FACULTY OF COMPUTER APPLICATION

SYLLABUS

POST GRADUATE DIPLOMA IN

COMPUTER APPLICATIONS

(PGDCA)

JODHPUR NATIONAL UNIVERSITY

JODHPUR

POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS (PGDCA)

PAPER I INTRODUCTION TO INFORMATION TECHNOLOGY

Unit I
Historical Evolution of Computer: characterisation of computers, types of computers, the computer generations. Basic Anatomy of Computers: memory unit, input-output unit, arithmetic logic unit, control unit, central processing unit, RAM, ROM, PROM, EPROM. Input-Output Devices: punched hole devices, magnetic media devices, printers, keyboard, scanners, other devices such as plotters, voice recognition and response devices, off-line data entry devices.

Unit II
Computer Software : Introduction, types of software, systems software, GUI, operating system, high level languages, assemblers, compilers and interpreters, system utilities, application packages, stages in the development of software, program testing and debugging, program documentation, concept of firmware.

Unit III
Networking: Basics, types of networks (LAN, WAN, MAN), hardware and software for LAN and WAN, topologies, Information, data processing, Data base concepts, database redundancy,
inconsistency, difficulty in accessing the data, concurrent access anomalies, security problem, integrity of data.

References:
1. V Raja Raman, "Fundamentals of Computer", PHI, N. Delhi, 1996.
2. N Subramanian, "Introduction to computers", Volume -I.
3. Dr. Rajesh Trehan, "A complete book on IT", Cyber Tech.

PAPER II   Operating Systems

Unit I
Introduction to operating System, its need and Operating system services, Definition, Early systems, Introduction to various types of operating systems: Batch processing operating system, Multiprogramming operating system, Time Sharing operating system, Multi tasking operating system, Distributed operating system, Network operating system, Real time operating system, Multi processor system and parallel processing.

Unit II
Disk Operating System (DOS): Booting process of DOS, Purpose of autoexec.bat and config.sys, internal commands and external commands, using wild card characters, Creating batch files, getting and setting date , time and prompt, Disk related commands: Format, Fdisk, Chkdsk, Scandisk, Defrag.

Unit III
Windows: GUI, Icon, Toolbar Working with files, closing and saving a file Mouse Mechanics: Click, double click, Drag and drop method, Installation of a new software, Control panel, Explorer, Accessories, Network Neighbourhood, system tools, Recycle bin, Files and directory management under windows, Running programs

Text books:
1. Rathbone, "Windows for dummies", Pustak mahal.
2. Stan Kelly-Bootley, Understanding UNIX", Sybex Tech asian edition.
3. Silverschatz, "Operating system concepts", Pearson Education India.

PAPER III DATABASE MANAGEMENT SYSTEM

Unit I
Traditional file processing system: Characteristics, limitations, Database: Definition, composition. Database Management system: Definition, Characteristics, advantages over traditional file processing system, Implication of Database approach, User of database, DBA and its responsibilities, Database schema, instance DBMS architecture, data independence, mapping between different levels. Database languages: DDL, DML, DCL. Database utilities, Data Models, Keys: Super, candidate, primary, unique, foreign.

Unit II
Entity relationship model: concepts, mapping cardinalities, entity relationship diagram, weak entity sets, strong entity set, aggregation, generalization, converting ER diagrams to tables. Overview of Network and Hierarchical model. Relational Data model: concepts, constraints. Relational algebra: Basic operations, additional operations

Unit III
Database design: Functional dependency, decomposition, problems arising out of bad database design, normalization, multi-valued dependency. Database design process, database protection, database integrity, database concurrency: Problems arising out of concurrency, methods of handling concurrency. Data

recovery, database security: Authentication, authorization, methods of implementing security.

Text Book:
1. Elmisry Nawathy, "Introduction to Database Systems", Pearson Education India.
2. Content Development Group" Working with MS-OFFICE 2000 ", TMH.
References:
1. Henry F. Korth, Abraham, "Database System Concepts", Tata McGraw Hill.
2. Naveen Prakash, Introduction to Database Management", TMH, 1993.
3 C.J. Date, "An Introduction to Data Base Systems", Pearsoned Education India.

PAPER IV PROBLEM SOLVING USING C

Unit I
Programming process: Problem definition, program design, coding, compilation and debugging Identifiers and keywords, data types, input and output, type conversion, operators and expressions: Arithmetic, unary, logical and relational operators, assignment operator, conditional operator, library functions.

Unit II
Control statements: branching, looping using for, while and do-while statements, nested control structures, switch, break and continue statement.
Functions: definition, call prototype and passing arguments to a function, recursion versus iteration. Storage classes: automatic, external and static variables.

Unit III
Arrays: Definition, accessing elements, initialization, passing to functions, multi dimensional arrays, strings Pointers: address and deterencing operators, declaration, assignment, passing pointer to functions, pointer arrays. Structure: variables, accessing members, nested structures, pointer to structures, self referential structures.

Text Books
1. Byron Gottfried , "Programming with C, Second edition, Schaum' s outline series" TMH
Reference books:
1. Ram Kumar and Rakesh Aggarwal : Programming in Ansi C, TMH.

2. B.W. Kerrighan and D.M.Richie, "The C programming language", 2nd edition, PHI.
3. H.H. Tan & T.B. Dorazio," C Programming for engineers & Computer Science", Mcgraw Hill international edition.

PAPER V   INTERNET AND E-COMMERCE

Unit I
Computer Networks: definition, need for computer networks and advantages, Hardware, Software, Users, Reference Models: OSI Reference Model, TCP/IP reference Model, Types of Networks: LAN, WAN, MAN, and value added network, there features, network topologies

Unit II
Transmission media: magnetic media, twisted pair, co-axial cable, radio transmission, line of sight transmission and communication satellite, wireless transmission. Switching: Virtual Circuits versus Circuit Switching.

Unit III
Introduction to Internet: Relays: Repeaters, Bridges, Routers, Gateways.
Internet: How networks differ, concatenated virtual circuits, connectionless internetworking, Firewalls, internet architecture. Applications of internet: Email, WWW and multimedia, FTP: introduction, data transfer and distributed computation. WWW: the client side, the server side, web browser, Net surfing.

Text Books:
1. Andrew S. Tanenbaum, "Computer Networks", Pearsoned Education India.
Reference books:
1. Douglas E. Comer, "Computer Networks and Internets" Pearsoned Education.
2. Achute S Godbole,"Data Communications and Networks", Tata Mcgraw Hill.

PAPER VI MANAGEMENT INFORMATION SYSTEM

Unit I
Framework of Management Information Systems: Importance's of MIS, Concepts of Management, information, system, Definition of MIS, information technology and MIS, nature and scope of MIS, MIS characteristics and functions. Structure and classification of MIS: structure of MIS, MIS classification, Brief introduction of functional information system, financial

information system, marketing information system, production/ Manufacturing information system, human resources information system.

Unit II
Decision making and MIS**:** decision making, Simon's model of decision making, types of decisions, purpose of decision making, level of programmability, knowledge of outcomes, methods of choosing among alternatives, decision making and MIS. Information and system concepts: types of information: strategic information, Tactical information, Operational information. Information quality, dimensions of information, System: Kinds of Systems, System related concepts, elements of systems, Human as an information processing system.

Unit III
System development stages**:** System investigation, system analysis, system design, construction and testing, implementation, maintenance. System development approaches (a brief introduction): waterfall model, pro-typing, iterative enhancement model, spiral model. System analysis: introduction, requirement definition, strategies for requirement definition, structured analysis tools: data flow diagram, data dictionary, decision trees , structured English, decision trees. System Design: objectives, conceptual design, design methods, detailed system design.

Text books:
D.P. Goyal, "Management information systems", Macmillan India Ltd.
References:
1. Bentley,"System Analysis and Design", TMH.
2. Robert G. Murdick & Joel E. Ross & James R. Claggett, "Information Systems for Modern Management" PHI.
3. Gordon B. Davis & M.H. Olson, "Management Information Systems: Conceptual Foundation, structure & Development".

PAPER VII   **INDUSTRIAL BASED ENVIRONMENTAL STUDIES**

UNIT – 1
Environment – Definition – Scope – Structure and function of eco system's procedures, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chain, food web and ecological pyramids - concepts of sustainable development.

UNIT – 2

Natural resources: Renewable – air, water, soil, land and wildlife resources. Non- renewable – mineral, coal, oil and gas. Environmental problems related to the extraction and use of natural resources.

UNIT – 3

Biodiversity – Definition – values – consumption use, productive social, ethical, aesthetic and option values threats to biodiversity – Hotspots of bio diversity – conservation of bio-diversity: In-situ Ex-situ. Bio-wealth – national and global level.

UNIT – 4

Environmental pollution : Definition – causes, effects and mitigation measures – Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution – Nuclear hazards – solid wastes acid rain – climate change and global warming environmental laws and regulations in India – Earth summit.

UNIT – 5

Population and environment – Population explosion – Environment and human health – HIV / AIDS – Women and child welfare – Resettlement and Rehabilitation of people, role of information technology in environmental health – Environmental awareness.