BCA SYLLABUS – 4TH SEMESTER

BCA-401: Data Base Management System

CONTACTS: 3L + 1T

CREDITS: 4

Introduction to DBMS, architecture, administration roles, data dictionary,

Traditional models, three-level architecture, hierarchical model, network model and relational model, File organization, Security.

Relational model – definitions and properties, keys, integrity rules, relational algebra, joins, set operations.

SQL constructs, embedded SQL, SQL Query.

Database design, conceptual, logical and physical models, ER diagram and model,

Functional Dependency (Armstrong's Axioms), Normal forms (1NF, 2NF, 3NF, BCNF)

Indexing- Primary, Secondary.

Study and use of any one relational database system (ORACLE / MS-SQL SERVER)

Books:

1. An Introduction to Database Systems, Vol.I & II – C.J. Date, Addison Wesley.
2. Database system Concepts, 3rd edn. – Corth & Siberschatz, T.M.H
3. Principles of Database Systems, 2nd edn. – J.D. Ullman, Galgotia
4. Data Base Concepts, Kroenke,PHI

BCA-402: Computer Networks

CONTACTS: 3L + 1T

CREDITS: 4

Introduction to computer network- Topology; Base Band & Broad Band Topology;

Guided & Unguided Media.

Overview of Data & Signal Bits. Baud & Bit Rate. Modulation (AM, PM, FM);

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Multiplexing (TDM, FDM, STDM).

Digital To Analog – ASK, PSK, FSK, QPSK.

Transmission methods – Synchronous & Asynchronous, Flow Control, Error Control,

Error Detection methods.

Goals of Layered protocols- Introduction to OSI, TCP/IP.

HDLC- frame format, station, states, configuration and access control.

LAN Topology – Ethernet (IEEE 802.3), Token Bus (IEEE 802.4), Token Ring (IEEE 802.5), Metropolitan Area Networks (MANs).

Switching and Routing in Networks: Message switching, packet switching, when and when not to use packet switching, packet routing, packet switching support to circuit switching networks.

The X.25 and supporting protocols: Features of X.25, Layers of X.25 and the physical layer, X.25 and the data link layer, X.25 standards, X.25 channel options, flow control principles.

Books:

1. Black , U., " Computer Networks- protocols, standards and Interfaces" , P.H.I.
2. Stallings, W ., " Computer Communication Networks",P.H.I.
3. Tannembaum , A.S., " Computer Networks", P.H.I.
4. Computer network Theory,Prasad,Scitech

BCA-403: Computer Organization and Architecture
CONTACTS: 3L + 1T
CREDITS: 4

Introduction: Evolution of Computers, Stored program concept and Von-Neumann architecture, Information representation and codes, Building blocks of Computers.

Register Transfer and micro operations: Concepts of bus, Data movement among registers, A language to represent conditional data transfer, Data movement from/to memory, Arithmetic and logical operations with register transfer, Timing in register transfer.

CPU Architecture: Instruction format, Addressing mode, Instruction execution, Fetch and execution cycles, CPU organization with large registers, Stacks and handling of interrupts and subroutines, Instruction pipelining: stages, hazards and methods to remove hazards.

Micro-programmed control unit: Basic organization of micro-programmed controller, Horizontal and vertical formats, Address sequencer.

I/O Organization: Strobe based and handshake based communication, Vector and Priority interrupt, DMA based transfer.

Books:

> 1. Structured Computer Organisation : A.S. Tanenmbaum
>
> 2. Computer System Architecture – M.M.Mano, PHI
>
> 3. Computer Architecture and Organization-Hayes, McGrawHill International edn.
>
> 4. Computer Organization, 4th Edn.-V.C.Hammacher & Others, TMH

BCA-404: Communicative English

CONTACTS: 2L

CREDITS: 2

This should cover general and technical writing, oral communications and listening skills: letter writing, technical report writing, and business communication.

Expression: Practical communication skill development, business presentation with multimedia, speaking skill, prepared speech, extempore speech

Reading skill: comprehension test

Writing skill: precise, technical/business letter, organisation of writing material, poster presentation, writing technical document.

Details in business communication – Introduction, Meaning of communication, Role of communication in Business, Basic elements of the communication process, level of communication.

Books:

1. Business Correspondence & Report Writing, Sharma, TMH

2. English for Technical communication, Laxminarayanan, Scitech

3. Business Communication, Kaul,PHI

4. Effective Technical English, Laxminarayanan, scitech

BCA-E405A: Information System Analysis & Design

CONTACTS: 3L + 1T

CREDITS: 4

Overview of System analysis and design: Development life cycle, feasibility studies, Requirements determination, Logical design, Physical design, Program design, Risk and feasibility analysis, prototyping Information requirement analysis: Process modelling with physical and logical data flow diagrams, Data modelling with entity relationship diagrams.

System design: Process descriptions, Input/output controls, object modelling, Database design, User Interface design, Documentation, Data Dictionary.

Development methodologies: Top down, bottom up, structured chart, decision table, decision tree, CASE productivity tools.

Books:

1. System Analysis & Design, Parthasarathi, EPH

2. Analysis & Design of Information Systems,Rajaraman,PHI

3. Analysis & Design of Information Systems, Senn , MH

4. Information Systems: Analysis and Design,Ram Bansal 'Vigyacharya',New Age International.

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BCA-E405B: Microprocessor and its Applications

CONTACTS: 3L + 1T

CREDITS: 4

8 bit microprocessor architecture; 8085 pin description.

Programmers model of 8085, addressing modes of 8085; Instruction set of 8085; Assembly language program for 8085.

Memory interfacing; I/O interfacing; Peripheral ICs; I/O memory Interfacing Chips, Bus structure of microprocessor based systems, bus arbitration; Interrupt handling and DMA operation. Basic idea about microprogramming.

Advanced Microprocessors: Functional description of 8086 microprocessor, software model of 8086/8088; Data addressing modes of 8086; 80x86 family of microprocessor.

Comparison of different microprocessors; microprocessors of other families.

Books:

1. Microprocessors: A.P.Mathur
2. Microcomputer systems -8086/8088 family: Liu and Gibson
3. Structured Computer Organisation : A.S. Tanenmbaum
4. Programming the 80286, 80386 Computers: B.B. Brey

BCA-406: SQL/PLSQL Lab
CONTACTS: 6P
CREDITS: 4

Program should be developed to implement the problems related to BCA-401 using SQL & PL/SQL.

BCA-407: VB Lab
CONTACTS: 6P
CREDITS: 4

Computer programming with Visual Basic

Different constructs and applications, connecting with MS-ACCESS using data controls.