



- Erase the startup configuration and reload a router to the default state
- Perform basic configuration tasks on a router
- Configure and activate interfaces
- Configure OSPF routing on all routers
- Configure OSPF router IDs
- Verify OSPF routing using show commands
- Configure a static default route
- Propagate default route to OSPF neighbors
- Configure OSPF Hello and Dead Timers
- Configure OSPF on a multi-access network, priority and election process

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

GAME PROGRAMMING USING GREENFOOT LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC828 | - | - | 2 | 1 |

The first program: Little Crab
The Little Crab scenario
Making the crab move
Turning
Dealing with screen edges
Adding random behavior
Adding worms
Eating worms
Creating new methods
Adding a Lobster
Keyboard control
Adding sound
Adding objects automatically
Creating new objects
Animating images
Greenfoot images
Alternating the images
Counting worms
Sharing your scenarios
Exporting your scenario
Export to application
Export to a web page
Publishing on the Greenfoot Gallery
Making music: An on-screen piano
Animating the key
Producing the sound

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

COMMUNICATION SKILLS - IV

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| BCS801 | 1 | - | - | 1 |

Course Objective:

To facilitate the learner with Academic Language Proficiency and make them effective users of functional language to excel in their profession.

Course Contents:

Module I: Introduction to Speaking Skills

Business Conversation
Effective Public Speaking
Art of Persuasion

Module II: Speaking for Employment

Types of Interview
Styles of Interview
Facing Interviews-Fundamentals and Practice Session
Conducting Interviews- Fundamentals and Practice Session
Question Answer on Various Dimensions

Module III: Basic Telephony Skills

Guidelines for Making a Call
Guidelines for Answering a Call
Telephone Word Groups
Answering Systems and Voice-Mail

Module IV: Work Place Speaking

Team Briefing
Conflict Management
Negotiations
Participation in Meetings
Keynote Speeches

Examination Scheme:

| Components | CT1 | CT2 | CAF | V | GD | GP | A |
|---------------|-----|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 25 | 10 | 10 | 10 | 5 |

CAF – Communication Assessment File

GD – Group Discussion

GP – Group Presentation

Text & References:

Jermy Comfort, Speaking Effectively, et.al, Cambridge
Krishnaswamy, N, Creative English for Communication, Macmillan
Raman Prakash, Business Communication, Oxford.
Taylor, Conversation in Practice.

BEHAVIOURAL SCIENCE – IV (PERSONAL AND PROFESSIONAL EXCELLENCE)

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| BSS801 | 1 | - | - | 1 |

Course Objective:

This course aims at imparting an understanding of:

Build and leverage your professional reputation

Maintain focus in pressure situations

Make a balanced choice between professional and personal commitments

Course Contents:

Module I: Components of Excellence

Personal Excellence:

0 Identifying long-term choices and goals

o Uncovering the talent, strength & style

Analyzing choke points in your personal processes by analysis in area of placements, events, seminars, conference, extracurricular activities, projects etc.

Developing professional power: Goal-setting, time management, handling criticism, interruptions and time wasters

Module II: Professional Excellence

Alan P. Rossiter's eight aspects of Professional Excellence

Resilience during challenge and loss

Continued Reflection (Placements, Events, Seminars, Conferences, Projects, Extracurricular Activities, etc.)

Module III: Career Planning

0 Knowing one's Interest and Aptitude

1 Identifying available Resources

2 Setting goals to maintain focus:

Developing Positive attributes in personality - Self-reliance and Employability skills

Module IV: Professional Success

Building independence & interdependence

Reducing resistance to change

Continued reflection (Placements, events, seminars, conferences, projects extracurricular Activities etc.)

Module V: Stress Management for Healthy Living

Meaning and Nature of Stress

Stages of stress

Causes and Con

sequences of stress: Personal, Organizational and Environmental

Personal Styles and strategies of coping

Module VI: End-of-Semester Appraisal

Viva based on personal journal

Assessment of Behavioural change as a result of training

Exit Level Rating by Self and Observer

Examination Scheme:

| Components | SAP | A | Mid Term Test (CT) | VIVA | Journal for Success (JOS) |
|---------------|-----|----|--------------------|------|---------------------------|
| Weightage (%) | 20 | 05 | 20 | 30 | 25 |

Text & References:

- J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 2, Group (1996); Pfeiffer & Company
- Smither Robert D.; The Psychology of Work and Human Performance, 1994, Harper Collins College Publishers
- Raman, A.T. (2003) Knowledge Management: A Resource Book. Excel Books, Delhi.
- Kamalavijayan, D. (2005). Information and Knowledge Management. Macmillan India Ltd. Delhi

FRENCH – IV

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLF801 | 2 | - | - | 2 |

Course Objective:

To enable students:

To develop strategies of comprehension of texts of different origin

To present facts, projects, plans with precision

Course Contents:

Module C: pp. 104 – 139: Unités 8, 9

Contenu lexical: Unité 8: Découvrir le passé

parler du passé, des habitudes et des changements.

parler de la famille, raconter une suite

d'événements/préciser leur date et leur durée.

connaître quelques moments de l'histoire

Unité 9: Entreprendre

0 faire un projet de la réalisation: (exprimer un besoin, préciser les étapes d'une réalisation)

parler d'une entreprise

parler du futur

Contenu grammatical:

1. Imparfait

Pronom « en »

Futur

Discours rapporté au présent

Passé récent

Présent progressif

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

le livre à suivre: Campus: Tome 1

GERMAN - IV

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| FLG801 | 2 | - | - | 2 |

Course Objective:

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany.

Introduction to Advanced Grammar Language and Professional Jargon

Course Contents:

Module I: Present perfect tense

Present perfect tense, usage and applicability

Usage of this tense to indicate near past

Universal applicability of this tense in German

Module II: Letter writing

To acquaint the students with the form of writing informal letters.

Module III: Interchanging prepositions

Usage of prepositions with both accusative and dative cases

Usage of verbs fixed with prepositions

Emphasizing on the action and position factor

Module IV: Past tense

Introduction to simple past tense

Learning the verb forms in past tense

Making a list of all verbs in the past tense and the participle forms

Module V: Reading a Fairy Tale

Comprehension and narration

Rotkäppchen

Froschprinzessin

Die Fremdsprache

Module VI: Genitive case

Genitive case – Explain the concept of possession in genitive

Mentioning the structure of weak nouns

Module VII: Genitive prepositions

Discuss the genitive prepositions and their usage: (während, wegen, statt, trotz)

Module VIII: Picture Description

Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;

Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

| | | | | | | |
|----------------------|------------|------------|----------|----------|----------|----------|
| Components | CT1 | CT2 | C | I | V | A |
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

Wolfgang Hieber, Lernziel Deutsch

Hans-Heinrich Wangler, Sprachkurs Deutsch
Schulz Griesbach, Deutsche Sprachlehre für Ausländer
P.L Aneja, Deutsch Interessant- 1, 2 & 3
Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

SPANISH - IV

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLS801 | 2 | - | - | 2 |

Course Objective:

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

Course Contents:

Module I

Revision of earlier semester modules
Introduction to Present Continuous Tense (Gerunds)

Module II

Translation with Present Continuous Tense
Introduction to Gustar, Parecer, Apetecer, doler

Module III

Imperatives (positive and negative commands of regular verbs)

Module IV

Commercial/business vocabulary

Module V

Simple conversation with help of texts and vocabulary
En la recepcion del hotel
En el restaurante
En la agencia de viajes
En la tienda/supermercado

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

Español Sin Fronteras (Nivel – Elemental)

CHINESE – IV

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| FLC801 | 2 | - | - | 2 |

Course Objective:

How many characters are there? The early Qing dynasty dictionary included nearly 50,000 characters the vast majority of which were rare accumulated characters over the centuries. An educate person in China can probably recognize around 6000 characters. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I

Dialogue Practice
 Observe picture and answer the question
 Pronunciation and intonation
 Character writing and stroke order.
 Electronic items

Module II

Traveling – The Scenery is very beautiful
 Weather and climate
 Grammar question with – —bu shi Ma?||
 The construction —yao ... le|| (Used to indicate that an action is going to take place)
 Time words —yiqian||, —yiwai|| (Before and after).
 The adverb —geng||.

Module III

Going to a friend house for a visit meeting his family and talking about their customs.
 Fallen sick and going to the Doctor, the doctor examines, takes temperature and writes prescription.
 Aspect particle —guo|| shows that an action has happened some time in the past.
 Progressive aspect of an actin —zhengzai|| Also the use if —zhe|| with it.
 To welcome someone and to see off someone I cant go the airport to see you off... etc.

Module IV

Shipment. Is this the place to checking luggage?
 Basic dialogue on – Where do u work?
 Basic dialogue on – This is my address
 Basic dialogue on – I understand Chinese
 Basic dialogue on – What job do u do?
 Basic dialogue on – What time is it now?

Module V

Basic dialogue on – What day (date) is it today?
 Basic dialogue on – What is the weather like here.
 Basic dialogue on – Do u like Chinese food?
 Basic dialogue on – I am planning to go to China.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|----------------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

—Elementary Chinese Reader, Part-2|| Lesson 31-38

ARTIFICIAL INTELLIGENCE

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC901 | 2 | 1 | - | 3 |

Course Objective:

The primary objective of this course is to provide an introduction to the basic principles, techniques, and applications of Artificial Intelligence. The emphasis of the course is on teaching the fundamentals and not on providing a mastery of specific commercially available software tools or programming environments. Upon successful completion of the course, you will have an understanding of the basic areas of artificial intelligence search, knowledge representation, learning and their applications in design and implementation of intelligent agents for a variety of tasks in analysis, design, and problem-solving. You will also be able to design and implement key components of intelligent agents of moderate complexity in Java and/or Lisp or Prolog and evaluate their performance.

Course Contents:

Module I: Introduction

AI and its importance, AI Problem, Application area.

Module II: Problem Representations

State space representation, problem-reduction representation, production system, production system characteristics, and types of production system.

Module III: Heuristic Search Techniques

AI and search process, brute force search, depth-first search, breadth-first search, time and space complexities, heuristics search, hill climbing, best first search, A* algorithm and beam search.

Module IV: Game Playing

AI and game playing, plausible move generator, static evaluation move generator, game playing strategies, problems in game playing.

Module V: Structured Knowledge

Associative networks, frame structures, conceptual dependencies and scripts.

Module VI: Logic

Propositional logic: syntax and semantics, First Order Predicate Logic (FOPL): Syntax and semantics, conversion to clausal form, inference rules, unification, and the resolution principles.

Module VII: Knowledge Acquisitions

Type of learning, Knowledge Acquisition, Early work in machine learning, learning by induction.

Module VIII: Expert System

Introduction to expert system, Phases of expert system, characteristics of expert system and a case study.

Module IX: Introduction to Neural Network, Fuzzy Logic, Robotics, LISP and Prolog.

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Artificial Intelligence – II Edition, Elaine Rich, Kevin Knight TMH.

References:

Foundations of Artificial Intelligence and Expert Systems, V S Janakiraman, K Sarukesi, P Gopalakrishan, Macmillan India Ltd.

Introduction to AI and Expert System, Dan W. Patterson, PHI.

INFORMATION STORAGE MANAGEMENT (EMC²)

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC902 | 2 | 1 | - | 3 |

Course Objective:

The Course gives the much needed flexibility about the latest and emerging technologies to the students like SAN, NAS, SAN- FC, iSCSI etc.

Course Contents:

Module I: Storage Concepts

The Need for storage Networks, Storage Devices and Techniques, NAS and SAN, NAS Devices, Advantages and Disadvantages of NAS Devices, SANs, NAS Versus SANs, SAN Standard Organization

Module II: Introduction to DAS

Module III: Introduction to NAS

Module IV: Introduction to Storage Area Networks

Evolution and Benefits of SANs, SAN Components and Building Blocks, SAN Servers, SAN Storage, SAN Interfaces, SAN Interconnections, SAN Software, Data Access over SAN, Fiber Channel Basics: Overview of Fiber Channel Technology, Advantages of the Fiber Channel, Technology, Fiber Channel Ports, Fiber Channel Topology, Fiber Channel Layers, Classes of Service; Fiber Channel Products: HBAs, Fiber Channel Connectors, HUBs, Switches, Fiber Channel Switches Versus Hubs, Bridges, Routers, Storage Devices, Disk Arrays, JBOD, Tape Libraries and Subsystems, Storages Services; Fibre Channel Cabling: Copper-Based Cabling, Fiber-Optic Cabling, Fiber –Optic Connectors, Planning and Implementing Fiber-Optic Cables, Advantages of Fiber-Optic Cabling, Type of Fiber-Optic Cabling

Module V: SAN Topologies

Point –to-Point Topology, FC-AL Topology, Switched Fabric Topology; Designing and Building a SAN; SAN Design Considerations, Designing a SAN, SAN Best Practices; Implementing SAN Security: General Security Guidelines, Securing a SAN, Securing SAN Components, Software-Based Security Measures, Securing Business Environments; Problem Isolation and Management of SANs: Isolating and Troubleshooting Problems, Managing SANs, Disaster Management, Traditional Backup and Restoring, SAN Backup and Restoration, SAN Backup and Restoration Models; iSCSI Technology: Emergence of iSCSI Technology, iSCSI Concepts, iSCSI Design Considerations and Security Requirements, iSCSI –The Challenges; Future of SANs: The Need for Change, SAN Technology Development, OSN, IP SANs Storage Service Providers, Non-SAN Technologies, SoIP, NDMP, FCIP, iFCP, DAFS, VI, InfiniBand Architecture

Module VI: Disaster Recovery and Business Continuity

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Storage Area Network Fundamentals, Meeta Gupta, Cisco Press, Pearson Education

References:

Network Security: The Complete Reference, Roberta Bragg, Mark Rhodes-Ousley, Keith Strassberg, et al - Tata McGraw-Hill presents

SUMMER PROJECT - II

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC960 | - | - | - | 6 |

Guidelines:

There are certain phases of every Intern's professional development that cannot be effectively taught in the academic environment. These facets can only be learned through direct, on-the-job experience working with successful professionals and experts in the field. The internship program can best be described as an attempt to institutionalize efforts to bridge the gap between the professional world and the academic institutions. Entire effort in internship is in terms of extending the program of education and evaluation beyond the classroom of a university or institution. The educational process in the internship course seeks out and focuses attention on many latent attributes, which do not surface in the normal classroom situations. These attributes are intellectual ability, professional judgment and decision-making ability, inter-disciplinary approach, skills for data handling, ability in written and oral presentation, sense of responsibility etc.

In order to achieve these objectives, each student will maintain a file (**Internship File**). The Internship File aims to encourage students to keep a personal record of their learning and achievement throughout the Programme. It can be used as the basis for lifelong learning and for job applications. Items can be drawn from activities completed in the course modules and from the workplace to demonstrate learning and personal development.

The File will assess the student's analytical skills and ability to present supportive evidence, whilst demonstrating understanding of their organization, its needs and their own personal contribution to the organization.

The **layout guidelines** for the Project & Seminar Report

File should be in the following specification

- 0 A4 size paper
- 1 Font: Arial (10 points) or Times New Roman (12 points)
- 2 Line spacing: 1.5
- 3 Top & bottom margins: 1 inch/ 2.5 cm
- 4 Left & right margins: 1.25 inches/ 3 cm

Report Layout: The report should contain the following components

Front Page
Table of Content
Acknowledgement Student
Certificate Company
Profile (optional)
Introduction
Main Body
References / Bibliography

The File will include **five sections** in the order described below. The content and comprehensiveness of the main body and appendices of the report should include the following:

The Title Page--Title - An Internship Experience Report For (Your Name), name of internship organization, name of the Supervisor/Guide and his/her designation, date started and completed, and number of credits for which the report is submitted.

Table of Content--an outline of the contents by topics and subtopics with the page number and location of each section.

Introduction--short, but should include how and why you obtained the internship experience position and the relationship it has to your professional and career goals.

Main Body--should include but not be limited to daily tasks performed. Major projects contributed to, dates, hours on task, observations and feelings, meetings attended and their purposes, listing of tools and materials and their suppliers, and photographs if possible of projects, buildings and co-workers.

References / Bibliography --This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system

ASSESSMENT OF THE INTERNSHIP FILE

The student will be provided with the Student Assessment Record (SAR) to be placed in front of the Internship File. Each item in the SAR is ticked off when it is completed successfully. The faculty will also assess each item as it is completed. The SAR will be signed by the student and by the faculty to indicate that the File is the student's own work. It will also ensure regularity and meeting the delaines.

STUDENT ASSESSMENT RECORD (SAR)

Range of Research Methods used to obtain information

Execution of Research

Data Analysis

- 0 Analyse Quantitative/ Qualitative information
- 1 Control Quality

Draw Conclusions

Examination Scheme:

| Components | V | S | R | FP |
|---------------|----|----|----|----|
| Weightage (%) | 20 | 20 | 20 | 40 |

V – Viva, S – Synopsis, FP – Final Presentation, R - Report

MINOR PROJECT

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC961 | - | - | - | 5 |

GUIDELINES FOR PROJECT FILE

Research experience is as close to a professional problem-solving activity as anything in the curriculum. It provides exposure to research methodology and an opportunity to work closely with a faculty guide. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation.

Research is genuine exploration of the unknown that leads to new knowledge, which often warrants publication. But whether or not the results of a research project are publishable, the project should be communicated in the form of a research report written by the student.

Sufficient time should be allowed for satisfactory completion of reports, taking into account that initial drafts should be critiqued by the faculty guide and corrected by the student at each stage.

The File is the principal means by which the work carried out will be assessed and therefore great care should be taken in its preparation.

In general, the File should be comprehensive and include

A short account of the activities that were undertaken as part of the project;

A statement about the extent to which the project has achieved its stated goals.

A statement about the outcomes of the evaluation and dissemination processes engaged in as part of the project;

Any activities planned but not yet completed as part of the project, or as a future initiative directly resulting from the project;

Any problems that have arisen that may be useful to document for future reference.

Report Layout

The report should contain the following components

File should be in the following specification

0 A4 size paper

1 Font: Arial (10 points) or Times New Roman (12 points)

2 Line spacing: 1.5

3 Top & bottom margins: 1 inch/ 2.5 cm

4 Left & right margins: 1.25 inches/ 3 cm

Report Layout: The report should contain the following components

Front Page

Table of Contents

Acknowledgement

Student Certificate

Company Profile

Introduction Chapters

Appendices References /

Bibliography

Title or Cover Page or Front Page

The title page should contain the following information: Project Title; Student's Name; Course; Year; Supervisor's Name.

Table of Contents

Titles and subtitles are to correspond exactly with those in the text.

Acknowledgement

Acknowledgment to any advisory or financial assistance received in the course of work may be given.

Student Certificate Given by the Institute.

Company Certificate & Profile

This is a certificate, which the company gives to the students. A Company Profile corresponds to a file with company-specific data. Company data can be stored there and included in a booking when needed.

Introduction

Here a brief introduction to the problem that is central to the project and an outline of the structure of the rest of the report should be provided. The introduction should aim to catch the imagination of the reader, so excessive details should be avoided.

Chapters

All chapters and sections must be appropriately numbered, titled and should neither be too long nor too short in length.

The first chapter should be introductory in nature and should outline the background of the project, the problem being solved, the importance, other related works and literature survey. The other chapters would form the body of the report. The last chapter should be concluding in nature and should also discuss the future prospect of the project.

Appendices

The Appendix contains material which is of interest to the reader but not an integral part of the thesis and any problem that have arisen that may be useful to document for future reference.

References / Bibliography

This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system.

ASSESSMENT OF THE PROJECT FILE

Essentially, marking will be based on the following criteria: the quality of the report, the technical merit of the project and the project execution. Technical merit attempts to assess the quality and depth of the intellectual efforts put into the project. Project execution is concerned with assessing how much work has been put in. The File should fulfill the following *assessment objectives*:

Writing a critical literature review

- 0 Search for literature
- 1 Summarizing and presenting the literature
- 2 Evaluating key content and theories

Collecting and analyzing research material

- 0 Choosing and designing research method
- 1 Conducting the research
- 2 Analyzing, sorting and classifying the data to make decision

Interpreting research method and draw conclusion

- 0 Findings
- 1 Recommendation

Assigning the theories and writing the project report

- 0 Structuring the project in accordance with the given style

Bibliography

- 0 This refer to the books, Journals and other documents consulting while working on the project

Examination Scheme:

| Components | MRP | V | S | FP | R |
|---------------|-----|----|----|----|----|
| Weightage (%) | 20 | 20 | 20 | 20 | 20 |

MRP – Mid Report Presentation, V – Viva, S – Synopsis, FP – Final Presentation, R - Report

BIG DATA ANALYTICS

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC910 | 2 | 1 | - | 3 |

COURSE OBJECTIVES:

- To explore the fundamental concepts of big data analytics
- To learn to analyze the big data using intelligent techniques.
- To understand the various search methods and visualization techniques.

Module I: INTRODUCTION TO BIG DATA

Introduction to BigData Platform – Challenges of Conventional Systems - Intelligent data analysis – Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools - Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error.

Module II: MINING DATA STREAMS

Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP) Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

Module III: HADOOP

History of Hadoop- The Hadoop Distributed File System – Components of Hadoop- Analyzing the Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFS-Java interfaces to HDFSBasics- Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution - Map Reduce Types and Formats- Map Reduce Features

Module IV: HADOOP ENVIRONMENT

Setting up a Hadoop Cluster - Cluster specification - Cluster Setup and Installation - Hadoop Configuration-Security in Hadoop - Administering Hadoop – HDFS - Monitoring-Maintenance-Hadoop benchmarks- Hadoop in the cloud

Module V: FRAMEWORKS

Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper - IBM InfoSphere BigInsights and Streams. Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

- Chris Eaton, Dirk DeRoos, Tom Deutsch, George Lapis, Paul Zikopoulos, —Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data, McGrawHill Publishing, 2012
- Bill Franks, —Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics, JohnWiley & sons, 2012.
- Glenn J. Myatt, —Making Sense of Data, John Wiley & Sons, 2007
- Paul Zikopoulos ,Dirk deRoos , Krishnan Parasuraman , Thomas Deutsch , James Giles , David Corrigan , Harness the Power of Big Data The IBM Big Data Platform, Tata McGraw Hill Publications, 2012
- Zikopoulos, Paul, Chris Eaton, Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data, Tata McGraw Hill Publications, 2011

ACCESSING THE WAN

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC911 | 2 | 1 | - | 3 |

Course Objective:

The course focuses on advanced IP addressing techniques Variable Length Subnet Masking (VLSM), advanced IP addressing technique (Network Address Translation and terminology, PPP, ISDN, DDR, Frame Relay, network security, ACLs, Teleworker services and network troubleshooting, In addition the student will prepare for taking the CCNA Exam.

Course Contents:

Module I: Introduction to WAN

Providing Integrated Services to Enterprise, WAN Technology Concept, WAN Connection Option

Module II: PPP

Serial Point to Point Links, PPP Concept, Configuring PPP, Configuring PPP with Authentication.

Module III: Frame Relay

Basic Frame Relay Concepts, Configuring Frame Relay, Advanced Frame Relay Concept, Configuring Advanced Frame Relay Concept

Module IV: Network Security

Introduction to Network Security, Securing Cisco Routers, Secure Router Network Services, Using Cisco SDM, Secure Router Management

Module V: ACLs

Using ACL to Secure Network, Configuring Standard ACLs, Configuring Extended ACLs, Configuring Complex ACLs

Module VI: Teleworker Services

Business Requirement for Teleworker Services, Broadband Services, VPN Technology

Module VII: IP addressing Services

DHCP, Scaling Network with NAT, Ipv6

Module VIII: Network Troubleshooting

Establishing Network Performance Base Line, Troubleshooting Methodology and Tools, Common WAN Implementation Issues, Network Troubleshooting

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text

Cisco Networking Academy Programme CCNA 4 Companion Guide, 3rd Edn by Pearson Education.
 Cisco Networking Academy Programme CCNA 4 Lab Companion, 3rd Edn by Pearson Education.
 CISCO CCNA-Exploration 4.0, Module 4, Pearson Education.

References:

Cisco Networking Academy Programme CCNA 4 Engineering General, 3rd Edn by Pearson Education

Note: This is an online course of Cisco. Online materials provided by Cisco are studied.

CLOUD COMPUTING

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC912 | 2 | 1 | - | 3 |

Course Objective

- To understand the concept of Virtualization and design of cloud Services
- To introduce the broad perspective of cloud architecture and model
- To learn to design the trusted cloud Computing system
- To apply different cloud programming model as per need.
- To understand the features of cloud simulator
- To be familiar with the lead players in cloud.

Course Contents

MODULE I: CLOUD ARCHITECTURE AND MODEL

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

MODULE II: VIRTUALIZATION

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

MODULE III: CLOUD INFRASTRUCTURE

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

MODULE IV: PROGRAMMING MODEL

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

MODULE V: SECURITY IN THE CLOUD

Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.

Examination Scheme:

| Components | CT | A/C/Q | Attd | EE |
|---------------|----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

- John W.Rittinghouse and James F.Ransome, —Cloud Computing: Implementation, Management, and Security, CRC Press, 2010.
- Toby Velte, Anthony Velte, Robert Elsenpeter, —Cloud Computing, A Practical Approach, TMH, 2009.
- Kumar Saurabh, —Cloud Computing – insights into New-Era Infrastructure, Wiley India,2011.
- James E. Smith, Ravi Nair, —Virtual Machines: Versatile Platforms for Systems and Processes, Elsevier/Morgan Kaufmann, 2005.
- Ronald L. Krutz, Russell Dean Vines, —Cloud Security – A comprehensive Guide to Secure Cloud Computing, Wiley – India, 2010.

PHP

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC913 | 2 | 1 | - | 3 |

Course Objective:

Write basic PHP scripts that process user input from a web form.
Use PHP variables, arrays, loops, conditional statements, and operators.
Create and incorporate PHP functions.
Integrate PHP scripts with email

Course Contents:

Module I: Introduction to PHP Servers :Introducing Apache, PHP, MySql, Installing Apache, PHP, MySql, Configuring Apache for PHP, Registering Domains, Parking Web sites, Publishing with FTP

Introduction to PHP :Introduction to PHP, Install, Syntax, Common PHP Script Elements, Variables, String, Operators, If...Else, Switch, Arrays, Looping, Functions, Forms, \$_GET, \$_POST, Date, Include, Error, Exception, Filter, PHP ODBC, Working With Forms, Processing Forms, Form Validation, Addressing the Stateless Nature of HTTP, Hidden Form Fields, Accessing Databases With PHP, Interacting With Databases, Modifying Database Records Using PHP

Module II: Generating dynamic content :Identifying browser platform, Server date and time, Time specific content, Random number generator, Getting form values, Displaying submitted values, String manipulation, Reloading a page, Browser redirection

Module III: Advance PHP :MySQL Connect, MySQL Create, MySQL Insert, MySQL Select, MySQL Where, MySQL Order By, MySQL Update, MySQL Delete, Introducing cookies, Set a cookie, Access limitation, Introducing sessions, Starting session, Session without cookies, Setting session persistence, Cookies or session, Sending plain text E-mail, Sending html E-mail, Creating an attachment form, Sending attachment with E-mail

Module IV: File Handling :File and Directory Handling, Including Files, File Access, Displaying directory files, Coping and renaming files, Deleting files, Opening and closing files, Reading files, Writing files, Logging visitor details, Enabling file uploads, Creating and upload form, Creating an upload script, Uploading a file

Module V: PHP and My SQL:Introducing databases, Exploring database tables, Creating new database, Creating database table, SQL data types, Inserting table data, Altering an existing table, Updating records, Deleting data, tables and databases, SQL Queries, Creating Mysql user and password, Connecting a user to Mysql, Listing databases, Listing table names, Creating a database, Deleting a database, Creating a database table, Inserting table data, Altering tables, Retrieving data from a table

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Atkinson, Leon. *Core PHP Programming, 2nd Edition*. New York: Prentice Hall

References:

<http://www.zend.com>
<http://www.php.net>
<http://www.mysql.com>
<http://www.phpbuilder.com>
<http://www.useit.com>
<http://www.devshed.com>
<http://www.webmonkey.com>

Post RDBMS with CACHE

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC914 | 2 | 1 | - | 3 |

Course Objective:

The course objective is to learn the latest and emerging technologies ‘_Cache’ in the Information Technology Field. Here students will learn the new database technology that is object oriented database technology (Post Relational DBMS).

Course Contents:

Module I: Introduction to Cache Objects

Objectives of classes, Typographic Conventions, Requirements, Namespace, Datasets, Creating a Namespace, Cache Cube, Creation and formatting of physical file.

Module II: Working with class

How to make a class, specification of class, Changing Namespace, Introduction to Property, Adding property.

Module III: Query and Index Handling

Introduction to query, How to create a query, Creating an Index , compilation, How to access data using Cache Object Script, Viewing the database, Introduction to OpenID, Save, write methods, Storing data in the global.

Module IV: Populating a class

Generating random data for the class, Searching the databases, Embedded Objects, Introduction to searching the database using query, populating an Index, Testing a Query, Embedded and Serial Object, Validations.

Module V: References, Working with Pre-defined Values

Introduction to Reference Object, how to work with Pre-defined values, Calculating the fields when the record is updated, Storing a picture, Creating List, Working with Arrays, Introduction to collections, Formatting data for output, Making Relationship.

Module VI: Cache with Visual Basic

VB Form Wizard, Cache Object Server, Project, Connecting to Cache, Working with Combo-box, Searching the database, Using embedded objects, References, Updating the database, Multimedia-Photos, Formatting data for Output, Making Relationship.

Module VII: Cache Server Pages

Introduction to CSP, Configuring CSP, Writing code in CSP, Introduction to ZEN, Configuring ZEN, Working with ZEN.

Case Studies: OPTALERT, DTI, ECOVISION, CBT, AUSTIN

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

From website: www.Intersystems.com/cache

SOFTWARE TESTING & QUALITY ASSURANCE

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC915 | 2 | 1 | - | 3 |

COURSE OBJECTIVES:

- To know the behavior of the testing techniques to detect the errors in the software
- To understand standard principles to check the occurrence of defects and its removal. ○
- To learn the functionality of automated testing tools
 - To understand the models of software reliability.

Course Contents

Module I: TESTING ENVIRONMENT AND TEST PROCESSES 9

World-Class Software Testing Model – Building a Software Testing Environment - Overview of Software Testing Process – Organizing for Testing – Developing the Test Plan – Verification Testing – Analyzing and Reporting Test Results – Acceptance Testing – Operational Testing – Post Implementation Analysis

Module II: TESTING TECHNIQUES AND LEVELS OF TESTING 9

Using White Box Approach to Test design - Static Testing Vs. Structural Testing – Code Functional Testing – Coverage and Control Flow Graphs –Using Black Box Approaches to Test Case Design – Random Testing – Requirements based testing –Decision tables –State-based testing – Cause-effect graphing – Error guessing – Compatibility testing – Levels of Testing - Unit Testing - Integration Testing - Defect Bash Elimination. System Testing - Usability and Accessibility Testing – Configuration Testing - Compatibility Testing - Case study for White box testing and Black box testing techniques.

Module III: INCORPORATING SPECIALIZED TESTING RESPONSIBILITIES 9

Testing Client/Server Systems – Rapid Application Development Testing – Testing in a Multiplatform Environment – Testing Software System Security - Testing Object-Oriented Software – Object Oriented Testing – Testing Web based systems – Web based system – Web Technology Evolution – Traditional Software and Web based Software – Challenges in Testing for Web-based Software – Testing a Data Warehouse - Case Study for Web Application Testing.

Module IV: TEST AUTOMATION 9

Selecting and Installing Software Testing Tools - Software Test Automation – Skills needed for Automation – Scope of Automation – Design and Architecture for Automation – Requirements for a Test Tool – Challenges in Automation – Tracking the Bug – Debugging – Case study using Bug Tracking Tool.

Module V: SOFTWARE TESTING AND QUALITY METRICS 9

Testing Software System Security - Six-Sigma – TQM - Complexity Metrics and Models – Quality Management Metrics - Availability Metrics - Defect Removal Effectiveness - FMEA - Quality Function Deployment – Taguchi Quality Loss Function – Cost of Quality. Case Study for Complexity and Object Oriented Metrics.

Examination Scheme:

| Components | CT1 | A/C/Q | Attd | EE |
|---------------|-----|-------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

William Perry, —Effective Methods of Software Testing, Third Edition, Wiley Publishing 2007

Srinivasan Desikan and Gopaldaswamy Ramesh, —Software Testing – Principles and Practices, Pearson Education, 2007.

Dale H. Besterfield et al., —Total Quality Management, Pearson Education Asia, Third Edition, Indian Reprint (2006).

Stephen Kan, —Metrics and Models in Software Quality, Addison – Wesley, Second Edition, 2004.

Renu Rajani, Pradeep Oak, —Software Testing – Effective Methods, Tools and Techniques, Tata McGraw Hill, 2004.

Edward Kit, — Software Testing in the Real World – Improving the Process, Pearson Education, 1995.

0 Adithya P. Mathur, — Foundations of Software Testing – Fundamentals algorithms and techniques, Dorling Kindersley (India) Pvt. Ltd., Pearson Education, 2008.

DIGITAL IMAGE PROCESSING

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC930 | 2 | 1 | - | 3 |

Course Objective:

Processing color and grayscale images or other two-dimensional signals has become an important tool for research and investigation in many areas of science and engineering. Digital Image Processing is designed to give professionals and students a powerful collection of fundamental and advanced image processing tools on the desktop. Digital Image Processing takes full advantage of the computational technology of Mathematica.

Course Contents:

Module I: Introduction and Digital Image Fundamentals

The origins of Digital Image Processing, Examples of Fields that Use Digital Image Processing, Fundamentals Steps in Image Processing, Elements of Digital Image Processing Systems, Image Sampling and Quantization, Some basic relationships like Neighbours, Connectivity, Distance Measures between pixels, Linear and Non Linear Operations.

Module II: Image Enhancement in the Spatial Domain

Some basic Gray Level Transformations, Histogram Processing, Enhancement Using Arithmetic and Logic operations, Basics of Spatial Filters, Smoothing and Sharpening Spatial Filters, Combining Spatial Enhancement Methods.

Module III: Image Enhancement in the Frequency Domain:

Introduction to Fourier Transform and the frequency Domain, Smoothing and Sharpening Frequency Domain Filters, Homomorphic Filtering.

Image Restoration: A model of The Image Degradation / Restoration Process, Noise Models, Restoration in the presence of Noise Only Spatial Filtering, Periodic Noise Reduction by Frequency Domain Filtering, Linear Position-Invariant Degrations, Estimation of Degradation Function, Inverse filtering, Wiener filtering, Constrained Least Square Filtering, Geometric Mean Filter, Geometric Transformations.

Module IV: Image Compression

Coding, Interpixel and Psychovisual Redundancy, Image Compression models, Elements of Information Theory, Error free comparison, Lossy compression, Image compression standards.

Image Segmentation: Detection of Discontinuities, Edge linking and boundary detection, Threshold, Region Oriented Segmentation, Motion based segmentation.

Module V: Representation and Description

Representation, Boundary Descriptors, Regional Descriptors, Use of Principal Components for Description, Introduction to Morphology, Some basic Morphological Algorithms.

Object Recognition: Patterns and Pattern Classes, Decision-Theoretic Methods, Structural Methods **Text & References:**

Text:

Rafael C. Conzalez & Richard E. Woods, —Digital Image Processing, 2nd edition, Pearson Education.

K. Jain, —Fundamental of Digital Image Processing, PHI.

References:

Rosefield Kak, —Digital Picture Processing,

W.K. Pratt, —Digital Image Processing,

DREAMWEAVER

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC931 | 2 | 1 | - | 3 |

Course Objective:

- Have hands-on knowledge in developing simple and comprehensive Internet Web sites.
- Be able to plan, design, and develop Web sites.
- Acquire creative skills in design, layout, and interactivity of Web pages.
- Integrate varied software applications such as Web editor, graphic, and multimedia software.
- Create a portfolio of Web sites that demonstrate competency in the software application.
- Understand fundamental trends of technological evolution of Web development.

Course Contents:

Module I: Concept of Web Designing

Basic concepts of Web designing, what is a website, features of a website, efficient and effective web designing, constraints of web designing, limitations of a website, defining a web page

Module II: Working with Dreamweaver

Explore the Dreamweaver working environment, creating a web page, format of a web page, organizing files and folders, create templates, insert images and tables, Create repeating region templates, Create hyperlinks, Create e-mail links, Create image maps, Create anchors, Create framesets, Enhance frames in a frameset, Ensure accessibility, Upload files onto a site

Module III: Developing Professional Webpage

Use coding tools, Search for and replace code, Add design notes and comments, Create and apply CSS styles, Apply external styles to multiple Web pages, Redefine style sheets, Create rollovers, Create a navigation bar, Create Flash buttons and Flash text, Use Spry user interface widgets, Add Spry effects, Create AP elements, Control AP elements dynamically, Insert rich media objects in an AP element on a page, Add library items from site pages, Place library items onto a Web page, Use snippets to perform repetitive tasks, Replay actions using the History panel, Set up forms in Dreamweaver, Add form elements, Validate a form, Integrate XML-based data Display XML data by using Spry

Module IV: Using Advance Features for Development

Connect to a server by using server technologies, Identify the components of a database-driven site, Create a connection to a database, Create record-sets, Display records, Page through record-sets, Create master and detail pages, Create search and result pages, Use dynamic form elements, Insert records, Edit records, Delete records, Create a user registration form, Secure web pages, Transfer files to servers, Manage websites

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Adobe Dreamweaver CS5 Classroom in a Book by Adobe Creative Team, Published by: Adobe Press

References:

Adobe Dreamweaver CS5, Digital Classroom (W/Cd), J. Osborn

ORACLE

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC932 | 2 | 1 | - | 3 |

Course Objective:

This course provides the learners with the essential SQL skills of querying the database, the meta data and creating database and managing database..

Course Contents:

Module I:

Introduction to RDBMS, Oracle and Client Server Computing, Oracle Architecture, Oracle files, Installation of Oracle.

SQL : Data Types, Writing queries, DDL, DML, DCL

PL-SQL: Basics of PL-SQL, Procedure, Function, Packages, Cursors, Triggers, Exception Handling

Module II:

Creating and Managing Database : Data Dictionary, Redo Log, Control Files, Data Dictionary Views.

Module III:

Managing Disk Space: ROWID, Rollback Segment, Creating and Managing Tablespace

Module IV:

Backup and Recovery: Types of Backup(Control file backup, Redo log backup, cold backup and Hot backup), Types of Failures, Recovery Methods

Module V:

Database Security : Authentication, Object VS System Security, defining database roles.

Import and Export, Performance Tuning, Locking

Examination Scheme:

| Components | CT | HA/V/Q | ATTD. | EE |
|---------------|----|--------|-------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text:

Oracle 10g The Complete Reference, Oracle Press

References:

Database System Concepts, Korth & Sudarshan, TMH

Oracle DBA Fundamentals , Oracle Press.

LAN SWITCHING AND WIRELESS

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC933 | 2 | 1 | - | 3 |

Course Objective:

The course focuses on advanced IP addressing techniques Variable Length Subnet Masking (VLSM), intermediate routing protocols (RIP v2, single area OSPF, EIGRP). Command line interface configuration of switches, Ethernet switching, Virtual LANs (VLANs), Spanning Tree Protocol (STP) and VLAN Trunking Protocol (VTP). In addition the student will prepare for taking the CCNA Exam.

Course Contents:

Module I: LAN Design

Switched LAN Architecture, Principles of Hierarchical Network Design, Matching Switches to Specific LAN Function

Module II: Basic Switch Concepts and Configuration

Introduction to Ethernet/ 802.3 LAN, Forward Frame Using a Switch, Switch Management Configuration, Configuring Switch Security,

Module III: VLANs

Introducing VLAN, VLAN Trunking, Configuring VLAN and Trunks', Trouble Shooting VLANs and Trunks

Module IV: VTP

VTP Concept, VTP Operation, Configure VTP

Module V: STP

Redundant Layer 2 Topology, Introduction To STP, STP Convergence, PVSTP+, RSTP And Paired PVSTP+

Module VI: Inter-VLAN Routing

Inter- VLAN Routing, Configuring Inter-VLAN Routing, Trouble Shooting Inter-VLAN Routing

Module VII: Basic Wireless Concepts and Configuration

The Wireless LAN, Wireless LAN Security, Configuring Wireless LAN Access, Trouble Shooting Simple WLAN Problems

Examination Scheme:

| Components | CT | HA/V/Q | Attd | EE |
|---------------|----|--------|------|----|
| Weightage (%) | 15 | 10 | 5 | 70 |

Text & References:

Text

Cisco Networking Academy Programme CCNA 3 Companion Guide, 3rd Edn by Pearson Education.
 Cisco Networking Academy Programme CCNA 3 Lab Companion, 3rd Edn by Pearson Education.
 CISCO CCNA-Exploration 4.0, Module 3, Pearson Education.

References:

Cisco Networking Academy Programme CCNA 3 Engineering General, 3rd Edn by Pearson Education

Note: This is an online course of Cisco. Online materials provided by Cisco are studied

ANDROID PROGRAMMING

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC934 | 2 | 1 | - | 3 |

Course Objectives

This course introduces mobile application development for the Android platform. Android is a software stack for mobile devices that includes an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language. Students will learn skills for creating and deploying Android applications, with particular emphasis on software engineering topics including software architecture, software process, usability, and deployment

Course Contents

Module –I: Basics of Android

What is Android, History and Version, Installing softwares , Setup Eclipse, Hello Android example, Internal Details, Dalvik VM , Software Stack , Android Core Building Blocks , Android Emulator , AndroidManifest.xml , R.java file , Hide Title Bar , Screen Orientation

Module –II: UI Widgets

Working with Button, Toast, Custom Toast, Button, Toggle Button, Switch Button, Image Button, CheckBox, AlertDialog, Spinner, AutoCompleteTextView, RatingBar, DatePicker, TimePicker, ProgressBar, Quick Contact Budge, Analog Clock and Digital Clock, Working with hardware Button, File Download,

Module –III: Activity, Intent & Fragment

Activity Lifecycle, Activity Example, Implicit Intent, Explicit Intent, Fragment Lifecycle, Fragment Example, Dynamic Fragment,

Module –IV: Android Menu & Layout Manager

Option Menu, Context Menu, Popup Menu , Relative Layout, Linear Layout, Table Layout, Grid Layout

Module –V: Adaptor & Views

Array Adaptor, ArrayList Adaptor, Base Adaptor, GridView , WebView , ScrollView , SearchView , TabHost , DynamicListView , ExpandedListView

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

Text & Reference:

- [Android Programming: The Big Nerd Ranch Guide \(Big Nerd Ranch Guides\)](#) (By: Bill Philips & Brian Hardy)
- [Android Recipes: A Problem-Solution Approach](#), Dave Smith & Jeff Friesen

DIGITAL IMAGE PROCESSING LAB

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC920 | - | - | 2 | 1 |

Software Required: Java

List of Assignments:

Experiments will be based on Image Representation, Image transformation, Image Enhancements, Edge Detection, Morphological Image processing and Segmentation.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

DREAM WEAVER LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC921 | - | - | 2 | 1 |

List of Programs:

Create a web page to show the working of Heading Tags, Font Tag, Paragraph Tag, Font Style Tag, Pre Tag, and other common tags.

Create a web page to show implementation of images and image map.

Create a web page to show implementation of hyperlink, bookmark, and email link.

Create a web page to show implementation of tables.

Create a web page to show implementation of frames.

Create a web page to show implementation of inline, internal and external CSS.

Create a web page to show implementation of rollovers, image viewer, navigation bar, flash button, and flash text.

Create a web page to show implementation of Spry User Interface widgets (Menu, Accordion, Tab Panel, etc.).

Create a web page to show implementation of spry effects on text, images, etc.

Create a web page to show implementation of AP (Absolute Positioning) elements.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

The cursor code below is designed to update personnel salaries based on where they work. Only there are lots of errors in it for you to sort out. Good luck, look very, very carefully and try to learn by interpreting the error messages you get. Sometimes they ARE useful! If you don't get it all sorted right away you can always come back to it. Go onto the next question if you get stuck as you can persevere with this in your own time.

```
declare
cursor c1 select snum, city from personnel p, branch b where p.div=b.div;
v_city b.city%type ;
v_snum      personnel.snum%type;
v_salary_1  number=30000;
v_salary_2  number(4)=25000;
v_salary_3  number:=20000;
v_salary    personnel.salary%type;
begin
  open c1;
  loop
    fetch c1 into v_snum, v_city;
    exit where c1%NOTFOUND;
```

```

If v_city='LONDON' then v_salary:=v_salary1;
  elsif v_city='BRISTOL' then v_salary:=v_salary_2;
  else v_sal:=v_salary_3;
  end if;
  update my_personnel set salary = v_salary where snum=v_snum;
endloop;
close ;
end;

```

Task 3: Storing and Executing PL/SQL

In order to store PL/SQL, simply replace the DECLARE word with:

CREATE PROCEDURE average_salary IS

A block which outputs the average result and current date and user is given below.

```

DECLARE
average NUMBER(7,2);
Begin
SELECT AVG(salary) INTO average FROM personnel;
DBMS_OUTPUT.PUT_LINE ('As of ' || SYSDATE);
DBMS_OUTPUT.PUT_LINE ('The average salary is ' || Average);
DBMS_OUTPUT.PUT_LINE ('Prepared by ' || USER);
END;

```

Edit and store this code now as a procedure.

Run it.

If you've got that, congratulations, you've stored a PL/SQL procedure.

If you still have compilation errors, check everything very carefully especially spelling and punctuation! Also try the command SHOW ERRORS for an idea of what went wrong.

Now execute the procedure

Task 4: Changing a stored procedure

Say you now want to get the average salary just for branch 10.

The code you need is

```

CREATE PROCEDURE average_salary IS
Today DATE := SYSDATE;
Average NUMBER(7,2);
Begin
SELECT AVG(salary) INTO Average FROM personnel WHERE div=10;
DBMS_OUTPUT.PUT_LINE ('As of ' || Today);
DBMS_OUTPUT.PUT_LINE ('Average salary for branch 10 is ' || Average);
DBMS_OUTPUT.PUT_LINE ('Prepared by ' || USER);
END;

```

Do the CREATE PROCEDURE process again, adding the WHERE clause as shown above.

You will probably get the message

```

ERROR at line 1: ORA-00955: name is already used by an existing object"

```

Why?

.....

To solve this problem, you could DROP the procedure first. But there is a better way:

Use

```

CREATE OR REPLACE PROCEDURE

```

..... at the top and try again.

That should have worked.

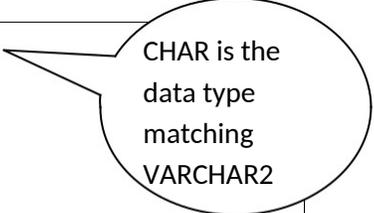
Note: The words OR REPLACE after CREATE make sure that if the procedure exists already, you can edit it.

Task 5: Procedure with parameter

So we know how to change the stored procedure. What would you do if you want the average for another branch? It's tedious to change the stored procedure every time we want different values. It would be so much nicer to be able to just specify the branch code when we execute the procedure.

The solution to this is to use **input parameters**. This can be done quite easily, you only need a few changes to the block. They are highlighted in bold below (note how the output is also changed):

```
CREATE OR REPLACE PROCEDURE average_salary(branchID CHAR) IS
Today DATE := SYSDATE;
Average NUMBER(7,2);
Begin
  SELECT AVG(salary) INTO Average FROM Personnel WHERE div=branchID;
  DBMS_OUTPUT.PUT_LINE ('As of ' || Today);
  DBMS_OUTPUT.PUT_LINE ('The average for branch ' || branchID || ' is ' || Average);
  DBMS_OUTPUT.PUT_LINE ('Prepared by ' || USER);
END;
```



CHAR is the
data type
matching
VARCHAR2

Create this procedure now and execute it.

Run the procedure twice, inserting different values each time.

Task 6: Declaring Procedures within procedures and calling them

Study the code below and write down the output you would expect the program to produce, then execute the main procedure and see if you were right. You'll need to understand the MOD function in particular. Basically it returns a zero if the result of a division by a specified number is an integer. Be clear about how the control is being passed to and fro between the procedures

```
create or replace procedure main_proc
is
  v_test number:=4;
  procedure inner_proc1
  is
  begin
    dbms_output.put_line(v_test||' inner procedure one');
  end inner_proc1;
  procedure inner_proc2
  is
  begin
    dbms_output.put_line(v_test||' inner procedure two');
  end inner_proc2;
begin
  while v_test <=10 loop
    inner_proc1;
    if mod(v_test,2)=0 then
      inner_proc2;
    end if;
    v_test:=v_test+1;
  end loop;
end main_proc;
```

Task 7: Function

Study the function and procedure below. They are written to calculate the total mileage for a given division name. The procedure accepts a division name and then calls a function to calculate the total mileage, which then returns the result to the procedure. The result is printed to the screen.

Your task is to ANNOTATE the code with comments so that you understand what the code is doing.

```
CREATE OR REPLACE PROCEDURE avemiles(divisionName varchar2)
```

```
is
```

```
V_divID      Branch.div%type;
```

```
V_aveMiles   personnel.salary%type;
```

```
BEGIN
```

```
SELECT div into v_divID
```

```
FROM branch WHERE divname=divisionName;
```

```
v_aveMiles:=get_aveMiles(v_divID);
```

```
DBMS_OUTPUT.PUT_LINE('Division '||v_divID||' has '||v_aveMiles||' average  
mileage'); END;
```

```
CREATE OR REPLACE FUNCTION get_aveMiles (i_div IN NUMBER)
```

```
RETURN number
```

```
IS
```

```
v_aveMiles Transport.Mileage%type;
```

```
BEGIN
```

```
SELECT avg(Mileage)
```

```
INTO v_aveMiles FROM Transport
```

```
WHERE div=i_div;
```

```
RETURN v_aveMiles;
```

```
END get_aveMiles;
```

You can TEST the function on its own using the following code:

```
SELECT get_avemiles(10) from dual;
```

You can now test the Procedure (which calls the function you have already tested) using the following:

```
Execute avemiles(,,ADMIN“)
```

So now you can play around with the code by trying it out on different Division Names to see if it works. What would you change if you wanted to calculate the maximum mileage for any division?

Task 8: More practice with functions.

Study the code below which uses functions embedded within a main function to do some fairly trivial arithmetic.

Again, see if you can work out what the output from the program function would be by tracing control within the code and record it below. Pay particular attention to the RETURN.

```
create or replace function calculate
```

```
(v_1 in number, op in varchar2, v_2 in number)
```

```
return number
```

```
is
```

```
v_return number;
```

```
function add
```

```
return number
```

```
is
```

```
begin
```

```
return v_1+v_2;
```

```
end add;
```

```
function subtract
```

```
return number
```

```
is
```

```
begin
```

```
return v_1-v_2;
```

```

end subtract;
function multiply
return number
is
begin
  return v_1*v_2;
end multiply;
function divide
return number
is
begin
  return v_1/v_2;
end divide;
begin
  if op='+' then v_return:=Add;
  elsif op='-' then v_return:=subtract;
  elsif op='*' then v_return:=multiply;
  elsif op = '/' then v_return:=divide;
  else v_return:=null;
end if;
return v_return;
end calculate;

```

To test the program you can use Oracle's DUAL dummy table in SELECT statements. For instance, try:

```
SELECT calculate(2,"+",3) from dual;
```

This should call the function and perform the arithmetic for you. Make sure you understand how the `_calling` is achieved in the above statement.

Try passing various parameters to test the code works. Try passing a zero for a division for example!

Task 9: The code below is similar in that it calculates an average result.

We know we can calculate the average easily in SQL, but just for illustration purposes see how the function achieves the result then see if you can expand the code to perform the **minimum** and **maximum** salary as well.

```

create or replace function calc_stats
(OP VARCHAR2)
return number
is
v_return number;
function average
return number
is
v1 number;
begin
  select avg(salary) into v1 from personnel;
  return v1;
end average;
begin
  if op='average' then v_return:=average;
end if;
return v_return;
end calc_stats;

```

Remember to test the code by typing `SELECT calc_stats('_average') from dual;`

Task 10: Developing your cursor skills

Create a routine that could be run each month to **insert** pension contribution details into a PENSIONS table. So create the table first.

CREATE TABLE MY_PENSIONS

```
(snum          NUMBER(4),  
P_employee    NUMBER(9,2),  
P_employer    NUMBER(9,2),  
P_date        DATE);
```

Your code should accept three prompts:

the date

the amount of employee contribution (less than 10%).

the amount of employer contribution (less than 10%).

The calculation you need to consider is simply:

Salary * contribution /12 (as it is a monthly contribution).

You'll need to declare variables for all of your prompts and for anchoring variables to the datatypes in the PENSIONS table for the insertion of data.

Task 11: Developing function skills

Write a function that calculates *tax* on a personnel member's salary.

You should then be able to test your function by typing something like:

```
SELECT surname, first name, salary, tax(35000,500) from dual; (the two parameters being salary and bonus respectively).
```

Things you need to know and incorporate (read carefully and try to work out the formulae from the information given):

Pass two parameters for salary and bonus

Taxable salary is the salary + bonus – tax allowance

Tax allowance is a constant at £4335

There are two **tax limits** at £3999 (lower) and £28999 (upper)

Salary is tested against these tax limits

If salary is less than the lower tax limit then tax is calculated as 10% of taxable salary

If salary is between the two tax limits then tax is calculated as 22% of taxable salary

If salary is higher than the upper tax limit then tax is calculated as:

22% of the upper limit + 40% of the difference between the taxable salary and the upper limit.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

LAN SWITCHING AND WIRELESS LAB

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| UBC923 | - | - | 2 | 1 |

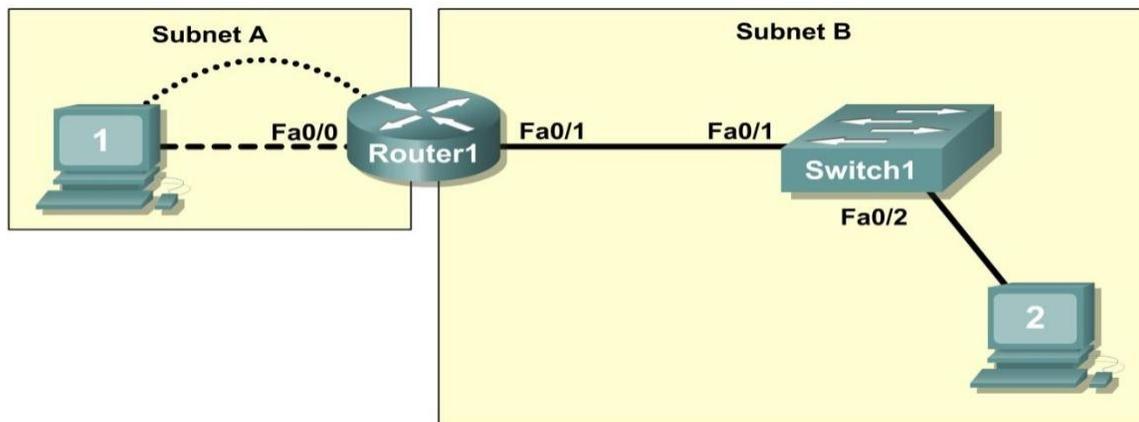
Course Contents:

Lab I: Review of Concepts from Exploration 1

- Create a logical topology given network requirements
- Create subnets to meet host requirements
- Configure the physical topology
- Configure the logical topology
- Verify network connectivity
- Configure and verify passwords

Lab II: Troubleshooting a Small Network

Topology Diagram



- Verify that a paper design meets stated network requirements
- Cable a network according to the topology diagram
- Erase the startup configuration and reload a router to the default state
- Load the routers with supplied scripts
- Discover where communication is not possible
- Gather information about the misconfigured portion of the network along with any other errors
- Analyze information to determine why communication is not possible
- Propose solutions to network errors
- Implement solutions to network errors

Examine the Logical LAN Topology

The IP address block of 172.16.30.0 /23 is subnetted to meet the following requirements:

| Subnet | Number of Hosts |
|----------|-----------------|
| Subnet A | 174 |
| Subnet B | 60 |

Additional requirements and specifications:

The 0 subnet is used.

The smallest possible number of subnets that satisfy the requirements for hosts should be used, keeping the largest possible block in reserve for future use.

Assign the first usable subnet to Subnet A.

Host computers use the first IP address in the subnet. The network router uses the last network host address. Based on these requirements, the following topology has been provided to you:

| Subnet A | |
|-----------------------|---------------|
| Specification | Value |
| IP mask (decimal) | 255.255.255.0 |
| IP address | 172.16.30.0 |
| First IP host address | 172.16.30.1 |
| Last IP host address | 172.16.30.254 |

| Subnet B | |
|-----------------------|-----------------|
| Specification | Value |
| IP mask (decimal) | 255.255.255.128 |
| IP address | 172.16.31.0 |
| First IP host address | 172.16.31.1 |
| Last IP host address | 172.16.31.126 |

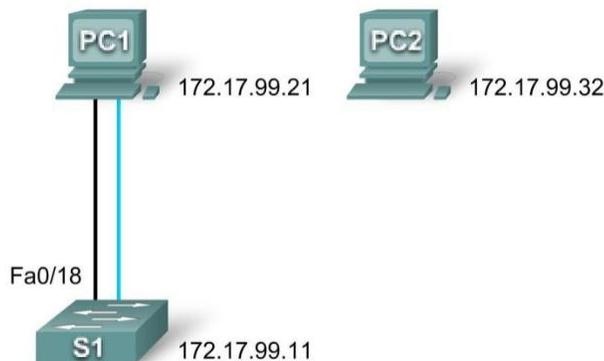
Examine each of the values in the tables above and verify that this topology meets all requirements and specifications. Are any of the given values incorrect? _____

If yes, correct the values in the table above and write the corrected values below:

Create a configuration table similar to the one below using your corrected values:

| Device | IP address | Mask | Gateway |
|---------------|---------------|-----------------|---------------|
| Host1 | 172.16.30.1 | 255.255.255.0 | 172.16.30.254 |
| Router1–Fa0/0 | 172.16.30.254 | 255.255.255.0 | N/A |
| Host2 | 172.16.31.1 | 255.255.255.128 | 172.16.31.126 |
| Router1–Fa0/1 | 172.16.31.126 | 255.255.255.128 | N/A |

Lab III: Basic Switch Configuration



Addressing Table

| Device | Interface | IP Address | Subnet Mask | Default Gateway |
|--------|-----------|--------------|---------------|-----------------|
| PC1 | NIC | 172.17.99.21 | 255.255.255.0 | 172.17.99.1 |
| PC2 | NIC | 172.17.99.32 | 255.255.255.0 | 172.17.99.1 |
| S1 | VLAN99 | 172.17.99.11 | 255.255.255.0 | 172.17.99.1 |

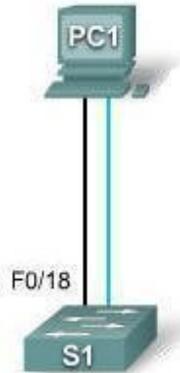
Learning Objectives

- Cable a network according to the topology diagram
- Clear an existing configuration on a switch
- Examine and verify the default configuration
- Create a basic switch configuration, including a name and an IP address
- Configure passwords to ensure that access to the CLI is secured
- Configure switch port speed and duplex properties for an interface

Configure basic switch port security
 Manage the MAC address table
 Assign static MAC addresses
 Add and move hosts on a switch

LAB IV: Managing Switch Operating System and Configuration Files

Topology Diagram



Addressing Table

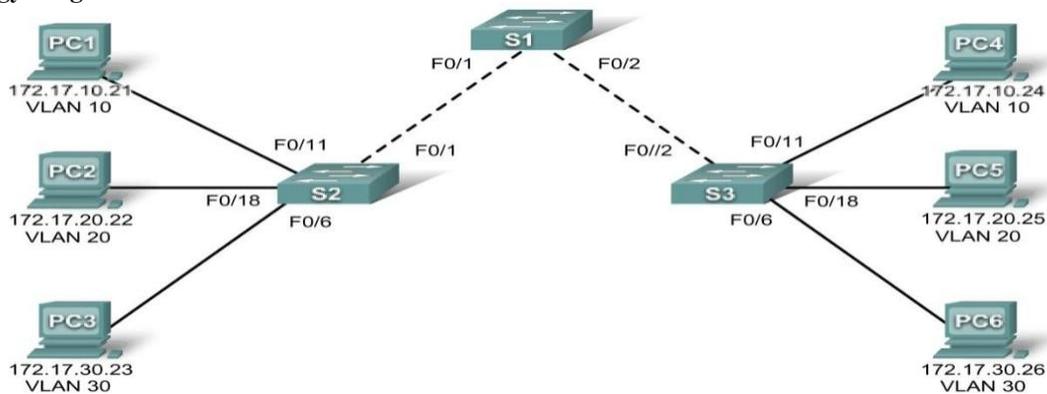
| Device | Hostname | Interface | IP Address | Subnet Mask | Default Gateway |
|--------|----------|-----------|--------------|---------------|-----------------|
| PC1 | Host-A | NIC | 172.17.99.21 | 255.255.255.0 | 172.17.99.1 |
| S1 | ALSwitch | VLAN99 | 172.17.99.11 | 255.255.255.0 | 172.17.99.1 |

Learning Objectives

- Create and save a basic switch configuration
- Set up a TFTP server on the network
- Back up the switch Cisco IOS software to a TFTP server and then restore it
- Back up the switch configuration to a TFTP server
- Configure a switch to load a configuration from a TFTP server
- Upgrade the Cisco IOS software from a TFTP server

Lab V: Basic VLAN Configuration

Topology Diagram



Addressing Table

| Device | | IP Address | Subnet Mask | Default Gateway |
|--------|---------|--------------|---------------|-----------------|
| S1 | VLAN 99 | 172.17.99.11 | 255.255.255.0 | N/A |
| S2 | VLAN 99 | 172.17.99.12 | 255.255.255.0 | N/A |
| S3 | VLAN 99 | 172.17.99.13 | 255.255.255.0 | N/A |
| PC1 | NIC | 172.17.10.21 | 255.255.255.0 | 172.17.10.1 |
| PC2 | NIC | 172.17.20.22 | 255.255.255.0 | 172.17.20.1 |
| PC3 | NIC | 172.17.30.23 | 255.255.255.0 | 172.17.30.1 |
| PC4 | NIC | 172.17.10.24 | 255.255.255.0 | 172.17.10.1 |
| PC5 | NIC | 172.17.20.25 | 255.255.255.0 | 172.17.20.1 |
| PC6 | NIC | 172.17.30.26 | 255.255.255.0 | 172.17.30.1 |

Initial Port Assignments (Switches 2 and 3)

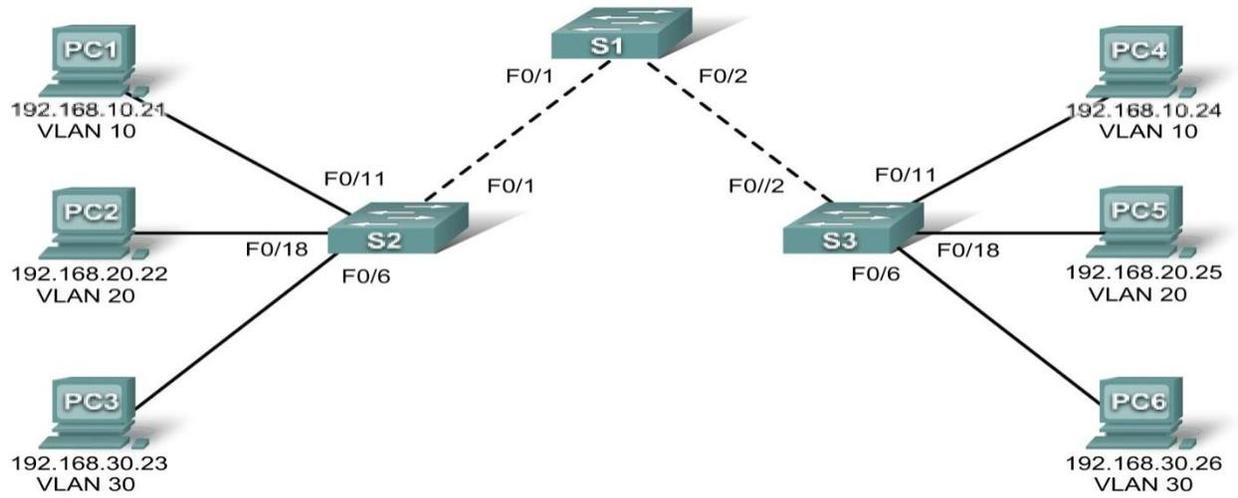
| Ports | Assignment | Network |
|---------------|--------------------------------|-----------------|
| Fa0/1 – 0/5 | 802.1q Trunks (Native VLAN 99) | 172.17.99.0 /24 |
| Fa0/6 – 0/10 | VLAN 30 – Guest (Default) | 172.17.30.0 /24 |
| Fa0/11 – 0/17 | VLAN 10 – Faculty/Staff | 172.17.10.0 /24 |
| Fa0/18 – 0/24 | VLAN 20 – Students | 172.17.20.0 /24 |

Learning Objectives

- Cable a network according to the topology diagram
- Erase the startup configuration and reload a switch to the default state
- Perform basic configuration tasks on a switch
- Create VLANs
- Assign switch ports to a VLAN
- Add, move, and change ports
- Verify VLAN configuration
- Enable trunking on inter-switch connections
- Verify trunk configuration
- Save the VLAN configuration

Lab VI: Troubleshooting VLAN Configurations

Topology Diagram



Addressing Table

| Device | | IP Address | Subnet Mask | Default Gateway |
|--------|---------|---------------|---------------|-----------------|
| S1 | VLAN 56 | 192.168.56.11 | 255.255.255.0 | N/A |
| S2 | VLAN 56 | 192.168.56.12 | 255.255.255.0 | N/A |
| S3 | VLAN 56 | 192.168.56.13 | 255.255.255.0 | N/A |
| PC1 | NIC | 192.168.10.21 | 255.255.255.0 | 192.168.10.1 |
| PC2 | NIC | 192.168.20.22 | 255.255.255.0 | 192.168.20.1 |
| PC3 | NIC | 192.168.30.23 | 255.255.255.0 | 192.168.30.1 |
| PC4 | NIC | 192.168.10.24 | 255.255.255.0 | 192.168.10.1 |
| PC5 | NIC | 192.168.20.25 | 255.255.255.0 | 192.168.20.1 |
| PC6 | NIC | 192.168.30.26 | 255.255.255.0 | 192.168.30.1 |

Initial Port Assignments (Switches 2 and 3)

| Ports | Assignment | Network |
|---------------|--------------------------------|------------------|
| Fa0/1 – 0/5 | 802.1q Trunks (Native VLAN 56) | 192.168.56.0 /24 |
| Fa0/6 – 0/10 | VLAN 30 – Guest (Default) | 192.168.30.0 /24 |
| Fa0/11 – 0/17 | VLAN 10 – Faculty/Staff | 192.168.10.0 /24 |
| Fa0/18 – 0/24 | VLAN 20 – Students | 192.168.20.0 /24 |

In this lab, you will practice troubleshooting a misconfigured VLAN environment. Load or have your instructor load the configurations below into your lab gear. Your objective is to locate and correct any and all errors in the configurations and establish end-to-end connectivity. Your final configuration should match the topology diagram and addressing table. All passwords are set to **cisco**, except the enable secret password, which is set to **class**.

Task 1: Prepare the Network

Step 1: Cable a network that is similar to the one in the topology diagram.

Step 2: Clear any existing configurations on the switches, and initialize all ports in the shutdown state.

Step 3: Import the configurations below.

Switch 1

```

hostname S1
no ip domain-lookup
enable secret class
!
!
interface range FastEthernet0/1-5
switchport mode trunk
!
interface range FastEthernet0/6-24
shutdown
!
interface Vlan1
no ip address
no ip route-cache
!
interface Vlan56
ip address 192.168.56.11 255.255.255.0
no ip route-cache
!
line con 0
logging synchronous
line vty 0 4
no login
line vty 5 15
password cisco
login
!
end

```


Switch 2

```
hostname S2
no ip domain-lookup
enable secret class
!
vlan 10,20,30,56
!
interface range FastEthernet0/1-5
switchport trunk native vlan 56
switchport mode access
!
interface range FastEthernet0/6-10
switchport access vlan 30
switchport mode access
!
interface range FastEthernet0/11-17
switchport access vlan 10
switchport mode access
!
interface range FastEthernet0/18-24
switchport access vlan 20
switchport mode access
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
ip address 192.168.56.12 255.255.255.0
no ip route-cache
shutdown
!
line con 0
password cisco
login
line vty 0 4
password cisco
login
line vty 5 15
password cisco
login
!
end
```

Switch 3

```
hostname S3
no ip domain-lookup
enable secret class
!
vlan 10,20,30
!
interface range FastEthernet0/1-5
switchport trunk native vlan 56
switchport mode trunk
!
interface range FastEthernet0/6-10
switchport mode access
!
interface range FastEthernet0/11-17
switchport mode access
!
interface range FastEthernet0/18-24
```



```

switchport mode access
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
no ip address
no ip route-cache
shutdown
!
interface Vlan56
no ip route-cache
!
line con 0
password cisco
login
line vty 0 4
password cisco
login
line vty 5 15
password cisco
login
!
end

```

Task 2: Troubleshoot and Repair the VLAN Configuration

Task 3: Document the Switch Configurations

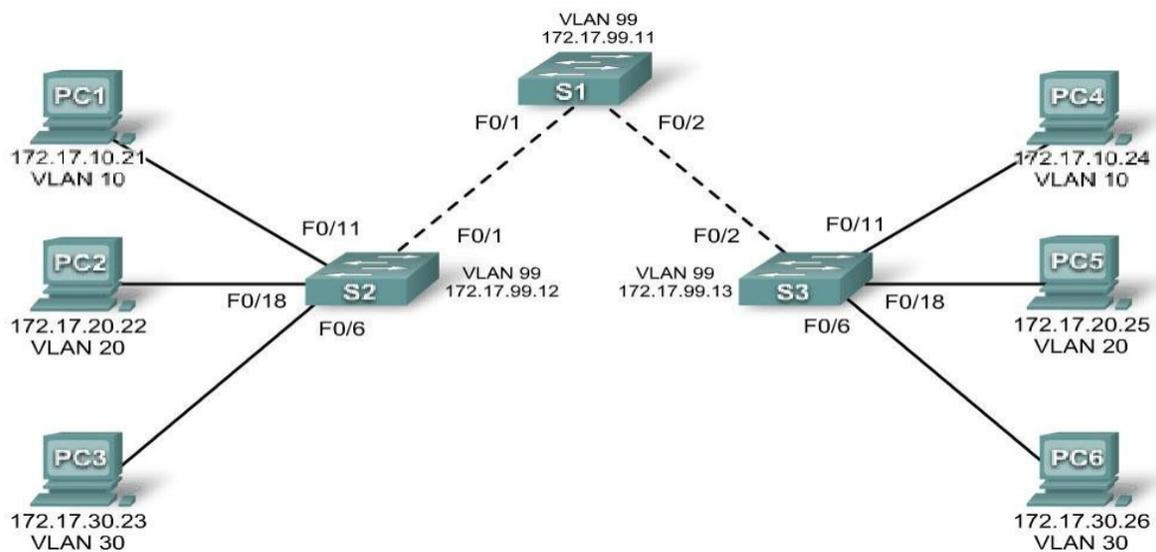
On each switch, capture the running configuration to a text file and save for future reference:

Task 4: Clean Up

Erase the configurations and reload the switches. Disconnect and store the cabling. For PC hosts that are normally connected to other networks (such as the school LAN or to the Internet), reconnect the appropriate cabling and restore the TCP/IP settings.

Lab VII: Basic VTP Configuration

Topology Diagram



Addressing Table

| Device | | IP Address | Subnet Mask | Default Gateway |
|--------|---------|--------------|---------------|-----------------|
| S1 | VLAN 99 | 172.17.99.11 | 255.255.255.0 | N/A |
| S2 | VLAN 99 | 172.17.99.12 | 255.255.255.0 | N/A |
| S3 | VLAN 99 | 172.17.99.13 | 255.255.255.0 | N/A |
| PC1 | NIC | 172.17.10.21 | 255.255.255.0 | 172.17.10.1 |
| PC2 | NIC | 172.17.20.22 | 255.255.255.0 | 172.17.20.1 |
| PC3 | NIC | 172.17.30.23 | 255.255.255.0 | 172.17.30.1 |
| PC4 | NIC | 172.17.10.24 | 255.255.255.0 | 172.17.10.1 |
| PC5 | NIC | 172.17.20.25 | 255.255.255.0 | 172.17.20.1 |
| PC6 | NIC | 172.17.30.26 | 255.255.255.0 | 172.17.30.1 |

Port Assignments (Switches 2 and 3)

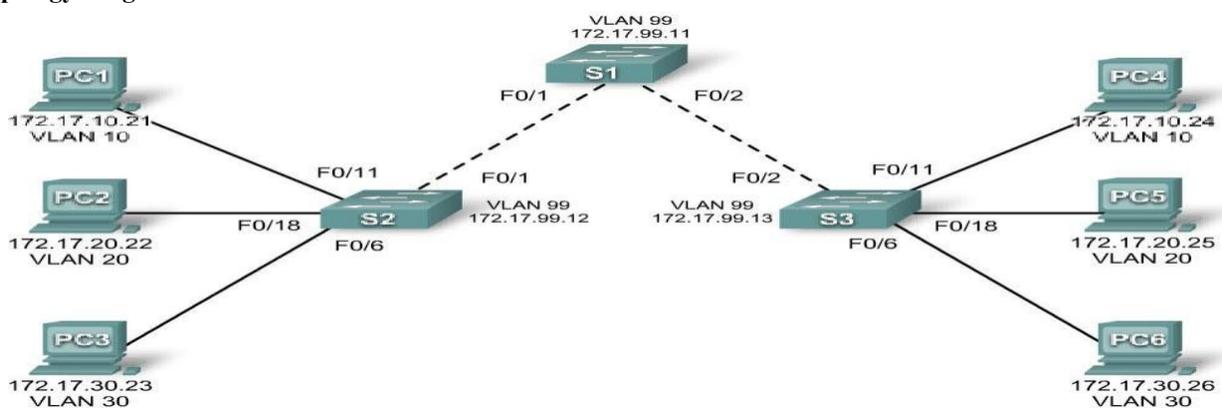
| Ports | Assignment | Network |
|---------------|--------------------------------|-----------------|
| Fa0/1 – 0/5 | 802.1q Trunks (Native VLAN 99) | 172.17.99.0 /24 |
| Fa0/6 – 0/10 | VLAN 30 – Guest (Default) | 172.17.30.0 /24 |
| Fa0/11 – 0/17 | VLAN 10 – Faculty/Staff | 172.17.10.0 /24 |
| Fa0/18 – 0/24 | VLAN 20 – Students | 172.17.20.0 /24 |

Learning Objectives

- Cable a network according to the topology diagram
- Erase the startup configuration and reload a switch to the default state
- Perform basic configuration tasks on a switch
- Configure VLAN Trunking Protocol (VTP) on all switches
- Enable trunking on inter-switch connections
- Verify trunk configuration
- Modify VTP modes and observe the impact
- Create VLANs on the VTP server, and distribute this VLAN information to switches in the network
- Explain the differences in operation between VTP transparent mode, server mode, and client mode
- Assign switch ports to the VLANs
- Save the VLAN configuration
- Enable VTP pruning on the network
- Explain how pruning reduces unnecessary broadcast traffic on the LAN

Lab VIII: Troubleshooting VTP Configuration

Topology Diagram



Addressing Table

| Device | | IP Address | Subnet Mask |
|--------|---------|--------------|---------------|
| S1 | VLAN 99 | 172.17.99.11 | 255.255.255.0 |
| S2 | VLAN 99 | 172.17.99.12 | 255.255.255.0 |
| S3 | VLAN 99 | 172.17.99.13 | 255.255.255.0 |
| PC1 | NIC | 172.17.10.21 | 255.255.255.0 |
| PC2 | NIC | 172.17.20.22 | 255.255.255.0 |
| PC3 | NIC | 172.17.30.23 | 255.255.255.0 |
| PC4 | NIC | 172.17.10.24 | 255.255.255.0 |
| PC5 | NIC | 172.17.20.25 | 255.255.255.0 |
| PC6 | NIC | 172.17.30.26 | 255.255.255.0 |

Port Assignments (Switches 2 and 3)

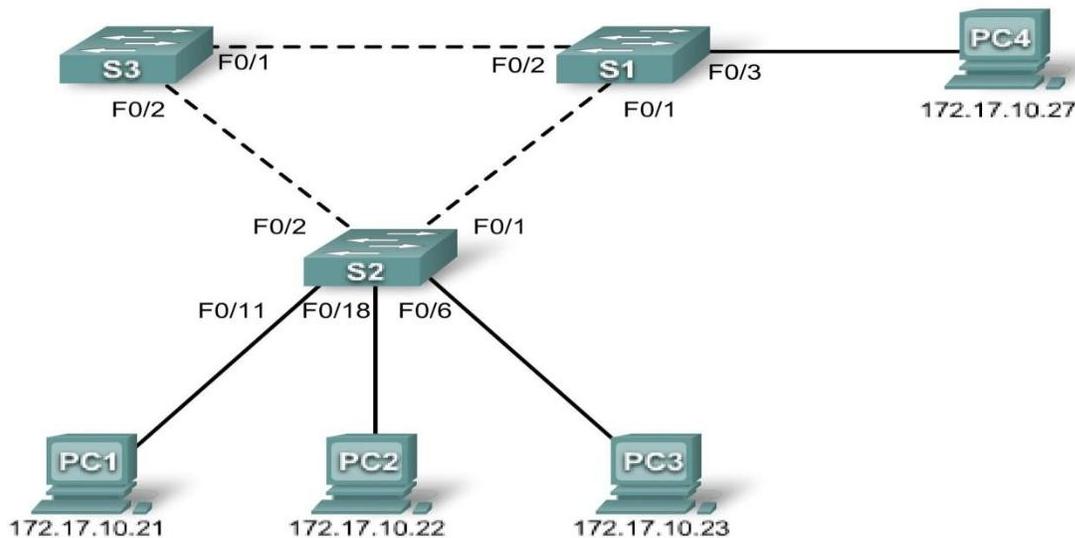
| Ports | Assignment | Network |
|---------------|--------------------------------|-----------------|
| Fa0/1 – 0/5 | 802.1q Trunks (Native VLAN 99) | 172.17.99.0 /24 |
| Fa0/6 – 0/10 | VLAN 30 – Guest (Default) | 172.17.30.0 /24 |
| Fa0/11 – 0/17 | VLAN 10 – Faculty/Staff | 172.17.10.0 /24 |
| Fa0/18 – 0/24 | VLAN 20 – Students | 172.17.20.0 /24 |

Objectives

Upon completion of this lab, you will be able to:

- Cable a network according to the topology diagram
- Erase the startup configuration and vlan.dat files and reload switches to the default state
- Load the switches with supplied scripts
- Find and correct all configuration errors
- Document the corrected network

Lab IX: Basic Spanning Tree Protocol Topology Diagram



Addressing Table

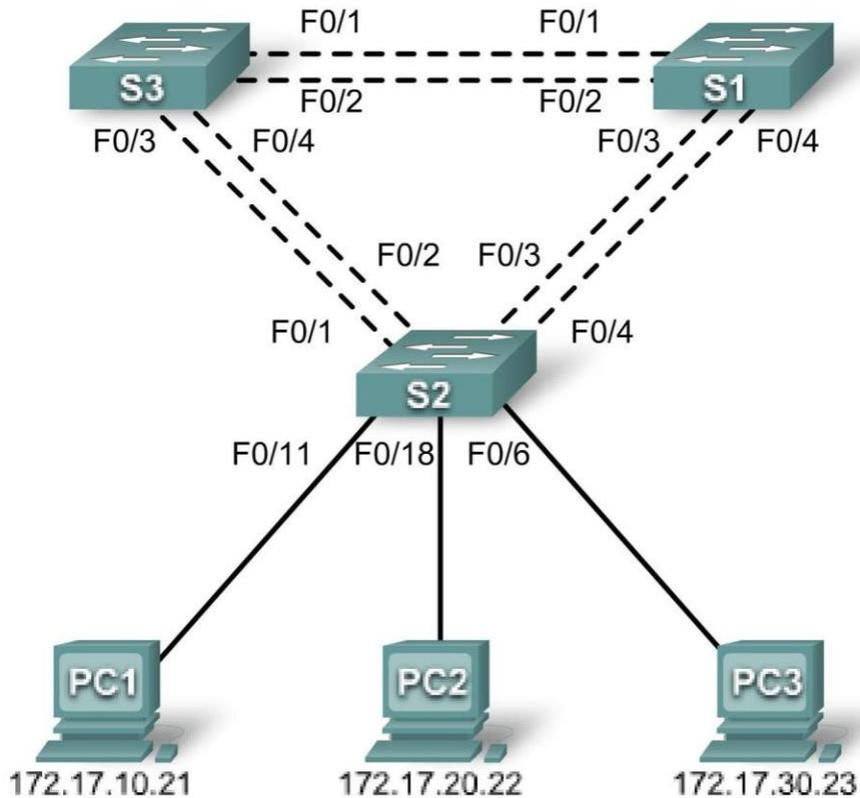
| Device | | IP Address | Subnet Mask | Default Gateway |
|--------|--------|--------------|---------------|-----------------|
| S1 | VLAN 1 | 172.17.10.1 | 255.255.255.0 | N/A |
| S2 | VLAN 1 | 172.17.10.2 | 255.255.255.0 | N/A |
| S3 | VLAN 1 | 172.17.10.3 | 255.255.255.0 | N/A |
| PC1 | NIC | 172.17.10.21 | 255.255.255.0 | 172.17.10.254 |
| PC2 | NIC | 172.17.10.22 | 255.255.255.0 | 172.17.10.254 |
| PC3 | NIC | 172.17.10.23 | 255.255.255.0 | 172.17.10.254 |
| PC4 | NIC | 172.17.10.27 | 255.255.255.0 | 172.17.10.254 |

Learning Objectives

- Cable a network according to the topology diagram
- Erase the startup configuration and reload the default configuration, setting a switch to the default state
- Perform basic configuration tasks on a switch
- Observe and explain the default behavior of Spanning Tree Protocol (STP, 802.1D)
- Observe the response to a change in the spanning tree topology

Lab X: Troubleshooting Spanning Tree Protocol

Topology Diagram



Addressing Table

| Device | | IP Address | Subnet Mask | Default Gateway |
|--------|---------|--------------|---------------|-----------------|
| S1 | VLAN 99 | 172.17.99.11 | 255.255.255.0 | N/A |
| S2 | VLAN 99 | 172.17.99.12 | 255.255.255.0 | N/A |
| S3 | VLAN 99 | 172.17.99.13 | 255.255.255.0 | N/A |
| PC1 | NIC | 172.17.10.21 | 255.255.255.0 | 172.17.10.1 |
| PC2 | NIC | 172.17.20.22 | 255.255.255.0 | 172.17.20.1 |
| PC3 | NIC | 172.17.30.23 | 255.255.255.0 | 172.17.30.1 |

Port Assignments – Switch 2

| Ports | Assignment | Network |
|---------------|--------------------------------|-----------------|
| Fa0/1 – 0/4 | 802.1q Trunks (Native VLAN 99) | 172.17.99.0 /24 |
| Fa0/5 – 0/10 | VLAN 30 – Guest (Default) | 172.17.30.0 /24 |
| Fa0/11 – 0/17 | VLAN 10 – Faculty/Staff | 172.17.10.0 /24 |
| Fa0/18 – 0/24 | VLAN 20 – Students | 172.17.20.0 /24 |

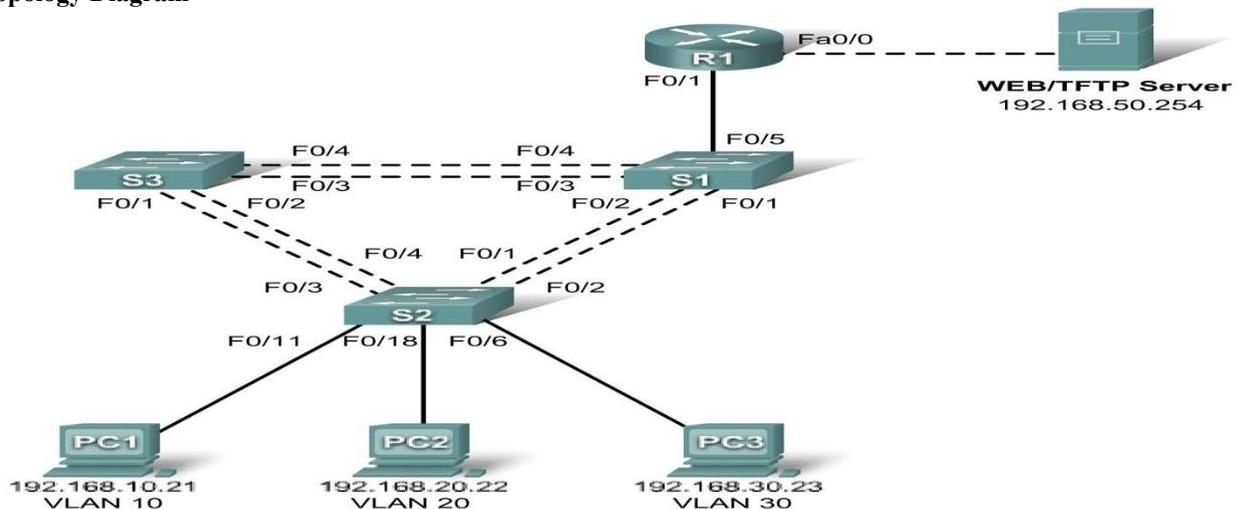
Learning Objectives

Analyze a congestion problem in a redundant, switched LAN network.
 Recognize the capabilities for per-VLAN load balancing with PVST.
 Modify the default STP configuration to optimize available bandwidth.
 Verify that modifications have had the intended effect.

You are responsible for the operation of the redundant switched LAN shown in the topology diagram. You and your users have been observing increased latency during peak usage times, and your analysis points to congested trunks. You recognize that of the six trunks configured, only two are forwarding packets in the default STP configuration currently running. The solution to this problem requires more effective use of the available trunks. The PVST+ feature of Cisco switches provides the required flexibility to distribute the inter-switch traffic using all six trunks. This lab is complete when all wired trunks are carrying traffic, and all three switches are participating in per-VLAN load balancing for the three user VLANs.

Lab XI: Inter-VLAN Routing

Topology Diagram



Addressing Table

| Device | | IP Address | Subnet Mask | Default Gateway |
|--------|---------|--------------------------------------|---------------|-----------------|
| S1 | VLAN 99 | 192.168.99.11 | 255.255.255.0 | 192.168.99.1 |
| S2 | VLAN 99 | 192.168.99.12 | 255.255.255.0 | 192.168.99.1 |
| S3 | VLAN 99 | 192.168.99.13 | 255.255.255.0 | 192.168.99.1 |
| R1 | Fa 0/0 | 192.168.50.1 | 255.255.255.0 | N/A |
| R1 | Fa 0/1 | See Subinterface Configuration Table | | N/A |
| PC1 | NIC | 192.168.10.21 | 255.255.255.0 | 192.168.10.1 |
| PC2 | NIC | 192.168.20.22 | 255.255.255.0 | 192.168.20.1 |
| PC3 | NIC | 192.168.30.23 | 255.255.255.0 | 192.168.30.1 |
| Server | NIC | 192.168.50.254 | 255.255.255.0 | 192.168.50.1 |

Port Assignments – Switch 2

| Ports | Assignment | Network |
|---------------|--------------------------------|------------------|
| Fa0/1 – 0/5 | 802.1q Trunks (Native VLAN 99) | 192.168.99.0 /24 |
| Fa0/6 – 0/10 | VLAN 30 – Sales | 192.168.30.0 /24 |
| Fa0/11 – 0/17 | VLAN 10 – R&D | 192.168.10.0 /24 |
| Fa0/18 – 0/24 | VLAN 20 – Engineering | 192.168.20.0 /24 |

Subinterface Configuration Table – Router 1

| Router Interface | Assignment | IP Address |
|------------------|------------|--------------|
| Fa0/1.1 | VLAN1 | 192.168.1.1 |
| Fa0/1.10 | VLAN 10 | 192.168.10.1 |
| Fa0/1.20 | VLAN 20 | 192.168.20.1 |
| Fa0/1.30 | VLAN 30 | 192.168.30.1 |
| Fa0/1.99 | VLAN 99 | 192.168.99.1 |

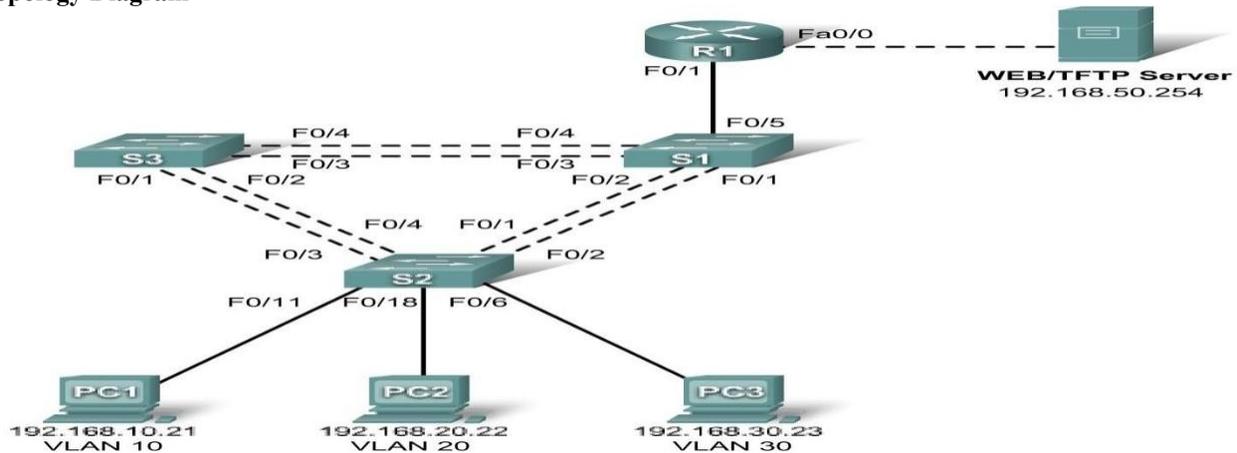
Learning Objectives

Upon completion of this lab, you will be able to to:

- Cable a network according to the topology diagram
- Clear configurations and reload a switch and a router to the default state
- Perform basic configuration tasks on a switched LAN and a router
- Configure VLANs and VLAN Trunking Protocol (VTP) on all switches
- Configure a router to support 802.1q trunking on a Fast Ethernet interface
- Configure a router with subinterfaces corresponding to the configured VLANs

Lab XII: Troubleshooting Inter-VLAN Routing

Topology Diagram



Addressing Table

| Device | | IP Address | Subnet Mask | Default Gateway |
|--------|---------|--------------------------------------|---------------|-----------------|
| S1 | VLAN 99 | 192.168.99.11 | 255.255.255.0 | 192.168.99.1 |
| S2 | VLAN 99 | 192.168.99.12 | 255.255.255.0 | 192.168.99.1 |
| S3 | VLAN 99 | 192.168.99.13 | 255.255.255.0 | 192.168.99.1 |
| R1 | Fa 0/0 | 192.168.50.1 | 255.255.255.0 | N/A |
| R1 | Fa 0/1 | See Subinterface Configuration Table | | N/A |
| PC1 | NIC | 192.168.10.21 | 255.255.255.0 | 192.168.10.1 |
| PC2 | NIC | 192.168.20.22 | 255.255.255.0 | 192.168.20.1 |
| PC3 | NIC | 192.168.30.23 | 255.255.255.0 | 192.168.30.1 |
| Server | NIC | 192.168.50.254 | 255.255.255.0 | 192.168.50.1 |

Port Assignments – Switch 2

| Ports | Assignment | Network |
|---------------|--------------------------------|------------------|
| Fa0/1 – 0/5 | 802.1q Trunks (Native VLAN 99) | 192.168.99.0 /24 |
| Fa0/6 – 0/10 | VLAN 30 – Sales | 192.168.30.0 /24 |
| Fa0/11 – 0/17 | VLAN 10 – R&D | 192.168.10.0 /24 |
| Fa0/18 – 0/24 | VLAN 20 – Engineering | 192.168.20.0 /24 |

Subinterface Configuration Table – Router 1

| Router Interface | Assignment | IP Address |
|------------------|------------|--------------|
| Fa0/1.1 | VLAN1 | 192.168.1.1 |
| Fa0/1.10 | VLAN 10 | 192.168.10.1 |
| Fa0/1.20 | VLAN 20 | 192.168.20.1 |
| Fa0/1.30 | VLAN 30 | 192.168.30.1 |
| Fa0/1.99 | VLAN 99 | 192.168.99.1 |

Learning Objectives

To complete this lab:

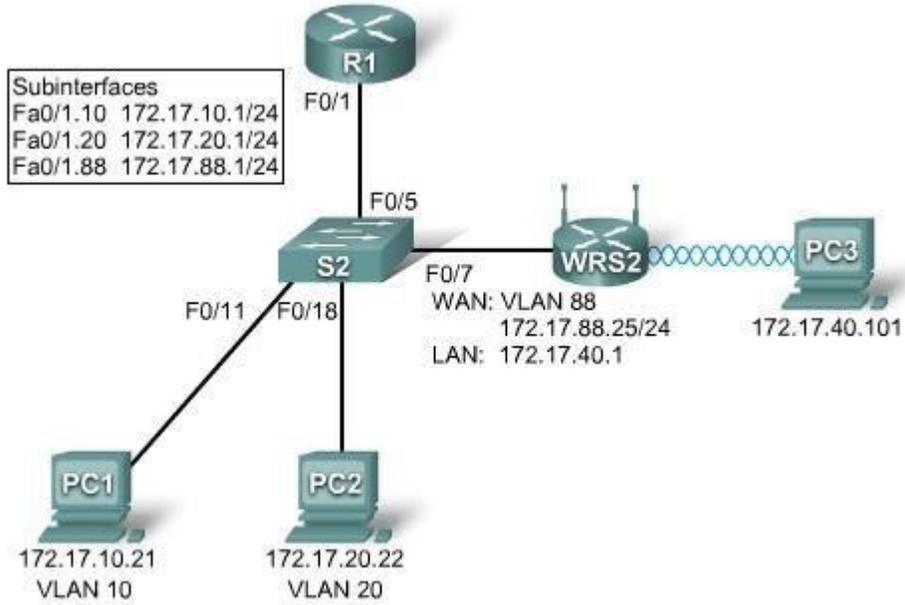
- Cable a network according to the topology diagram
- Erase any existing configurations and reload switches and the router to the default state
- Load the switches and the router with supplied scripts
- Find and correct all configuration errors
- Document the corrected network

Scenario

The network has been designed and configured to support five VLANs and a separate server network. Inter-VLAN routing is being provided by an external router in a router-on-a-stick configuration, and the server network is routed across a separate Fast Ethernet interface. However, it is not working as designed, and complaints from your users have not given much insight into the source of the problems. You must first define what is not working as expected, and then analyze the existing configurations to determine and correct the source of the problems.

This lab is complete when you can demonstrate IP connectivity between each of the user VLANs and the external server network, and between the switch management VLAN and the server network.

**Lab XIII: Basic Wireless Configuration
Topology Diagram**

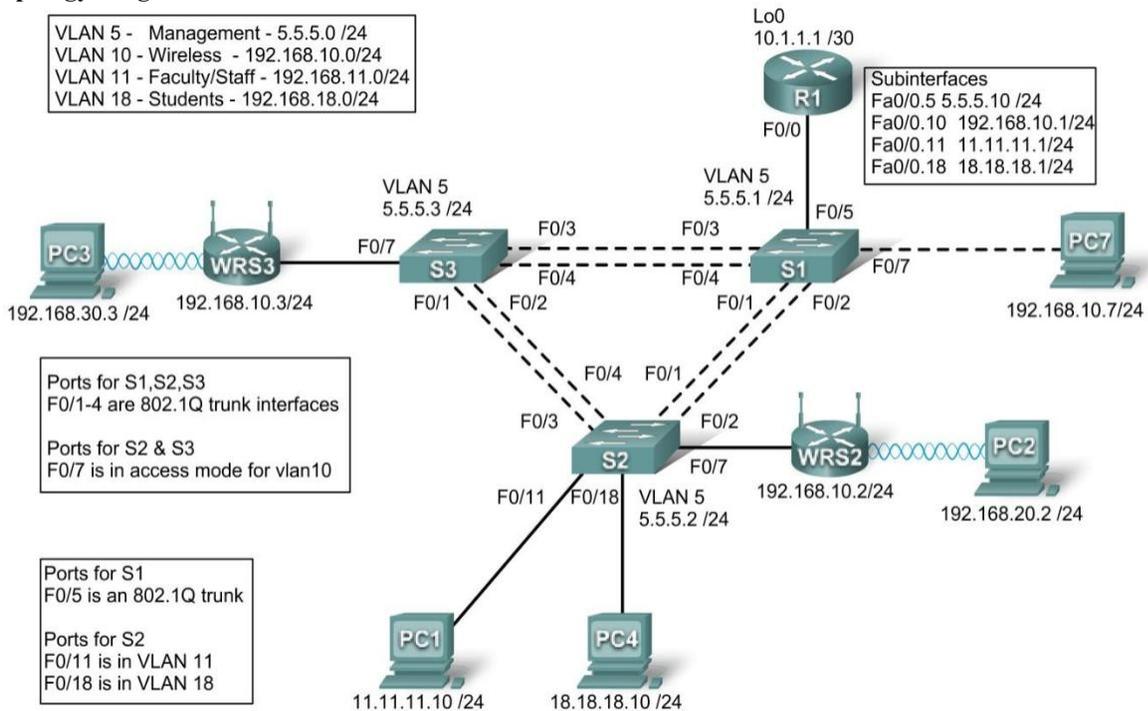


Learning Objectives

- Configure options in the Linksys Setup tab.
- Configure options in the Linksys Wireless tab.
- Configure options in the Linksys Administration tab.
- Configure options in the Linksys Security tab.
- Add wireless connectivity to a PC.
- Test connectivity.

Lab XIV: Troubleshooting Wireless Configuration

Topology Diagram



Addressing Table

| Device | Interface | IP Address | Subnet Mask | Default Gateway |
|--------|--------------|--------------|-----------------|-----------------|
| R1 | Fa0/0.5 | 5.5.5.10 | 255.255.255.0 | N/A |
| | Fa0/0.10 | 192.168.10.1 | 255.255.255.0 | N/A |
| | Fa0/0.11 | 11.11.11.1 | 255.255.255.0 | N/A |
| | Fa0/0.18 | 18.18.18.1 | 255.255.255.0 | N/A |
| | Lo0 | 10.1.1.1 | 255.255.255.252 | N/A |
| WRS2 | WAN | 192.168.10.2 | 255.255.255.0 | 192.168.10.1 |
| | LAN/Wireless | 192.168.20.1 | 255.255.255.0 | N/A |
| WRS3 | WAN | 192.168.10.3 | 255.255.255.0 | 192.168.10.1 |
| | LAN/Wireless | 192.168.30.1 | 255.255.255.0 | N/A |
| PC1 | NIC | 11.11.11.10 | 255.255.255.0 | 11.11.11.1 |
| PC4 | NIC | 18.18.18.10 | 255.255.255.0 | 18.18.18.1 |
| S1 | VLAN 5 | 5.5.5.1 | 255.255.255.0 | N/A |
| S2 | VLAN 5 | 5.5.5.2 | 255.255.255.0 | N/A |
| S3 | VLAN 5 | 5.5.5.3 | 255.255.255.0 | N/A |

Scenario

In this lab, a basic network and wireless network have been configured improperly. You must find and correct the misconfigurations based on the minimum network specifications provided by your company. Here are the configurations to load into your router and switches.

R1 Configuration

```

hostname R1
!
interface Loopback0
ip address 10.1.1.1 255.255.255.0
!
interface FastEthernet0/0
no ip address
duplex auto
speed auto
no shutdown
!
interface FastEthernet0/0.5
encapsulation dot1Q 5
ip address 5.5.5.10 255.255.255.0
!
interface FastEthernet0/0.10
encapsulation dot1Q 10
ip address 192.168.11.1 255.255.255.0
!
!
interface FastEthernet0/0.18
encapsulation dot1Q 18
ip address 18.18.18.1 255.255.255.0
!
ip route 192.168.20.0 255.255.255.0 192.168.10.2
ip route 192.168.30.0 255.255.255.0 192.168.10.3
!
line con 0
exec-timeout 0 0
logging synchronous

```



```
!  
end
```

Switch 1 Configuration

```
hostname S1  
!  
vtp mode transparent  
!  
vlan 5,10-11  
!  
interface FastEthernet0/1  
switchport trunk allowed vlan 5,10,11  
switchport mode trunk  
switchport trunk native vlan 5  
!  
interface FastEthernet0/2  
switchport trunk allowed vlan 5,10,11  
switchport mode trunk  
switchport trunk native vlan 5  
!  
interface FastEthernet0/3  
switchport trunk allowed vlan 5,10,11  
switchport mode trunk  
switchport trunk native vlan 5  
!  
interface FastEthernet0/4  
switchport trunk allowed vlan 5,10,11  
switchport mode trunk  
switchport trunk native vlan 5  
!  
interface FastEthernet0/5  
switchport mode trunk  
switchport trunk native vlan 5  
!  
interface Vlan5  
ip address 5.5.5.1 255.255.255.0  
no shutdown  
!  
line con 0  
exec-timeout 0 0  
logging synchronous  
!  
End
```

Switch 2 Configuration

```
hostname S2  
!  
vtp mode transparent  
ip subnet-zero  
!  
vlan 5,10-11,18  
!  
interface FastEthernet0/1  
switchport trunk allowed vlan 5,10,11,18  
switchport mode access  
!  
interface FastEthernet0/2  
switchport trunk allowed vlan 5,10,11,18  
switchport mode access  
!
```



```

interface FastEthernet0/3
switchport trunk allowed vlan 5,10,11,18
switchport mode access
!
interface FastEthernet0/4
switchport trunk allowed vlan 5,10,11,18
switchport mode access
!
interface FastEthernet0/7
switchport access vlan 10
!
interface FastEthernet0/11
switchport access vlan 11
switchport mode access
switchport port-security mac-address sticky
switchport port-security mac-address sticky 0336.5b1e.33fa
!
interface FastEthernet0/18
switchport access vlan 18
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security mac-address sticky 022c.ab13.22fb
!
interface Vlan1
no ip address
shutdown
!
interface Vlan5
ip address 5.5.5.2 255.255.255.0
no shutdown
!
line con 0
exec-timeout 0 0
logging synchronous
!
End

```

Switch 3 Configuration

```

hostname S3
!
vtp mode transparent
!
vlan 5,10-11,18
!
interface FastEthernet0/1
switchport trunk allowed vlan 5,10,11,18
switchport mode trunk
switchport trunk native vlan 5
!
interface FastEthernet0/2
switchport trunk allowed vlan 5,10,11,18
switchport mode trunk
switchport trunk native vlan 5
!
interface FastEthernet0/3
switchport trunk allowed vlan 5,10,11,18
switchport mode trunk
switchport trunk native vlan 5
!
interface FastEthernet0/4

```



```

switchport trunk allowed vlan 5,10,11,18
switchport mode trunk
switchport trunk native vlan 5
!
interface FastEthernet0/7
!
interface Vlan1
no ip address
no ip route-cache
!
interface Vlan5
ip address 6.6.6.3 255.255.255.0
no shutdown
!
line con 0
exec-timeout 0 0
logging synchronous
!
end

```

Wireless Router Network Requirements

While troubleshooting WRS2 and WRS3, ensure that at least the following capabilities exist:

- 0 Connections via the IP addresses shown in the topology diagram.
- 1 More than 30 clients can get an IP address through DHCP at a single time.
- 2 A client can have a DHCP address for at least 2 hours.
- 3 Clients using both B and G wireless network modes can connect, but N clients cannot.
- 4 Wireless clients must be authenticated using WEP with a key of 5655545251.
- 5 Traffic between PC2 and PC3 must take the most efficient route possible.

Ping requests coming from outside WAN ports of the Linksys routers to their inside LAN/wireless IP addresses (192.168.30.1) must be successful.

- 0 DHCP must not give out IP addresses in a range that includes the addresses for PC2 and PC3.
- 1 The two wireless networks must not interfere with each other.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

ANDROID PROGRAMMING LAB

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| UBC924 | - | - | 2 | 1 |

The experiments will be based on the topics covered in the corresponding theory Course.

- Write a Program to Build a Simple Android Application
- Java Andorid Program to Demonstrate Usage of String.xml File
- Java Andorid Program to Demonstrate Activity Life Cycle
- Write a Program to Change the Background of your Activity
- Java Andorid Program to Perform all Operations using Calculators
- Write a Program to Change the Image Displayed on the Screen
- Write a Program to Create Multiple Activities within an Application
- Write a Program to Demonstrate Action Button by Implementing on Click Listener
- Write a Program to Demonstrate the Sound Button Application
- Write a Program to Demonstrate the use of Scroll View
- Write a Program to Demonstrate Radio Group Application
- Write a Program to Demonstrate Alert Dialog Box
- Write a Program to Set the Wallpaper of Your Device using Bitmap Class
- Write a Program to Demonstrate the Menu Application
- Write a Program to Demonstrate Toast in an Application
- Write a Program for Dividing our Activity into Fully Encapsulated Reusable Components using Fragement
- Write a Program to Demonstrate List View Activity
- Write a Program to Demonstrate an Advanced Xml Layout
- Write a Program to Draw on a Canvas
- Write a Program to Demonstrate Surface View via Thread
- Write a Program to Demonstrate Count Down Timer Application
- Write a Program to Demonstrate Tip Calculator
- Write a Program to Animate Bitmap
- Write a Program to Demonstrate Layouts in an Activity and Nesting of Layouts
- Write a Program to Demonstrate Touch Listener
- Write a Program to Demonstrate Motion Event on Android screen with the help of an Image
- Write a Program to Draw a Spritesheet on a Canvas
- Write a Program to Demonstrate an Advanced Animation Activity
- Write a Program to Demonstrate a Simple Video View
- Write a Program to Demonstrate Simple Animation Activity
- Write a Program to Demonstrate a Simple to do List Application
- Write a Program to Demonstrate an Adapter
- Write a Program to demonstrate Advanced Adapter
- Write a Program to Demonstrate a Simple Compound Control
- Write a Program to Demonstrate Explicit Intent
- Write a Program to Demonstrate Implicit Intent
- Java Andorid Program to Demonstrate Linkify Class in Android
- Java Andorid Program to Demonstrate a Match Filter
- Write a Program to Demonstrate a TransformFilter
- Write a Program to Demonstrate Broadcast Receiver
- Write a Program to Demonstrate BroadCast Receiver to Intercept Custom Intent
- Write a Program to Demonstrate Pending Intent
- Write a Program to Demonstrate Ordered BroadCast
- Write a Program to Demonstrate Intent Filter
- Write a Program to Demonstrate Local BroadCast Manager
- Write a Program to Monitoring Device State Changes Using Broadcast Intents
- Write a Program to Open an Internet Data Stream
- Write a Program to Parse Xml Using Xml Pull Parser
- Write a Program to Parse Xml Using Dom Parser
- Write a to demonstrate Download Manager in Android
- Write a Program to Demonstrate Connection to an Internet Resource
- Write a Program to Demonstrate Google Maps in Andorid
- Write a Program to Demonstrate Zoom-IN and Zoom -Out of an image using Touch events
- Write a Program to Demonstrate Creating and Saving Shared Preferences

Write a Program to Demonstrate Preference Screen
Write a Program to Demonstrate Subscreen in a Preference Screen
Write a Program to Demonstrate Intent in Preference Screen
Write a Program to Demonstrate Preference Fragment
Write a Program to Demonstrate Preference Headers
Write a Program to Demonstrate Preference Activity
Write a Program to Demonstrate Reading a File on SD Card
Write a Program to Demonstrate Reading and Writing to a File in Android
Write a Program to Demonstrate Instance Save State
Write a Program to Write to a SQLite Database in Android
Write a Program to Read and Write to a SQLite Database in Android
Write a Program to Read Write and Delete to a SQLite Database in Android
Write a Program to Demonstrate Content Providers in Android
Write a Program to Create Grade Report Using Content Providers in Android
Write a Program to Create Search Activity for an Application in Android
Write a Program to Demonstrate Search Interface in Android
Write a Program to Demonstrate Search Interface with Suggestion Provider in Android
Write a Program to Demonstrate Voice Search in a Search Provider
Write a Program to Demonstrate a Full Screen Activity
Write a Program to Change an Activity's Icon
Write a Program to Set an Activity in Portrait Mode
Write a Program to Set an Activity in Landscape Mode
Write a Program to Demonstrate Media Content Provider
Write a Program to Access the Contacts Contract Contact Content Provider
Write a Program to Demonstrate Finding contact details for a contact name
Write a Program to Demonstrate Performing a Caller-ID lookup
Write a Program to Pick Contacts Using Intent
Write a Program to Create New Contact Using Intent
Write a Program to Demonstrate Calendar Content Provider
Write a Program to Demonstrate to Insert a New Calendar Event Using Intent
Write a Program to Edit a Calendar Event Using Intent
Write a Program to Display a calendar event using an Intent
Write a Program to Demonstrate Deleting a Calendar Event in Android
Write a Program to Start a Service in Android
Write a Program to Start a Service to Vibrate Phone
Write a Program to Start and Stop a Service in Android
Write a Program to Demonstrate to Force Stop a Service in Android
Write a Program to Demonstrate Self Terminating Services
Write a Program to Start a Service in a Different Process
Write a Program to Create a New Thread for Service Tasks
Write a Program to Start a Starting Services regularly via AlarmManager in Android
Write a Program to Cancel an Alarm Intent
Java Android Program to Start a Service After Every Hour
Write a Program to Demonstrate IntentServices in Android
Write a Program to Demonstrate Downloading a File Using a Service
Write a Program to Demonstrate Binding a Service to an Activity
Write a Program to Move a Service to Background in Android
Write a Program to Demonstrate Asynchronous Tasks in Android
Write a Program to Demonstrate Loaders in Android
Write a Program to Demonstrate Action Bar in Android
Write a Program to Disable the Action Bar in an Activity in Android
Write a Program to Hide Title Label of Action Bar in Android
Write a to Add Actions in Action Bar in Android
Write a Program to Respond to Added Actions in Action Bar in Android
Write a Program to Change the Displayed Text alongside the Application Icon at Runtime
Write a Program to Change the Background of Action Bar in Android
Write a Program to Dim the Software Navigation Button in your Android Application
Write a Program to add Action to Home Icon
Write a Program to add Action to Home Icon using set the parentActivityName
Write a Program to Enable the Split Action Bar
Write a Program to Add a Custom View to the ActionBar
Write a Program to Demonstrate Action View in Android

Write a Program to Demonstrate Share Action Provider in Android
 Write a Program to Demonstrate Navigation Drawer in Android
 Write a Program to Demonstrate Navigation Using Fragments in Android
 Write a Program to Demonstrate adding actions to Navigation Bar in Android
 Write a Program to Demonstrate Navigation Drawer with Different Fragements in Android
 Write a Program to Demonstrate Tab Navigation in Android
 Write a Program to Demonstrate Drop Down Navigaton in Android
 Write a Program to Demonstrate Contextual Mode in Android
 Write a Program to Show SMS in Your Phone
 Write a Program to Display SMS from the Phone Numbers, which are in Your Contacts
 Write a Programs to Know Your Current Location Using GPS
 Write a Program to Calculate Distance between two points using Latitude & Longitude
 Write a that Accepts a Location from the User, Run in the Background, and Notifies the User when he/she is within 1Km from that Location
 Write a Program to Shows SMS from the phone numbers, which are in your contacts
 Write a Program to Show Contacts in Your Phone
 Write a Program to Demonstrate to Receive BroadCast in Android
 Write a Program to Consume GPS Broad-Cast using BroadCast Receiver
 Write a Program to Define a Style and Apply to a View
 Write a Program to Create a Text View with Rounded Corners
 Write a Program to Demonstrate Button with Rounded Corners
 Write a Program to Send Message From Service to Activity
 Write a Program to Send Data From Service to Activity in Android
 Write a Program to Draw Driving Route on Google Maps in Android
 Write a Program to Demonstrate Grid View Layout in Android
 Write a Program to Demonstrate Custom Grid View Layout in Android
 Write a Program to Customize GridView Style in Android
 Write a Program to Demonstrate Geo Coding in Android
 Write a Program to Get more than one Geo location of a Place
 Write a Program to Create Simple Menu in Android
 Write a Program to Demonstrate Creating an Options Menu in Android
 Write a Program to Demonstrate Context Menu in Android
 Write a Program to Demonstrate Popup Menu in Android
 Write a Program to Demonstarte Menu Groups in Android
 Write a Program to Demonstrate Checkable Menu Items in Android
 Write a Program to Demonstrate Adding Menu Items Based on an Intent in Android
 Write a Program to Demonstrate Adding a Share Action Provider to a Menu in Android
 Write a Program to Demonstrate Defining Menu Hierarchies in XML in Android
 Write a Program to Demonstrate Adding Shortcuts to Items in a Menu in Android
 Write a Program to Demonstrate Date Picker Dialog in Android
 Write a Program to Demonstrate Character Picker Dialog in Android
 Write a Program to Demonstrate Time Picker Dialog in Android
 Write a Program to Demonstrate Progress Dialog in Android
 Write a Program to Demonstrate Progress Dialog with Spinning Wheel in Android
 Write a Program to Demonstrate Parsing a Json Object
 Write a Program to Demonstrate Custom Toast in Android
 Write a Program to Display Custom Toast in the Center of Screen
 Write a Program to Demonstrate Shape Drawables
 Write a Program to Demonstrate Gradient Drawables
 Write a Program to Demonstrate Radial Gradient in Android
 Write a Program to Demonstrate Sweep Gradient in Android
 Write a Program to Demonstrate Text to Speech in Android
 Write a Program to Play Sound Using Sound Pool
 Write a to Record Media Using Media Recorder
 Write a Program to Send and Receive Data From Server

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

COMMUNICATION SKILLS - V

| Code | L | T | P/FW | CREDITS |
|--------|---|---|------|---------|
| BCS901 | 1 | - | - | 1 |

Course Objective:

The modules are designed to enhance the communicative competence of the learners to equip them with efficient interpersonal communication.

Course Contents:

Module I: Essentials of Workplace Conversation

Language: registers (formal vs. informal) and usage
Job description and evaluation;
Relations with superiors, peers, and subordinates
Team building
Conversation Management
Non Verbal Aids

Module II: Dynamics of Group Discussion

Introduction,
Methodology
Role Functions
Mannerism
Guidelines

Module III: Communication through Electronic Channels

Introduction
Technology based Communication Tools
Video Conferencing
Web Conferencing
Selection of the Effective Tool
E-mails, Fax etc.

Examination Scheme:

| Components | CT1 | CT2 | CAF | V | GD | GP | A |
|---------------|-----|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 25 | 10 | 10 | 10 | 5 |

CAF – Communication Assessment File

GD – Group Discussion

GP – Group Presentation

Text & References:

Jermy Comfort, Speaking Effectively, et.al, Cambridge
Krishnaswamy, N, Creative English for Communication, Macmillan
Raman Prakash, Business Communication, Oxford.
Taylor, Conversation in Practice,

BEHAVIOURAL SCIENCE – V (INDIVIDUAL, SOCIETY AND NATION)

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| BSS901 | 1 | - | - | 1 |

Course Objective:

This course aims at enabling students towards understanding the importance of individual differences, better understanding of self in relation to society and nation, facilitation for a meaningful existence and adjustment in society, to inculcate patriotism and national pride, understanding workforce diversity

Course Contents:

Module I: Individual differences & Personality

Personality: Definition & Relevance

Importance of nature & nurture in Personality Development

Importance and Recognition of Individual differences in Personality

Accepting and Managing Individual differences (Adjustment Mechanisms)

Module II: Socialization

Nature of Socialization

Social Interaction

Interaction of Socialization Process

Contributions to Society & Nation

Module III: Patriotism and National Pride

Sense of Pride and Patriotism

Importance of Discipline and hard work

Integrity and accountability

Module IV: Human Rights, Values and Ethics

Meaning of Human Rights

Human Rights Awareness

Importance of human rights

Values and Ethics

Module V: Workforce Diversity & Peace

Globalization and workforce

Gender Sensitization

Respect for diversity

Power of peace

Module VI: End-of-Semester Appraisal

Viva based on personal journal

Assessment of Behavioural change as a result of training

Exit Level Rating by Self and Observer

Examination Scheme:

| Components | SAP | A | Mid Term Test (CT) | VIVA | Journal for Success (JOS) |
|---------------|-----|----|--------------------|------|---------------------------|
| Weightage (%) | 20 | 05 | 20 | 30 | 25 |

Text & References:

Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour

Dressler, David and Cans, Donald: The Study of Human Interaction

Lapiere, Richard. T – Social Change

Rose, G.: Oxford Textbook of Public Health, Vol.4, 1985.

Robbins O.B. Stephen; Organizational Behaviour

FRENCH - V

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| FLF901 | 2 | - | - | 2 |

Course Objective:

To furnish some basic knowledge of French culture and civilization for understanding an authentic document and information relating to political and administrative life

Course Contents:

Module D: pp. 131 – 156 Unités 10, 11

Contenu lexical: Unité 10: Prendre des décisions

- Faire des comparaisons
- décrire un lieu, le temps, les gens, l'ambiance
- 0 rédiger une carte postale

Unité 11: faire face aux problèmes

- Exposer un problème.
- 0 parler de la santé, de la maladie
- 1 interdire/demander/donner une autorisation
- 2 connaître la vie politique française

Contenu grammatical:

- comparatif - comparer des qualités/ quantités/actions
- supposition: Si + présent, futur
- adverbe - caractériser une action
- pronom "Y"

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

le livre à suivre: Campus: Tome 1

GERMAN - V

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| FLG901 | 2 | - | - | 2 |

Course Objective:

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Genitive case

Genitive case – Explain the concept of possession in genitive

Mentioning the structure of weak nouns

Module II: Genitive prepositions

Discuss the genitive prepositions and their usage: (während, wegen, statt, trotz)

Module III: Reflexive verbs

Verbs with accusative case

Verbs with dative case

Difference in usage in the two cases

Module IV: Verbs with fixed prepositions

Verbs with accusative case

Verbs with dative case

Difference in the usage of the two cases

Module V: Texts

A poem „Maxi“

A text Rocko

Module VI: Picture Description

Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;

Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

Wolfgang Hieber, Lernziel Deutsch

Hans-Heinrich Wangler, Sprachkurs Deutsch

Schulz Griesbach, Deutsche Sprachlehre für Ausländer

P.L Aneja, Deutsch Interessant- 1, 2 & 3

Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2

Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

SPANISH - V

| | | | | |
|------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
|------|---|---|------|---------|

| | | | | |
|--------|---|---|---|---|
| FLS901 | 2 | - | - | 2 |
|--------|---|---|---|---|

Course Objective:

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

Course Contents:

Module I

Revision of earlier semester modules

Module II

Future Tense

Module III

Presentations in English on Spanish speaking countries'

Culture

Sports

Food

People

Politics

Society

Geography

Module IV

Situations:

En el hospital

En la comisaria

En la estacion de autobus/tren

En el banco/cambio

Module V

General revision of Spanish language learnt so far.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation

I – Interaction/Conversation Practice

Text & References:

Español Sin Fronteras, Greenfield

CHINESE – V

| | | | | |
|--------|---|---|------|---------|
| Code | L | T | P/FW | CREDITS |
| FLC901 | 2 | - | - | 2 |

Course Objective:

What English words come from Chinese? Some of the more common English words with Chinese roots are ginseng, silk, dim sum, fengshui, typhoon, yin and yang, Tai chi, kung-fu. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I

Drills
Dialogue practice
Observe picture and answer the question.
Pronunciation and intonation.
Character writing and stroke order

Module II

Intonation
Chinese foods and tastes – tofu, chowmian, noodle, Beijing duck, rice, sweet, sour...etc. Learning to say phrases like – Chinese food, Western food, delicious, hot and spicy, sour, salty, tasteless, tender, nutritious, good for health, fish, shrimps, vegetables, cholesterol is not high, pizza, milk, vitamins, to be able to cook, to be used to, cook well, once a week, once a month, once a year, twice a week.....
Repetition of the grammar and verbs taught in the previous module and making dialogues using it.
Compliment of degree —de.

Module III

Grammar the complex sentence —suiran ... danshi...
Comparison – It is colder today than it was yesterday.....etc.
The Expression —chule...yiwail. (Besides)
Names of different animals.
Talking about Great Wall of China
Short stories

Module IV

Use of —huozhe and —haishi
Is he/she married?
Going for a film with a friend.
Having a meal at the restaurant and ordering a meal.

Module V

Shopping – Talking about a thing you have bought, how much money you spent on it? How many kinds were there? What did you think of others?
Talking about a day in your life using compliment of degree —de. When you get up? When do you go for class? Do you sleep early or late? How is Chinese? Do you enjoy your life in the hostel?
Making up a dialogue by asking question on the year, month, day and the days of the week and answer them.

Examination Scheme:

| Components | CT1 | CT2 | C | I | V | A |
|---------------|-----|-----|----|----|----|---|
| Weightage (%) | 20 | 20 | 20 | 20 | 15 | 5 |

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

—Elementary Chinese Reader || Part-II Lesson 39-46

DISSERTATION / PROJECT WORK

| Code | L | T | P/FW | CREDITS |
|---------|---|---|------|---------|
| UBC1062 | - | - | - | 30 |

GUIDELINES FOR PROJECT FILE

Research experience is as close to a professional problem-solving activity as anything in the curriculum. It provides exposure to research methodology and an opportunity to work closely with a faculty guide. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation.

Research is genuine exploration of the unknown that leads to new knowledge, which often warrants publication. But whether or not the results of a research project are publishable, the project should be communicated in the form of a research report written by the student.

Sufficient time should be allowed for satisfactory completion of reports, taking into account that initial drafts should be critiqued by the faculty guide and corrected by the student at each stage.

The File is the principal means by which the work carried out will be assessed and therefore great care should be taken in its preparation.

In general, the File should be comprehensive and include

A short account of the activities that were undertaken as part of the project;

A statement about the extent to which the project has achieved its stated goals.

A statement about the outcomes of the evaluation and dissemination processes engaged in as part of the project;

Any activities planned but not yet completed as part of the project, or as a future initiative directly resulting from the project;

Any problems that have arisen that may be useful to document for future reference.

Report Layout

The report should contain the following components

File should be in the following specification

0 A4 size paper

1 Font: Arial (10 points) or Times New Roman (12 points)

2 Line spacing: 1.5

3 Top & bottom margins: 1 inch/ 2.5 cm

4 Left & right margins: 1.25 inches/ 3 cm

Report Layout: The report should contain the following components

Front Page

Table of Contents

Acknowledgement

Student Certificate

Company Profile

Introduction Chapters

Appendices References /

Bibliography

Title or Cover Page or Front Page

The title page should contain the following information: Project Title; Student's Name; Course; Year; Supervisor's Name.

Table of Contents

Titles and subtitles are to correspond exactly with those in the text.

Acknowledgement

Acknowledgment to any advisory or financial assistance received in the course of work may be given.

Student Certificate Given
by the Institute.

Company Certificate & Profile

This is a certificate, which the company gives to the students. A Company Profile corresponds to a file with company-specific data. Company data can be stored there and included in a booking when needed.

Introduction

Here a brief introduction to the problem that is central to the project and an outline of the structure of the rest of the report should be provided. The introduction should aim to catch the imagination of the reader, so excessive details should be avoided.

Chapters

All chapters and sections must be appropriately numbered, titled and should neither be too long nor too short in length. The first chapter should be introductory in nature and should outline the background of the project, the problem being solved, the importance, other related works and literature survey. The other chapters would form the body of the report. The last chapter should be concluding in nature and should also discuss the future prospect of the project.

Appendices

The Appendix contains material which is of interest to the reader but not an integral part of the thesis and any problem that have arisen that may be useful to document for future reference.

References / Bibliography

This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system.

ASSESSMENT OF THE PROJECT FILE

Essentially, marking will be based on the following criteria: the quality of the report, the technical merit of the project and the project execution. Technical merit attempts to assess the quality and depth of the intellectual efforts put into the project. Project execution is concerned with assessing how much work has been put in. The File should fulfill the following *assessment objectives*:

Writing a critical literature review

- 0 Search for literature
- 1 Summarizing and presenting the literature
- 2 Evaluating key content and theories

Collecting and analyzing research material

- 0 Choosing and designing research method
- 1 Conducting the research
- 2 Analyzing, sorting and classifying the data to make decision

Interpreting research method and draw conclusion

- 0 Findings
- 1 Recommendation

Assigning the theories and writing the project report

- 0 Structuring the project in accordance with the given style

Bibliography

- 0 This refer to the books, Journals and other documents consulting while working on the project

Examination Scheme:

| Components | MRP | V | S | FP | R |
|----------------------|------------|----------|----------|-----------|----------|
| Weightage (%) | 20 | 20 | 20 | 20 | 20 |

MRP – Mid Report Presentation, V – Viva, S – Synopsis, FP – Final Presentation, R - Report