Madhepura College, Madhepura

(Affiliated to BNM University, Madhepura)

B.Voc. in Information Technology (UGC)

B.VOC
In
INFORMATION TECHNOLOGY
(UGC)

INTRODUCTION

The University Grants Commission (UGC) has launched a scheme on skills development based higher education as part of college/university education, leading to Bachelor of Vocation (B.Voc.) Degree with multiple exits such as Diploma/Advanced Diploma under the NSQF.The B.Voc.programme is focused on universities and colleges providing undergraduate studies which would aiso incorporate specific job roies aiong with broad based general education. This would enable the graduates completing B.Voc.to make a meaningful participation in accelerating India's economy by gaining appropriate employment, becoming entrepreneurs and creating appropriate knowledge.

The proposed vocational programme in Software Development will be a judicious mix of skills, professional education related to Software Development and also appropriate content of general education. It is designed with the objective of equipping the students to cope with the emerging trends and challenges in the Software Development environment.

PROGRAMME STRUCTURE

The B.Voc Information Technology shall include:

- Language courses (English)
- General Education Components
- Skill Components
- Project
- Industrial Training
- Soft Skills and Personality Development Programmes
- Study tours

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Programme Structure

Semester-I

Course Title	G.C./S.C.	Credits	Marks Distribution		Total
			Internal	External	
Speaking and Listening Skills	G.C.	4	10	40	50
Introduction to IT	G.C.	4	20	80	100
Programming Principles	G.C.	4	10	40	50
Word Processing & Image Editing	S.C.	6	20	80	100
Photoshop Lab	S.C.	6	10	40	50
Page Maker Lab	S.C.	6	10	40	50

Semester-II

Course Title	G.C./S.C.	Credits	Marks Distribution		Total
			Internal	External	
Mathematics I	G.C.	4	10	40	50
Animation Software	G.C.	4	10	40	50
Network & Internet Application	G.C.	4	20	80	100
C Programming	S.C.	6	20	80	100
C Programming Lab	S.C.	6	10	40	50
Animations Lab	S.C.	6	10	40	50

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Semester-III

Course Title	G.C./S.C.	Credits	Marks Distribution		Total
			Internal	External	
System Analysis & Design	G.C.	4	10	40	50
Management Information Systems	G.C.	4	10	40	50
Web application & Development	G.C.	4	20	80	100
Operating System	S.C.	6	20	80	100
Web Development Lab	S.C.	6	10	40	50
Computer Hardware Lab	S.C.	6	10	40	50

Semester-IV

Course Title	G.C./S.C.	Credits	Marks Distribution		Total
			Internal	External	
Mathematics II	G.C.	4	10	40	50
Network Administration	G.C.	4	20	80	100
Object Oriented Programming	G.C.	4	20	80	100
Visual Tools	S.C.	6	10	40	50
Visual Tools Lab	S.C.	6	10	40	50
OOP & Network Lab	S.C.	6	10	40	50

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Semester-V

Course Title	G.C./S.C.	Credits	Marks Distribution		Total
			Internal	External	
Introduction to Information Security	G.C.	4	10	40	50
Programming in Java	G.C.	4	20	80	100
Software Testing	G.C.	4	10	40	50
Software Engineering	S.C.	6	20	80	100
Java Lab	S.C.	6	10	40	50
Major Project (Phase-I)	S.C.	6	10	40	50

Semester-VI

Course Title	G.C./S.C.	Credits	Marks Distribution		Total
			Internal	External	
IT & Society	G.C.	4	10	40	50
Mobile Application Development	G.C.	4	20	80	100
Database Administration	G.C.	4	10	40	50
Advanced Java	S.C.	6	20	80	100
Android & Java Lab	S.C.	6	10	40	50
Major Project (Phase-II)	S.C.	6	10	40	50

- G.C. – General Component
- S.C. – Skill Component

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MADHEPURA COLLEGE, MADHEPURA

Syllabus of Information Technology (IT)

SEMESTER – 1

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -I	Total Marks-50
Time-3hours	

Speaking and Listening Skills

AIMS

1. To familiarize students with English sounds and phonemic symbols.
2. To enhance their ability in listening and speaking.

OBJECTIVES :

On completion of the course, the students should be able to

1. listen to lectures, public announcements and news on TV and radio.
2. Engage in telephonic conversation.
3. Communicate effectively and accurately in English.
4. Use spoken language for various purposes.

Course outline

Module 1

Pronunciation

Phonemic symbols – consonants – voweis – syllabies – word stress – strong and weak forms- intonation

Module 2

Listening Skills

Difference between listening and hearing – active listening –barriers to listening – academic listening – listening for details – listening and note-taking – listening for sound contents of video – listening to talks and descriptions – listening for meaning – listening to announcements – listening to news programs.

Module 3

Speaking Skills

Intractive nature of communication – importance of context – formal and informal – set expressions in different situations –greeting – introducing – making requests – asking for giving permission – giving instructions and directions – agreeing / disagreeing – seeking and giving advice – inviting and apologizing telephonic skills – conversational manners.

Module 4

Dialouge Practice

(Students should be given ample practice in dialogue, using core and supplementary materials.)

COURSE MATERIALS

Modules 1-3

Core reading: *English for Effective Communication. Oxford University Press, 2013*

Further reading:

1. Marks, Jonathan, *English Pronunciation in Use*. New Delhi: CUP,2007.
2. Lynch,Tony. *Study Listening*.New Delhi:CUP, 2008.
3. Kenneth, Anderson, Tony Lynch, Joan MacLean. *Study Speaking*. New Delhi: CUP,2008.

Reference:

Jones,Daniel, *English pronouncing Dictionary* 17th Edition. New Delhi: CUP, 2009.

MODULE 4:

Core reading: *Dramatic Moments: A BOOK of One Act Plays*. Orient Black Swan, 2013.

The following One-act plays prescribed:

1. Serafin and Joaquin Alvarez Quinters - A Sunny Morning
2. H.H.Munro - The Death Trap
3. Vincent Godefroy - Fail Not Our Feast

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Program- B.VOC	Externnal-80
Branch-Information Technology	Internal-20
Paper -II	Total Marks-100
Time-3hours	

INTRODUCTION TO IT

SKILL COMPONENT

AIM:

- To create overall generic awareness **about** scope of the field of **IT** and to impart basic personal computing skills.
- To create background knowledge for the various courses in the programme.

OBJECTIVES:

- ✓ To introduce the basic terminology in the field of IT
- ✓ To impart functional knowledge about PC hardware, operations and concepts
- ✓ To impart functional knowledge in the use of GUI Operating System
- ✓ To impart functional knowledge in a standard office package (word processor, spread sheet and presentation softwares) and popular utilities
- ✓ To impart functional knowledge about networks and internet.
- ✓ To give an overview of computer application in various fields and an overall generic awareness about the scope of thr field of IT

SYLLABUS

Module 1: *Computer characteristics:* Speed, storage, accuracy,diligence; Digital signals, Binary System, ASCII; Historic Evolution of Computers; Classification of computers: Microcomputer, Minicomputer, mainframes, Supercomputers; Personal computers: Desktop, Laptops, Palmtop, Tablet PC; Hardware & Software; Von Neumann model.

Module 2: Hardware: CPU, Memory,Input devices, output devices. Memory units: RAM (SDRAM,DDR RAM, RDRAM etc. feature wise comparision only); **ROM** – different types: Flash memory; Auxiliary storage: Magnetic devices, Optical Devices; Floppy, Hard disk, Memory stick, CD, DVD, CD-Writer; Input devices – keyboard, mouse, scanner, speech input devices, digital camera, Touch screen, Joystick, Optical readers, bar code reader; Output devices: Display device, size and resolution; CRT,LCD; Printers: Dot-matrix, Inkjet, Laser; Plotters, Sound cards & speaker.

Module 3: Software- System software, Application software; concepts of files and folders, Introduction to Operating systems, Different types of operating systems: single user, multitasking, time-sharing multi-user; Booting, **POST;** Basic features of two **GUI** operating

systems: Windows & Linux (Basic desk top management); Programming Languages, Compiler, Interpreter, Databases; Application softwares: Generic Features of Word processors, Spread sheets and Presentation softwares; Generic Introduction to Latex for scientific typesetting; Utilities and their use; Computer Viruses & Protection, Free software, open source.

Module 4: Computer Networks- Connecting computers, Requirements for a network: Server, Workstation, switch, router, network operating systems; Internet: brief history, World Wide Web, Websites, URL, browsers, search engines, search tips; Internet connections: ISP,Dial-up,cable modem, WLL, DSL,leased line; email software features (send receive,filter,attach,forward, copy, blind copy); characteristics of web-based systems, Web pages, introduction to HTML.

REFERENCES:

Core

- E. Balagurusamy, *Fundamentals of Computers*, McGraw hill, 2014

Additional

- Dennis P Curtain, *Information Technology*: The Breaking wave, McGrawhill,2014
- Peter Norton, Introduction to Computers, McGrawhill, Seventh edition

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Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -III	Total Marks-50
Time-3hours	

PROGRAMMING PRINCIPLES

AIM

- To give an awareness about the background knowledge required for problem solving

OBJECTIVES

At the end of the course the students will be able to

- Explain problem solving steps
- Develop algorithm for different problems
- Draw flow chart
- Analyse algorithms

SYLLABUS

Module1: Prpblem Solving and the Computer: Problem Definition, Solution Design, Solution Refinement, Testing Strategy Development, Program Coding and Testing, Documentation Completion, Program Maintenance.

Module2: Software and types of Software, Programming Languages- Machine Language, AssemblyLanguage, High Level Language, Object Oriented Language and its features.

Module3: Algorithms and Their Representations, Flow charts, Pseudo code, Types of Programming, Languages, Structured Programming, Different approaches of Programming:Top-down and Bottom-up, Life Cycles Stages of Programming, Features of a good computer program.

Module4: Areas of algorithm study, performance analysis – space complexity, time complexity, asymptotic notations (Ω,).

REFERENCES:

- Computer Fundamentals By P K Sinha&PritiSinha Fourth Edition.
- Ellis Horowitz, SartajSahni, SanguthevanRajshekharan

Program- B.VOC	Externnal-80
Branch-Information Technology	Internal-20
Paper -IV	Total Marks-100
Time-3hours	

WORD PROCESSING & IMAGE EDITING

AIM

- To create knowledge of word processing, power point, flash and photoshop

OBJECTIVES

At the end of the course the students will be able to

- Prepare office document
- Create presentation
- Design multimedia presentation
- Edit images

SYLLABUS

Module1: Wordprocessing: Word processing concepts, Editing, Fprmatting Text, Table Manipulation, Indexing, Mail merge, Documentation, Inserting Word Art, Inserting Picture and clip Arts, Auto formatting, Tools, Macros

Module2: Power Point: Beginning a presentation, Templates and Slide Master, Drawing Tools, ClipArt and WordArt, Organization Charts, Graphs, Output and Presentation Options, Integrating with Animation and Multimedia packages.

Module3: Flash: Introduction, Drawing, Working with Colour. Using Imported Artwork, Adding Sound, Working with Objects, Using Layers, Using Type, Using Symbols and Instances, Creating Animation, Creating interactive movies, Creating Printable movies, Publishing and Exporting.

Module4: Photoshop: Getting image into Phoyoshop, Selecting, Transforming and Retouching, Drawing, Painting, Applying Filters for special effects, Designing Web pages, Creating Rollovers and Animations, Preparing Graphics for the Web, Saving and exporting image.

CORE

1. Microsoft®Office Word 2003, Online Training Solutions Inc.
2. Powerpoint 2003 Essential Training,David Rivers
3. Flash CS3 Professional for Windows and Macintosh,Katherine Ulrich

Reference Books:

i. Exploring Microsoft Wprd 2003 Comprehensive, Robert T. Grauer and Maryann Barber
ii. Microsoft®Office PowerPoint® 2003, Online Training Solution Inc.
iii. Adobe Flash CS3 Professional Hands-On Training, Todd Perkins

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Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -V	Total Marks-50
Practical	

PHOTOSHOP LAB

Students should provide hands-on knowledge with the Pagemaker software for preparing documents **with the knowledge they acquired through module 1 of the paper VS 315**

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -VI	Total Marks-50
Practical	

PAGEMAKER LAB

Students should provide hands-on knowledge with the Photoshop software for editing images with the knowledge they acquired through module 4 of the paper VS 315

MADHEPURA COLLEGE, MADHEPURA

Syllabus of Information Technology

SEMESTER – 2

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -I	Total Marks-50
Time-3hours	

MATHEMATICS I

SYLLABUS

Module-I : Review of basic differentiation, Differentiation of hyperbolic functions, derivatives of hyperbolic functions, inverse hyperbolic functions logarithmic differentiation, implicit differentiation, Lebnitz's theorem, Mean value theorem, Rolle's theorem, Lagrange's mean-value theorem, Maxima and minima.

Module-II : Differential equations, General Concepts, Formulation and solution of differential equations, solution of higher order linear Des. Partial Des, Laplace and Inverse Laplace transforms.

Module-III : Theory of Numbers, prime numbers, Unique factorization theorem, Euclidean algorithm, congruences, Fermat's theorem, Wilson's theorem.

Module-IV : Complex Numbers, Separation into real and imaginary parts, Complex mapping

Module-V : Miscellaneous Topics: Markov processes. Harmonic analysis and Fourier series, Linear Programming

REFERENCES

Core

- Erwin KreyzigAdvanced Engineering Mathematics, New Age International Pvt Ltd.
- Shanthi Narayan, Differential Calculus, S Chand & Company
- ZafarAhsan, Differential Equations and their applications.
- RudraPratap, Getting Started with MATLAB, Oxford University Press

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -II	Total Marks-50
Time-3hors	

ANIMATION SOFTWARES

AIM

- To create skills in animation

OBJECTIVES

At the end of the course the students will be able to

- Create objects using 3DMax
- Perform animation
- Add special effects

SYLLABUS

Module 1 : Introduction to 3D Max, Creating objects, Selecting objects, Transforming objects

Module 2 : Animation, Modifying objects and Editing Objects

Module 3 : Compound objects, Cameras, Lights

Module 4 : Maps and Material, Rendering and Special Effects

REFERENCE

- 3D Studio MAX® R3 Bibleby Kelly L. Murdock
- 3D Studio MAX in Motion: Basics Using 3D Studio MAX 4.2by Stephen J. Ethier and Christine A. Ethier

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Program- B.VOC	Externnal-80
Branch-Information Technology	Internal-20
Paper -III	Total Marks-100
Time-3hours	

COMPUTER NETWORKS AND INTERNET APPLICATIONS

AIM

- To create an awareness of internet and different tools used

OBJECTIVES

At the end of the course the students will be able to

- Explain different components for internet
- Discuss different applications of it

SYLLABUS

Module-I : Computer Network: Introduction, Uses of computer networks, Networks Hardware, LAN, MAN, WAN, Protocol hierarchies, OSI Model, TCP/IP reference model.

Module-II : History of internet, The early years, The global Internet, A global information infrastructure, Review of packet switching and its relevance to the internet, Incompatible

topologies, Routers, Dial-up access, Software to create a virtual network, Datagrams, IP address.

Transmission Control Protocol (TCP) : Software for reliable communication, Guaranteed delivery, Recovering the datagrams, Automatic retransmission, Brief discussion on distributed computing, Domain names, Names and IP address, TCP/IP, Flexibility, Reliability and efficiency.

Module III : Electronic mail, Mail box, Sending, Notification, Reading, How it works, Address format, E-mail to and from non-Internet sites, Access to service via E-mail, Speed and reliability, Impact and significance, Joining a mailing list. Bulletin Board Services (BBS), Network norms, News group, Selection, Subscription, Readings, submitting, article, How BBS works File Transfer Protocol (FTP) Store/retrieve, Binary and text files, How FTP works, Impact and significance, Remote login, How it works, TELNET

Module IV : Browsing the World Wide Web (WWW), How a browser works, Software used to access, URLs, Browser. WWW documents, HTML, Web page design with HTML, Features and importance of HTML. Advanced WEB technologies, CGI, How it works. CGI and advertising Search engines, Browsing, Searching, and Search tool, Advanced search engines, Examples of search engines.

Text :

i. Ferozan. Introduction to Data Communication & Networking, TMH
ii. Leon and Leon, Internet For Everyone, LeonTechworld, Chennai

References:

i. Douglas E Comer, The Internet Book, 2nd Edition, Prentice Hall of India.
ii. Nancy Cadeno, The Internet Tool Kit, BPB Publications.
iii. Christian Crumlish, ABC's of the Internet, 2nd Edition, BPB Publications
iv. Patrick Naugton, Java Hand Book, Tata McGraw Hill

Program- B.VOC	Externnal-80
Branch-Information Technology	Internal-20
Paper -IV	Total Marks-100
Time- 3 hours	

C-PROGRAMMING

AIM

- To Expose students to algorithmic thinking and problem solving and impart moderate skills in programming in a industry-standard programming language

OBJECTIVES

- To expose students to algorithmic thinking and algorithmic representations
- To introduce students to basic data types and control structures in C.
- To introduce students to structured programming concepts
- To introduce students to standard library functions in C language

SYLLABUS

Module-I : Introduction to programming : Character set, Variables and Constants, Rules for naming the Variables/Identifiers; Basic data types of C, int, char,float, double; storage capacity range of all the data types; Storage classes;

Module-II : Basic Elements : Operators and Expressions: Assignment Operator, Arithmetic Operator and Arithmetic expression, Relational Operator and Relational exp., Logical Operator and how it is used in condition, Expression Evaluation (Precedence of Operators); simple I/O statements, Control structures, if, if else, switch-case, for, while, do-while, break, continue. Arrays, Defining simple arrays, Multi-dimensional arrays, declaration, initialization and processing;

Module-III : Functions & Pointers: concept of modular programming, Library, User defined functions, declaration, definition & scope, recursion, Pointers: The & and * Operators, pointer declaration, assignment and arithmetic, visualizing pointers, call by value, call by reference, dynamic memory allocation.

Module-IV : Advanced features: Array & pointer relationship, pointer to arrays, array of pointers. Strings: String handling functions; Structures and unions; File handling: text and binary files, file operations, Library functions for file handling, Modes of files.

REFERENCES

Core

- Ashok N. Kamthene, Programming in C, Pearson Education, Second edition
- E.Balaguruswamy, Programming in ANSI C, McGrawhill, Sixth Edition

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -V	Total Marks-50
Practical	

C-PROGRAMMING LAB

AIM:

- To provide an opportunity for hands-on practice of basic features of DOS, Windows, software tools (word processor, spread sheet, presentation s/w) and algorithmic thinking and problem solving in a industry standard programming language

OBJECTIVES :

After the completion of this course, the student should be able to:

- Create, Save, Copy, Delete, Organise various types of files and manage the desk top in general
- Use a standard word processing package Exploiting popular features
- Use a standard spread-sheet processing package Exploiting popular features
- Use a standard presentation package Exploiting popular features

Also, this course will provide hands-on practice in the following topics, under a variety of programming situations with a focus on writing, debugging and analyzing structured programs:

- Basic data types in C.
- Basic control structures in C.
- Arrays, structures and files
- Standard library functions in C language
- Solving moderately complex problems involving the above and requiring selection of appropriate data structures and efficient algorithms

SYLLABUS

1. Familiarization of important DOS/Windows/Linux features
2. Practice on basic features of word processor, spread sheet and presentation software.

Part A

The C laboratory work will consist of 15-20 Experiments

1. Testing out and interpreting a variety of simple programs to demonstrate the syntax and use of the following features of the language: basic data types, operators and control structures.

Part B

2. 1-D Arrays: A variety of programs to declare, initialize, read, print and process 1-D arrays of various basic data types. Processing to include, selection, sum, counting, selective sum, selective counting, reversing etc.
3. Pointers: A large number of trivial programs involving all possible data types to familiarize the syntax of pointers in a variety of situations and to draw memory diagrams based on the observations.
4. Structures: A variety of programs to declare, initialize, read, print and process structures made up of a variety of data types and structures.
5. 2-D Arrays: A variety of programs to declare, initialize, read, print and process 2-D arrays of various basic data types. Processing to include, selection, sum, counting, selective sum, selective counting, reversing etc.
6. Array of Structures and Structure of Arrays: Programs to demonstrate declaration and processing of structure of arrays and array of structures.
7. Pointers to Arrays: A number of programs to demonstrate handling of 1-D and 2-D arrays using pointers and to draw memory diagrams based on the observations.
8. Pointers to Structures: A number of programs to demonstrate use of pointers to structures and to draw memory diagrams based on the observations.
9. Functions – I: Simple Examples of declaring and using functions of the following categories **(i)** no argument, no return, **(ii)** argument, no return, **(iii)** no argument, return, **(iv)** argument, return, all pass by value
10. Functions –II : Declaring and using functions with pass by reference, Passing and Returning structures, Recursive functions.
11. Files: Simple Example involving use of multiple files: declaring, opening, closing, reading from and writing to text files.
12. Files: Example involving use of multiple files: declaring, opening, closing, reading from and writing to binary files.

13. Library functions: A variety of Examples demonstrating **(i)** string processing functions **(ii)** a variety of selected library functions
14. Debugging programs involving syntactic and/or logical errors

16-20 : Developing programming solutions to problems including program design, algorithm development and data structure selection.

REFERENCES

- Deitel&Deital, C: How to Program, Pearson Education
- Alan R Feuer, The C Puzzle Book, Pearson Education
- YashvantKanetkar, Test Your C Skills, BPB Publications, 3rd Edition

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -V1	Total Marks-50
Practical	

ANIMATIONS LAB

Students should provide hands-on knowledge with the 3D Max software for creating animation with the knowledge they acquired through module 1 of the paper ANIMATION SOFTWARES.

MADHEPURA COLLEGE, MADHEPURA

Syllabus of Information Technology

SEMESTER – 3

Program- B.VOC,	Externnal-40
Branch-Information Technology	Internal-10
Paper -I	Total Marks-50
Time-3hours	

SYSTEM ANALYSIS AND DESIGN

AIM:

- To provide an overview of how a software is developed and what are the different stages by which the development take place.

OBJECTIVES

At the end of this course, the students will be able to

- Explain the background study required for developing a system
- Design a new system
- Discuss types of testing
- Select the hardware and software required for a system

SYLLABUS

Module I : Overview of System analysis and Design : Business system concepts, project selection, sources of project requests, preliminary investigation, System development life cycle – Feasibility analysis, design, implementation, testing and evaluation, project review.

Feasibility study – technical and economical feasibility, cost and benefit analysis, fact finding techniques, DFD, Data dictionaries, Decision analysis, decision trees and tables.

Module II : *System design* – Design objectives, Process and stages of system design, Design methodologies, structured design, structured walkthrough, audit considerations, audit trials, detailed design, modularization, module specification, software design and documentation tools, top down and bottom up approaches

Module III : *Testing & System Conversation* : Unit and integration testing, testing practices and plans, system control and quality assurance, training, conversion, operation plans, system administration.

Module IV : *Hardware and Software selection* : Benchmarking, Financial considerations in selection software selection, vendor selection, performance and acceptance criteria.

REFERENCES

- Award, EM, Systems Analysis and Design, Galgotia Pub, 1991

Additional

- Lesson, System analysis and Design, SRA pub, 1985

❖ Rajaraman V, Analysis and Design of Information systems, PHI, 1991

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -II	Total Marks-50
Time-3hours	

MANAGEMENT INFORMATION SYSTEMS

SYLLABUS

Module I : An introduction to information systems, Information systems in organizations, Information Technology Concepts, The IS Revolution; Information requirement for the different levels If management, transaction processing system, Management information system, Decision support system. Strategic Role of Information Systems. Business Processes; Information management, and Decision Making. Computers and Information Processing;
Module II : Transaction processing system; hardware and software requirements, tools used, case studies, merits and demerits of transaction processing system.

Module III : Managerial control, Information and tools required, difference between transactional system and managerial system. Frequency of taking outputs, Need for interconnected system, common database, Redundancy control, case studies. Decision support system, concept and tools, case studies, virtual organizations, strategic decisions-unstructured approach, cost and values of unstructured information.

Module IV : Optimization techniques, difference between optimization tools and DSS tools expert system, difference between expert system and management information system. Role of chief Information officer.

REFERENCES :

- Management Information Systems, by Rajaraman
- Management Information Systems, by By S. SADAGOPAN, Prentice-Hall of India
- Management Information Systems, By Uma G. Gupta, Galgotia Publications
- Management Information Systems, By JAWADEKAR, W.S., Tata McGraw-Hill

Program- B.VOC	Externnal-80
Branch-Information Technology	Internal-20
Paper -III	Total Marks-100
Time-3hours	

WEB APPLICATION & DEVELOPMENT

AIM :

- To Expose students to technology of web sites and to introduce various tools and languages required for technical and creative design of state-of-the-art web sites

OBJECTIVES :

To impart basic skills in moderately complex use of the following tools/scripts/languages:

- HTML, DHTML, CGI Script, Perl, CSS, Java script, ASP and JSP.
- To impart necessary ability to choose the appropriate web tools/languages for creating state-of-the art web sites
- To Expose students to current trends and styles in web design and applications

SYLLABUS

Module – I : *HTML* : General Introduction to Internet and WWW; Text tags; Graphics, Video and Sound Tags; Link and Anchor Tags; Table Tags; Frame Tags; Miscellaneous tags (layers, image maps etc); CSS; DHTML; Example Applications; simple introduction to XML and VRML

Module – II : *CGI Programming* : HTML Forms and Fields; Perl: Basic control structures, data types and basic features; CGI Programs: CGI Programs: GET & POST methods, simple applications; Cookies; Server Side Includes; Example Applications;

Module – III : Javascript: Basic data types; control structures; standard functions; arrays and objects, event driven programming in Javascript; Example Application;

Module – IV : Architecture of java Servelets; Servelet Structure; Servelet Life Cycle; Request and Response Objects; Sessions; Invoking Servelets;

REFERENCES

❖ V.K. Jain, Advanced Programming in Web Design, Cyber Tech Publications

Additional

- Joel Sklar, Principles of Web Design, Vikas
- H M Deitel, P J Deitel & A B Goldberg, Internet and Worldwide web programming: How to Program, 3/e, Pearson Education

Program- B.VOC	Externnal-80
Branch-Information Technology	Internal-20
Paper -IV	Total Marks-100
Time-3hour	

OPERATING SYSTEMS

AIM

- To discuss the internal working of operating systems

OBJECTIVES

At the end of the course the students will be able to

- Discuss the installation of windows
- Explain the ways of diagnosis
- Make a system secure

SYLLABUS

Module I : Baiscs of Operating System : Differences between DOS, Windows 2000/XP and Linux operating systems, starting and exiting from a program in Windows 2003/XP, Linux, files and folders in Windows 2003/XP/Linux copying and moving files under Windows 2003/XP,the use of explorer, study of control panel and its settings

Module II : Installation and Administration of Windows 2003 and Linux: The minimum hardware requirements for the installation, the steps involved in installation. Booting process of Windows 2003/XP/Linux the plug and play feature of Windows 2003/XP – the automatic detection of new hardware at booting time, the boot sector, Architecture of Windows 2003/XP, the Recycle bins, DLL files, The Windows registry and its importance, the device drivers, the addition of new hardware and software to a Windows 2003/XP system, the device manager of 2003/XP, changing of display settings, setting of screen savers and their password protection, configuration of keyboard & mouse in Windows 2003/XP

Module III : Taking Care of System Health & Debugging: System testing and diagnosis using available diagnostic programs like AMIDIAG, PC tools, Norton utilities etc and latest trends. Debugging Tools, procedures, features and their use.

Module IV : Windows based back-up Procedures & Disaster Prevention : Write protection of your software MS-Windows delete protection, crash recovery, preventing hard disk failure, Back-up & Restore procedures, types of back-up, media for back-up, Raid systems. Preparation of bootable CD and FD.

REFERENCES

- Windows Internals – Part 1 by Mark Russinovich, David A. Solomon and Alex Lonescu (2 January 2013)
- Windows Internals – Part 2 by Mark Russinovich, David A. Solomon and Alex Lonescu (2 January 2013)

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -V	Total Marks-50
Practical	

WEB DEVELOPMENT – LAB

AIM :

- To give hands-on Exposure to various tools and languages required for technical and creative design of web sites

OBJECTIVES

To practice moderately complex use of the following scripts/languages/technologies :

- ✓ HTML, DHTML, CSS
- ✓ Java script
- ✓ CGI Script, Perl

SYLLABUS

The laboratory work will consist of 15-20 Experiments

Part A (HTML)

Part B (Javascript, XML, Perl, CGI)

1. Practicing basic HTML tags, text tags test styles, paragraph styles, headings, lists

2. Tables in HTML, Frames in HTML, nested frames, Link and Anchor Tags
3. Including graphics, video and sound in web pages, including Java applets
4. Layers & Image Maps
5. Creating animated Gifs, simple flash animations
6. Cascading Style sheets
7. DHTML
8. Creating and browsing XML database
9. Installing VRML plugins and viewing VRML source files
10. HTML forms and Fields
11. Exercises covering basic introduction to perl
12. Installing web server, setting CGI, connecting HTML forms to Perl Scripts (CGI programming)
13. Exercises covering basic introduction to Javascript

14-20 : Development of a web site involving a variety of tools practiced above

REFERENCES

❖ V.K Jain, Advanced Programming in Web Design, Cyber Tech Publications

Additional

- H M Deitel, P J Deitel & A B Goldberg, Internet and Worldwide web programming: How to Program, 3/e, Pearson Education

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -VI	Total Marks-50
Practical	

COMPUTER HARDWARE – LAB

- Students should be provided with hands-on experience on hardware assembling, trouble shooting, installation of operating system and other softwares, ensure security of systems and so on.

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Syllabus of Information Technology

SEMESTER – 4

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -I	Total Marks-50
Time-3hours	

Mathematics II

SYLLABUS

Module I : Proof Methods, Logic: Formal proofs, Propositional reasoning, Proofs by contradiction, False Proofs, Proofs by Induction, Symbolic Logic: Boolean expressions, Logical Equivalance, DeMorgan's Law, tautologies, Implications, Arguments, Fallacies, Normal forms in prepositional logic, Resolution

Module II : Set Theory, Relations, Functions : Review of Set theory concepts, set operations, characteristic functions, fuzzy set theory basics, Relations: opetrations on relations, equivalence relations & partitions, partial orders, ordered sets, Warshal's algorithm, Functions, Recursion.

Module III : Algebraic Structures : Algebra, DeMorgan's Law, Group, Ring, Polish Expressions, Communication Model and error corrections, Hamming Codes

Module IV : Graph Theory : Introduction, Graph Notation, Topological sort, Graph Propagation algorithm, Depth First, Breadth-first searches, Shortest Path algorithms, Directed acyclic graphs.

Module V : Miscellaneous Topics : Graphical representations of functions, Graphical interpretation of convergence, Complex Mapping, Fractals, Grammars, Languages and Automaton. Introduction to Matlab (Matrix, Linear Algebra, Graphics operations)

REFERENCES

- Rajendra Akerkar, Rupali Akerkar, Discrete Mathematics, Pearson Education

Additional

- RM Somasundaram, Discrete Mathematical structures
- Calvin C. Clawson, Mathematical Mysteries, The beauty and magic of Numbers, Viva Books Pvt Ltd.
- Rudra Pratap, Getting Started with MATLAB, Oxford University Press

Program- B.VOC	Externnal-80
Branch-Information Technology	Internal-20
Paper -II	Total Marks-100
Time-3hours	

NETWORK ADMINISTRATION

1. SYLLABUS

Module I: Network fundamentals and Data Communication: Local Area Network (LAN), Metropolitan Area Network (MAN), Wide Area Network (WAN), Wireless Networks, Internetworks; Data Communication: Channel capacity. Transmission media-twisted pair, coaxial cables, fiber-optic cables, wireless transmission, multiplexing, switching, narrowband ISDN, broadband ISDN, ATM, High speed LAN's, The Web and HTTP; File Transfer: FTP; Electronic Mail in the Internet; DNS-The Internet's Directory Service.

Module II: Transport Layer- Introduction and Transport-Layer Services, Multiplexing andDemultiplexing, Connectionless transport: UDP, Principles of Reliable Data Transfer, Connection-Oriented Transport: TCP, principles of Congestion Control, TCP Congestion Control, Networking Layer & Routing-Introduction and Network Service Model, Routing principles, Hierarchical Routing, Internetworking: Switch/Hub, Bridge, Router, Gateways, Concatenated virtual circuits, Fragmentation, firewalls. The Internet protocol, Routing and the Internet, What's Inside a Router, IPv6, Multicast Routing, Mobility and the Network Layer.

ModuleIII: Link Layer- Data Link Layer: Introduction and Services, Error Detection and Correction Techniques, Multiple Access Protocols, LAN Addresses and ARP, Ethernet. Hubs, Bridges and Switches, Wireless links, PPP: The Point-to-point protocol, Asynchronous Transfer Mode (ATM), Frame Relay

Module IV: Network Security-cryptography-public key, secret key. Wireless & Mobility-Introduction to Wireless and Mobility. Wi-fi, Mobility principles, Cellular Telephony, mobile IP, Ad hoc Networks, Moving Beyond the Link Layer-An Interlude.

2. REFERENCIES

- TCP/IP Network Administration by Craig Hunt
- The practice of System and Network Administration by Thomas A. Limon celli and Christina J. Hogan
- Windows XP Professional Network Administration (Networking Series) by Toby Volte

Module 2: Conceptual Frame work: Accounting Concepts, Principles and Conventions, Accounting Standards

Module 3: Recording of transactions: Journals, Subsidiary Books, Ledger, Cash Book, Bank Reconciliation Statement, Trial Balance. Depreciation: Meaning, need & importance of depreciation, methods of charging depreciation.

Module 4: Preparation of final accounts: Preparation of Trading and profit & Loss Account and Balance Sheet of sole proprietary business with adjustments.

Module 5: Computerized Accounting: Journalizing and preparing final accounts using

TALLY

Program- B.VOC	Externnal-80
Branch-Information Technology	Internal-20
Paper -III	Total Marks-100
Time-3hours	

OBJECT ORIENTED PROGRAMMING

3. **AIM:**

- To Introduce the Student to the basic concepts of object orientation and impart skills in an industry standard object oriented language

4. **OBJECTIVES:**

On the completion of this course, the student will be able to

- ✓ Understand the concepts of classes and object
- ✓ Define classes for a given situation and instantiate objects for specific problem solving
- ✓ Reuse available classes after modifications if possible
- ✓ Possess skill in object oriented thought process

5. **SYLLABUS**

Module-I: Concept of Object orientation- why related data and methods should be kept as a single unit –comparison with procedural and structured programing – Classes and objects- data abstraction, encapsulation, inheritance, polymorphism, dynamic binding, message passing Advantages of object orientation-reusability, maintenance, security, comfort in programming. Input and output streams in C++; Basic data types and declarations.

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Officer on Special Duty (Judicial)

Module-II: Classes and objects in C++, access modifiers, static members, friend functions, Constructors and Destructors, polymorphism, Operator Overloading and type conversion, anonymous objects

Module-III: Inheritance- parent and child classes, private, public and protected inheritance, multiple inheritance and multi-level inheritance, Virtual base classes. C++ and memory models-new and delete operators, Heap, dynamic objects.

Module-IV: Binding & Polymorphism: Early binding, late Binding, pointers to derived class objects, virtual functions, pure virtual functions, abstract classes, object slicing, exception handing in C++: try, throw and catch.

REFERENCES

Core

- Ashok N. Kamthane, Object oriented programming with ANSI & Turbo C++, Pearson

Additional

- H M Deitel and PJ Deitel, C++: how to program, pearson Education
- Robert Lafore, Object Oriented Programming in Turbo C++, Galgotia publications

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -IV	Total Marks-50
Time-3hours	

VISUAL TOOLS

1. AIM:

- ✓ To get an exposure to visual language

2. OBJECTIVES:

At the end of this course, the students will be able to:

- ✓ Give an introduction about visual basic
- ✓ Explain the fundamentals of visual basic
- ✓ Discuss the various controls in visual basic
- ✓ Narrate database connectivity in visual basic

3. SYLLABUS

Module I: Introduction Visual Basic IDE- Menu bar, Tool bar, Tool Box, Form designer, Code Editor, Properties Window, Form Layout, Project Explorer, Immediate Window, Locals Window and Watch Window; Features in Visual Basic 6.0: The Language Object Based programming, Different Data Access models, Internet enabled features. Wizards. Visual Basic Language: Variables, constants, Data Types, User Defined Data Types, scope of Variables, - Life Time of a Variables, Naming Conventions in VB, Arrays, Dynamic Arrays, Collections, procedures,- Calling Procedures, Subroutines, Functions, calling Functions, Arguments, Named and positional arguments, Control flow Statements, Loop Statements, Exit Statement.

Module II: Visual Basic Standard ActiveX Controls & Objects: Standard Controls: Textbox, Checkbox, Combo Box, Option Button, Button, Massage Box, PictureBox, Image Control, Shape contro, System Controls, Timer Control, OLE container Contro, Common Dialogs control. Event driven programming and Events of Standard Active X Controls. i.e., TextBoxListBox, ComboBox etc.Creating Groups, Creating and adding project files.Standard EXE Project file, adding form file. Designing menu Objects.Single Document Interface and Multiple Documents Interface. Drag Drop Operations.

Module III: Input Validation: over view of validation field level validation, form level validation masking. Error handling: General Error handling in visual Basic, Built in VB Error Objects Error Types, Creating Error handlers. Compilation: P-code compilation, Native code Compilation, Conditional Compilation, Optimization.

Module IV: Database programming: Introduction to different databases. Data-bound controls. Data control. Data Access Object Model. Accessing Native Database with DAO, ODBC Connectivity to any RDBMS, Remote Data Access, remote Data Control, Accessing ODBC data base with RDO, Data Report Designer: Creating Data Reports, Various Types of Reports, ActiveX Data objects: Active Data Object Model, Uses of ADO Mode, Accessing ODBC, database with ADO. Object linking and Embedding: Overview of OLE, In place Activation, Creating OLE Servers. ActiveX Controls: Ms Flex Grid, Flex Grid. Image list Control, list View Control, Tool Bar, Status Bar etc.

REFERENCES

Core

- Halvorson, Microsoft visual basic 6.0 professional –Step by, PHI, Second Edition

Program- B.VOC	Externnal-50
Branch-Information Technology	Internal-10
Paper -V(Practical)	Total Marks-50

VISUAL TOOLS LAB

The laboratory work may consist of 15-20 experiments covering the following topics

1. Introduction to visual basic IDE- demonstration of various types of windows in IDE
2. Mouse, Keyboard, focus and Scroll events.
3. Demonstrate the syntax and use of various VB data types, operators and control structures
4. Demonstration and use arrays and its types- (static, dynamic and control arrays)
5. Implementation of Functions, Procedures and sub routines
6. Implementation of various standard activeX controls- Text box, list box check box combo box, option button, picture box, image box, timer, OLE control and message box
7. Programs to demonstrate various methods, events and properties of activeX controls
8. Program to implement the menu Editor
9. Implementation of Single and Multiple Document Interface
10. Implementation of Input validation (form and field level)
11. Implementation of Error handling in VB
12. Program to implement Data bound controls
13. Implementing ADO to access database.
14. Creating and generating data reports using report designer

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -VI(practical)	Total Marks-50

OOP & NETWORK LAB

1. AIM:

- To provide an opportunity for hands-on practice of object oriented programming and problem solving in a industry- standard programming language and also hands-on practice in various user-defined static and dynamic data structures.

2. OBJECTIVES:

This course will provide hands-on practice in a the following topics, under a variety of programming situations with a focus on writing, debugging and analyzing object oriented programs :

- ✓ Basic data types and control structures in C++.
- ✓ Managing classes and objects in a variety of situation
- ✓ Solving moderately complex problems involving the above and requiring selection of appropriate structures and algorithms

3. SYLLABUS

The laboratory work will consist of 15-20 experiments, only by using class concept

Part A

1. Testing out and interpreting a variety of simple programs to demonstrate the syntax and use of the following features of the language: basic data types, operators and control structures.

2. Solving a problem using (i) structures and (ii) classes and comparison and comparison between the two (the problem logic and details should be kept minimal and simple to enable focus on the contrast between the two methods, for example declaring result of a set of students defining the name and total marks in the program itself).

3. Class definitions and usage involving variety of constructors and destructors

Part B

4. Programs involving various kinds of inheritances,

5. Programs involving operator overloading and type conversions

6. Programs involving virtual base classes, friend functions

7. Program to demonstrate early and late binding

8. Program to allocate memory dynamically

9. Program involving class and function templates

10. Programs to demonstrate (i) string processing (ii) file streams (iii) a variety of selected library functions

11. Exception handling

12. Handling of 2-D arrays using pointers

13. Debugging programs involving syntactic and/or logical errors

1. Programs using TCP Sockets (like date and time server & client, echo server & client, etc...)
2. programs using UDP Sockets (like simple DNS)
3. Programs using Raw sockets (like packet capturing and filtering)
4. Programs using RPC
5. Simulation of sliding window protocols
6. Experiments using simulators (like OPNET)
7. Performance comparison of MAC protocols
8. Performance comparison of Routing protocols
9. OPEN SHORTEST PATH FIRST ROUTING PROTOCOL
10. Study of TCP/ UDP performance

REFERENCES

- Deitel&deital, C++: How to program, pearson Education

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Syllabus of Information Technology

SEMESTER-5

Program- B.VOC	Externnal-40
Branch-Information Technology	Internal-10
Paper -I	Total Marks-50
Time-3hours	

Intrduction to information Security

1. AIM:

- ✓ Tointroduce internetworking and the issues and methods of information security over internetworks.

2. OBJECTIVES:

On completion of this course student shall:

- ✓ Be aware of Principles and Protocols of internetworks
- ✓ Understand the basic issues in information security
- ✓ Understand the concept of ciphers and cryptography.
- ✓ To impart an idea on various ciphers
- ✓ Understand the concept of digital signatures and e-mail security policies
- ✓ Impart an idea on malicious software and remedies.

3. **SYLLABUS**

Module I:**Information Security:**Network security, Confidentiality, integrity, authentication, security policy, basic network security terminology, cryptography, symmetric encryption, substitution ciphers, transposition ciphers, steganography, Block ciphers, modes of operation, Data Encryption Standard, public key cryptography, application, strength and weakness, RSA algorithm, Key distribution(concepts only)

Module II: **Authentication**, authentication methods, message digest, digital signatures, digital signature algorithm, DSS E-mail security: Pretty Good privacy, working of PGP, S/MIME, MIME, IP Security, Architecture, IPSec: strengths and benefits, IPv4, IPv6, ESP protocol, Web Security: Secure Socket layer, SSL session and connection.

Module III: Malicious Software,viruses, working of anti-virus software, worms, Trojans, spyware, firewall, characteristics of firewall, packet filters, application level gateways , firewall architecture, trusted systes.

Module IV : Security and Law:- Regulations in India. Information Technology Act 2000/2008. Cyber Crime and the IT act 2000/2008. India Contract Act 1872, India penal Code, India copyright Act, Consumer Protection Act. Future Trends- The law of Convergence.

4. **REFERENCES**

4.1 Core

- Brijendrasingh, Cryptography & Network Security, PHI.
- Pachghare, V.K, Cryptography and information Security, PHI.

Program- B.VOC	Externnal-80
Branch-Information Technology	Internal-20
Paper-II	Total Marks-100
Time-3hours	

PROGRAMMING IN JAVA

1. **AIM:**

- To introduce students to basic features of java language and selected APLs

2. **OBJECTIVES:**

- ✓ Let students install and work with JDK, also make them aware the use of java doc.
- ✓ Practice basic data types, operators and control structures in Java

- ✓ Practice basic handling of classes and objects in java
- ✓ Introduce the following selected APLs: I/O, Strings, Threads, AWT, Applet, Networking
- ✓ Idea to approach and use a new package

3. SYLLABUS

MODULE-I: Brief History of Java, Special Features of Java, data Type & Operators in Java, Arrays, Objects, the Assignment Statement, Arithmetic Operators, Relational and Logical Operators in Java, Control Structures, The Java Class, Constructor, simple Java Application, simple Java Applet, Finalizers, Classes inside Classes: composition.

Module-II: Inheritance & Interface,Deriving Classes, Method over-riding, Method Overloading, Access Modifiers, Abstract Class and

Method, Interfaces, Packages, Imports and Class Path.

Module-III: Exception Handling, The Try-Catch Statement, Catching more than one Exception, The finally Clause, Generating Exceptions, Threads: Introduction, Creating Threads in Applications, Method in Thread Class, Threads in Applets.

Module-IV: Java APIs- overview of APIs, IO Packages, Java Input Stream Classes, Java output stream classes, File Class, Graphic & sound: AWT and swing, Graphic methods, Fonts, Loading and Viewing Images, Loading and Playing Sound, AWT & Event Handling, Layouts, JDBC.

4.REFERENCES

4.2 Additional

- Deitel, Java: How To Program, Pearson Education