M.Sc.-01/APGDCA- 01
Foundation Course in IT & MS-Office 2000

S. No	Syllabus	Coverage
1	***Introduction***: Historical evolution of computers, Classification of computers, Model of a digital computer, Functioning of a digital computer, Why computers are useful ? Human being Vs computer, Computer as a tool, Applications of computers (desktop publishing, sports, design and manufacturing, research and design, military, robotics, planning & management, marketing, medicine & health care, arts, communications).	
2	***Number systems and Boolean Algebra*** : What is Number system, necessity of binary number system, binary, octal and hexadecimal number system, inter-conversion of numbers, binary arithmetic, character codes, concepts of Boolean Algebra and its requirement.	
3	***Input/Output Devices*** : Punched cards, card-readers, key-punching machines, keyboards, mouse, joysticks, trackballs, digitizer, voice-recognition, optical-recognition, scanners, terminals, point-of-sale terminals, machine-vision systems. Hard-copy devices : Print quality, Impact printers - DMPs, Daisy-wheel printers, Line-printers, Drum printers, Chain printers; Non-impact printers - Inkjet, Laser, Thermal, LED; Plotters. Soft-copy devices : monitors, video-standards (VGA and SVGA).	
4	***Memory & Mass Storage Devices*** : Characteristics of memory systems, types of memory, RAM, ROM, magnetic disks - floppy disk, hard-disk; optical disks - CD, CD-I, CD-ROM; Magnetic tapes; Concepts of Virtual and Cache memory.	
5	***Software Concepts*** : Introduction, types of software - System & Application software; Language translators - Compiler, Interpreter, Assempler; Operating system - Characteristics, bootstrapping, types of operating, operating system as a resource manager; BIOS; System utilities - Editor, Loader, Linker, File Manager. Concept of GUI, GUI standards.	
6	***Social Concerns*** : Positive and Negative Impacts of Computer Technology, Viruses and their types, Computer Crimes.	
7	***Applications of Computers*** : Scientific, Education, Medicines & Health, Research, Sports, etc	
8	***MS-Office 2000*** ***MS-Word*** : Introduction to MS-Word, Standard Toolbar, WordWrap, Text formatting, Formatting Paragraphs, Aplying Effects to Text, Applying Animation to Text. ***MS-Excel*** : Introduction to MS-Excel, Working with Toolbars, Formatting, Formulas, Data Management, Graphs & Chart, Macros, and other additional Functions. ***MS-PowerPoint*** : Introduction, PowerPoint Slide Creation, Slide-show, Adding Graphics, Formatting, Customizing and Printing. ***MS-Access :*** Introduction, Understanding Databases, Creating a Database and Tables Automatically, Creating and Customizing a Form, Adding, Editing, Sorting and Searching of Records, Creating and Printing Reports, Queries, Creating a Database and Application, Linking, Importing and Exporting Data, Form, Creating Reports, Creating Charts and Pivot Tables.	

M.Sc.-02/APGDCA- 02
Computer Networking & Multimedia

S. No	Syllabus	Coverage
1	***Computer Networking***	
	Introduction to Computer Network, Why Computer Network ? Key Issues for Computer Network, Types of Network : LAN, WAN and MAN; Criteria for Classification of Computer Network, LANs : Hardware requirements for LAN, Transmission Channel for LAN, Network Interface Unit, Servers & Workstations, LAN Software. Introduction to Ethernet, Token Ring : Basics and Working, Cables, ring speed. WAN : Transmission Channel for LAN, hardware requirements : Bridges, Routers, Gateways. Private Networks, Public Networks : ISDN, PSTN, PSDN, Value Added Networks.	
2	Connecting PCs : Simple switches, Printer sharing buffers, Zero-slot LANs, Media sharing LANs, Printer Servers, Client and Servers, Interface Cards, Media Access Control, Operating System features, OSI Model, TCP/IP Model, Data encoding & Communication Techniques, Multiplexing and Communication Hardware	
3	Network topology, Network Protocols, Applications of Computer Network. Distributed data processing, Teletext and Videotext Networks	
4	Communication Channels : Wire cables (Telegraph, telephone, twisted-pair, co-axial), Microwave, Fibre-optics, Communication satellites; Channel sharing, data-transmission.	
	Multimedia	
5	Introduction to multimedia technology - Computers, Communication and Entertainment; Framework for multimedia systems; M/M devices, presentation devices and the user interface; M/M presentation and authoring; Digital representation of sound and transmission; brief survey of speech recognition and generation; digital video and image compression; JPEG image compression standards; MPEG motion video compression; DVI technology; time-based media representation and delivery.	
6	Audio Compression and Decompression, Audio Synthesis, MIDI, Speech Recognition & Synthesis, Video Capturing, Compression & Decompression, Real-time 3D, LANs and Multimedia.	
7	Applications of M/M; Intelligent M/M system, Desktop Virtual Reality (VR), VR operating System, Virtual environment displays and orientation tracking; visually coupled system requirements; intelligent VR software systems.	
8	Applications of environments in various fields viz. Entertainment, manufacturing, business, education, etc.	

M.Sc.-03/APGDCA-03
Programming in C and Data Structure

S. No	Syllabus	Coverage
	Algorithm Development	
1	Introduction to Problem Solving : Top Down Design, Algorithm, Characteristics of Algorithm, Implementation of Algorithms, Efficiency of Algorithms, Analysis of Algorithm.	
2	Fundamental algorithms, Array Techniques, Merging, Sorting & Searching Techniques, Text Processing and Pattern Search, Dynamic Data Structure Algorithms, Recursive Algorithms.	
3	Elements of Program Style, Flowcharts : Flowchart Symbols, Its Types, Benefits and Limitations; Decision Tables, Pseudocodes : Using User Input, Files, Reports and Output on Paper/Console; Practice of Algorithm Development and Flowcharting	
	C Programming	
4	Basic concepts of programming, problem solving, algorithm designing and flowcharting, concept of structured programming, evolution of C language, advantages of C, variables and constants, operators, expressions, loops, arrays, functions, structures, pointers, file-handling, pre-processing, header-files.	
	Data Structure	
5	Fundamental Notations: Primitive and Composite data types. Time and Space complexity of algorithms.	
6	Data structures: Arrays, Stacks, Queues, Linked Lists, Trees and Graphs.	
7	File Structures: Concepts of fields, records and files. Sequential file organisation, ISAM, Hashing techniques, Inverted Lists and Multilists.	
8	Sorting: Internal and External sorting. Searching techniques and Merging algorithms	

M.Sc-04/APGDCA-04
Computer Organisation And Architecture

S. No	Syllabus	Coverage
1	**Representation of Information :** Number Systems, Integer and Floating-point representation, Character codes – ASCII and EBCDIC	
2	**Basic Building Blocks and Circuit Design** : OR, AND, NOT, XOR Gates; De Morgan's theorem, Universal building blocks, laws and theorems of boolean algebra, Simplifying logic circuits – sum of product and product of sum form, algebraic simplification, Karnaugh simplification; arithmetic circuits; flip-flops, counters; shift registers; encoder, decoder, multiplexor, demulti -plexor circuits.	
3	**Register transfer and Micro-operations**: Register Transfer Language, Bus and memory. Transfers, Arithmetic. Logic Micro -operations, Shift Micro-operations	
4	**Basic Computer Organization and Design**: Instruction and instructions Codes, Computer instructions, Timing and Control, Instruction Cycle, Memory Reference Instructions, Input-Output and Interrupts; Complete Computer Description.	
5	**Programming the Basic Computer**: Machine Language, Assembly Language, The assembler, program loops, programming Arithmetic and Logic, Subroutines, Inputs-Outputs programming. Micro-programmed Control; Control Memory, Address Sequencing, Micro-programe Example, Design of Control Unit.	
6	**Central Processing Unit**: General Register Organization Stack Organization Instruction Formats, Addressing Modes, Data and Transfer Manipulation, Program Control, Reduced Instruction Set Computer, Pipeline and Vector Processing parallel processing Pipelining, Arithmetic Pipeline, RISC Ouoekubem Vector Processing, Arrays Processors	
7	**Computer Arithmetic**: Addition and Subtraction, Multiplication Algorithms, Division algorithm, Floating-Point Arithmetic Operations, decimal arithmetic Unit, Decimal Arithmetic Operations.	
8	**Input-Output Organization**: Peripheral Devices, Input-Output interface, Asynchronous Data Transfer, Modes of transfer, Priority interrupt, Direct Memory Access(DMA), input-output processors(IOP), serial communication multi-processors, characteristics of multi-processors, Inter-connection structures, Inter-processor Arbitration, Inter-processor Communication and Synchronization, Cache Coherence	

SECOND SEMESTER
M.Sc.-06/APGDCA-06
Visual C++

S. No	Syllabus	Coverage
1	Introduction to Visual C++, Getting started with Visual C++, Reading Keystrokes from the keyboard, Handling mouse in VC++, Creating Menus, Toolbar Buttons, Status Bar prompts. Dialog Boxes: Using Buttons and Text Boxes, Creating Check boxes and Radio Buttons, LIST Boxes, Combo Boxes and Sliders, File Handling, Multiple Documents, and Multiple Views, creating Internet Programs-including a Web Browser, Creating Active X controls.	
2	**COM**: Introduction, Building and using COM Servers in VC++, Building and Using Active X controls in VC++, Building Internet COM components with VC++, COM Security, New COM features Features in Windows 2000, Debugging and Profiling COM Components, Deploying COM Applications.	

M.Sc.-07/APGDCA-07
Visual Basic & Oracle

S. No	Syllabus	Coverage
1	***Visual Basic*** Introduction, Analyzing, Controls and Properties, Coding, Loops, Dialog Boxes, Additional Controls- Option Buttons, Frames, Check Boxes, Scroll Bars, Timer Control, Procedures and Functions, Using Debugging Windows, Database Programming, Crystal Reports. Simple Active X controls.	
	Oracle	
2	***Introduction to Oracle*** : Overview of RDBMS, Getting started, Modules of Oracle, Invoking SQLPLUS, Data types, Data Constraints, Operators, Data manipulation - Create, Modify, Insert, Delete and Update; Searching, Matching and Oracle Functions.	
3	***SQL*Forms*** : Basic concepts, Form Construction, Creating default form, user-defined form, multiple-record form,Master-detail form.	
4	***PL/SQL Blocks in SQL*Forms*** : PL/SQL syntax, Data types, PL/SQL functions, Error handling in PL/SQL, package functions, package procedures, Oracle transactions.	
5	***SQL*ReportWriter*** : Selective dump report, Master-detail Report, Control-break Report, Test report.	
6	SQL*Menu : Various menu styles, using pull-down & bar-menu, Authorisation of SQL*Menu, Creating Oracle Menu, Granting Role Access, Generating & Executing Applications.	
7	***Stored Procedures/Functions*** : Stored procedures, How to create & execute procedures ?, Where to store procedures ?; Stored functions, How to create & execute functions ?, Where to store functions ? Where do procedures & functions reside ?	
8	***Database Triggers*** : Introduction, Use & type of database Triggers, Database Triggers Vs SQL*Forms, Database Triggers Vs. Declarative Integrity Constraints, How to apply Triggers ?, BEFORE Vs. AFTER Trigger Combinations, Creating a Trigger, Dropping a Trigger.	
9	***Utilities*** : Export/Import, SQL*Loader.	

M.Sc.-08/APGDCA-08
System Analysis & Design

S. No	Syllabus	Coverage
1	Overview of system analysis and design. Business systems concepts, system development life cycle, project selection, feasibility, analysis, design, implementation, testing and evaluation.	
2	Project Selection : Source of Project requests, managing project review and selection, preliminary investigation.	
3	Feasibility Study : Technical and economical feasibility, cost and benefit analysis	
4	System requirement specification and Analysis : Fact finding techniques, Data flow diagrams, data dictionaries, process organisation and interactions, Decision analysis, decision trees and tables.	
5	Detailed design modularisation, modula specification, file design, system development involving data bases.	
6	System Control and Quality : Assurance4-Design objectives reliability and maintenance, software design and documentation tools top down , bottom up and variants, Units and intergration testing, testing practices and plans. System Controls, Audit trails.	
7	System Administration and Training : conversion, and operation plans.	
8	Hardware and Software Selection : Hardware acquisition, memory process, peripherals, bench marking, vendor selection, software selection-operating system languages, language process, performance and acceptance criteria.	