SYLLABUS

Bachelor of Computer Applications

5th SEMESTER

Mission of SCS&IT, DAVV

To produce world-class professionals who have excellent analytical skills, communication skills, team building spirit and ability to work in cross cultural environment.

To produce international quality IT professionals, who can independently design, develop and implement computer applications.

Professionals who dedicate themselves to mankind, who are environment conscious, follow social norms and ethics.

School of Computer Science & IT,
Devi Ahilya Vishwa Vidyalaya, Indore
www.scs.dauniv.ac.in

Course Name: **BCA 5th Semester**

Subject Code: **CS-2302**

Subject Name: **System Analysis & Design**

Aim of the Subject

To develop and maintain the system that perform basic business functions. The analysis and design are mainly base on understanding business objectives and processes.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Understand the principles and tools of systems analysis and design
- Understand the application of computing in different context
- Solve a wide range of problems related to the analysis, design and
- construction of information systems.
- Plan and undertake a major individual project, prepare and deliver
- coherent and structured verbal and written technical reports

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Unit 1

Concept of System, Characteristics, Elements and Types of Systems, Transaction Processing System, Management Information System (MIS), Decision Support System. System Development Life Cycle, Waterfall Model, Prototyping Model, Spiral Model, Iterative model CBD Model, Comparative Study of Various Development Models.

Unit 2

System Analysis, Role of System Analyst, Project Identification and Initiation, Feasibility Analysis, Project Selection, Creating Project Plan, Staffing the Project, Managing and Controlling the Project, Applying the concept to a case study.

Unit 3

Requirement Determination, Requirement Elicitation Techniques, Requirement Analysis Strategies, Process Modelling, Data Flow Diagram, User Interface

Design,Architectural Design, Design Process, Navigation Design, Input Design, Output Design, Applying the concepts to a case study

Unit 4

Implementation Phase, Managing the programming Process, Testing Fundamentals, Functional and Non Functional Testing, Black Box and White Box Testing Techniques, Testing Tools.Developing Documentation, Applying the concept to a case study.

Unit 5

Transition to a new system, The Migration Plan, Post implementation Activities.

Text Book(s)

System Analysis and Design: Awad, EM, Galgotia Publications Pvt. Ltd

Reference Material(s)

1. Systems Analysis and Design: Dennis, Wixom, Roth, Wiley

2.Silver and Silver, System Analysis and Design, Addison Wesley, Last Edition

Course Name: **BCA 5th Semester**

Subject Code: **CS-3604**

Subject Name: **Data and Computer Communication**

Aim of the Subject

Build an understanding of the fundamental concepts of data communication and computer networking.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Describe the basis and structure of an abstract layered protocol model
- Identify the different types of network topologies and protocols.
- Enumerate the layers of the OSI model and TCP/IP.
- Identify the different types of network devices and their functions within a network
- Understand and building the skills of sub ne□ng and routing mechanisms.

Unit 1

Data communications and networking for Today's Enterprise, A communication model, Data

Communications, Networking, and the Internet. Network model, need for a protocol architecture,

The TCP/IP protocol architecture, The OSI model, Addressing, Subnetting. Data transmission: Concept and

terminology, Analog and digital signals, Transmission impairment, Channel capacity

Unit 2

Digital transmission: Digital-to-digital conversion, Analog-to-digital conversion, Transmission mode. Analog transmission, Digital-to-analog conversion, Analog-to-digital conversion.

Unit 3

Bandwidth utilization: Frequency division multiplexing, Wavelength division multiplexing, Synchronous and statistical time-division multiplexing, Switching: Circuit switching Packet switching

Unit 4

Routing in switched network: Routing in packet switched networks, Least-cost algorithms. Local area network overview: Background topologies and Transmission media, LAN protocol architecture, Bridges, Ethernet.

Unit 5

Internet and transport protocols: Principles of internetworking IPv4 & IPv6, Connection-oriented transport protocol mechanism, TCP and UDP. Network security: Encryption and decryption technique, Internet applications: E-mail, World Wide Web, And HTTP.

Text Book(s)

1. Data and Computer Communications: William Stallings, Prentice-Hall, 8th Ed.,

2. Data Communications and Networking, BehrouzA. Forouzan, McGraw-Hill, 5th Edition.

Reference Material(s)

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Course Name: **BCA 5th Semester**

Subject Code: **CS-2402**

Subject Name: **Introduction to DBMS (SQL& PLSQL)**

Aim of the Subject

The student should learn database design and information retrieval concepts and apply these concepts in complex projects involving large database.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Introduction to the theory of relational database design.
- Functional
- dependencies and normalization with emphasis on the motivation and intuitive understanding of each normal form.
- Database design using the entity relationship data model

Unit 1

Introduction: purpose of DBMS, view of data, data models: physical model, logical model, conceptual model, hierarchical model, network model. Object oriented model. Database language, Database administrator, database user, overall system structure.

Unit 2

Entity relationship model: basic concepts, mapping constraints, keys, E-R diagram, weak, entity features, design of an E-R database schema, reduction of E-R schema to table.

Unit 3

Structured Query Language(SQL):basic structure, set operations, aggregate functions, null values, nested sub queries, data definition language(DDL), data manipulation language(DML), data control language(DCL), transaction control language(TCL),QBE,QUEL.

Unit 4

Relational database design: pitfalls in relational database design, decomposition, normalization using functional dependencies, normalization using multivalue dependencies, normalization using joined dependencies. Integrity constraints: domain constraints, entity integrity constraints, referential integrity constraints, assertion, triggers, functions, procedures, cursors.

Unit 5

Concept of RDBMS, characteristics of RDBMS, Codd's 12 rules, introduction to oracle tools, security.

Text Book(s)

1. Database system concepts by A.silberschatz, H.F.Korth, and S.Sudershan 5th Edition McGraw Hill

Reference Material(s)

1. An introduction to database management system by Vipin Desai
2. Modern database system by Mcfadden
3. SQL, PL/SQL The programming language of Oracle- Ivan Bayross

Course Name: **BCA 5th Semester**

Subject Code: **CS-2023**

Subject Name: **Computer Organization and Hardware Maintenance**

Aim of the Subject

This course will teach the fundamental of Computer Organization and Hardware Maintenance on the Application Binary Interfaces described in Course CS-2023.

Learning Outcomes

The students are expected to learn following after completion of the course:

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Unit 1

Computer: Function, various Components, Architecture and Organization, Structure and function,.Interconnection Structures, PCI, Bus Interconnection., Computer Memory System: registers,Cache memory Principles, Elements of Cache Design, Pentium 4 and power PC organization,Semiconductor Main Memory, DRAM, SRAM, Types of ROM, SRAM and DRAM, ErrorCorrection, Advanced DRAM Organization, Magnetic, Disk, RAID, Optical Memory, CompactDisk, Digital Versatile Disk, Magnetic Tape.

Unit 2

Input/output Techniques: Direct Memory Access, Intel 8237A DMA Controller, I/O Channels and Processors. Types of Interfaces. Interrupt- Driven I/O, Interrupt Processing, Intel 82C59 Interrupt Controller, External Devices, Keyboard, Monitor, I/O Modules, I/O module Structure,Programmed I/O, I/O Commands, The Arithmetic and Logic Unit:, Integer Representation,Integer Arithmetic, Floating Point Representation.

Unit 3

Instruction characteristics: Types of Operands, Types of Operations. Addressing modes,Instruction Formats, Example for Pentium and Power PCs, Machine Instruction Characteristics,Instruction Representation, and Instruction set Design. Processor Organization, RegisterOrganization, Instruction Cycle, Instruction Pipelining, Introduction to Reduced Instruction set Architecture, Complex Instruction Set Architecture, and RISC versus CISC.

Unit 4

Hardware Basics: Basic terms, concepts, and functions of system modules (System board,firmware, storage devices, monitor, boot process, ports). CMOS and BIOS, POST sequence, Clock Generator, Bus controller ,CPU Cabinet: Power supply, SMPS, Chipsets , Motherboard, CPU structure, Cables and connectors, Front and rear panel study, Storage

device, Input devices, Output devices(CRT, LCD/ LED), Display adapter cards, VGA and super VGA, Printer:, Sound devices (Speaker, Headphone, Bluetooth, dongle).

Unit 5

Interfaces: HDC, CRT Controller, Serial and Parallel, SCSI, IDE, SATA, ATA, UART, RS232, RJ-45, Wifi, HDMI, USB, Mini USB, Micro USB, Driver Installation. Troubleshooting Procedures and Preventative Maintenance: Identifying Troubleshooting Tools, Hardware tools, Diagnostic software, The Art of Troubleshooting, Troubleshooting basics, troubleshooting by visual Inspection, Preventative Maintenance, Using Preventative Maintenance Tools, Materials and equipment, Software utilities,Maintaining Environmental, Controls, Ventilation and airflow, Humidity and liquids , Dirt and dust EMI, Power, UPS, and suppressors, Completing Maintenance Tasks, Case and components, Power supplies.

Text Book(s)

1.Computer Organization and Architecture (Ninth Edition) Pearson Education: William Stallings 2. IBM PC & Clones: Hardware Trouble Shooting and Maintenance by B. Govindarajalu, Tata McGraw Hill.

Reference Material(s)

1.Computer Architecture & Parallel Processing, Hwang & Briggs, McGraw Hill 2. Computer Architecture By Dr. Rajkamal. Publication: TMH Indian Special edition 2006. 3. Digital systems principal and Design by Dr. Rajkamal 4. CompTIA A+ Certification All-

Course Name: **BCA 5th Semester**

Subject Code: **IC-2928**

Subject Name: **Principles and Practice of Management**

Aim of the Subject

To make students understandable & give an insight about its application in an organization

Learning Outcomes

The students are expected to learn following after completion of the course:

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Unit 1

Concept of Management: Introduction to management, levels,Functions and Responsibilities of Managers, Fayol's Principles of Management, Management Thought; the Classical School, the Human Relations School, Systems theory, Contingency Management, Developing Excellent Managers.

Unit 2

Planning: Nature and Purpose of Planning, the Planning Process, Principles of Planning,

Types of Planning, Advantages and Limitations of Planning.Management by Objectives (MBO),Decision Making Process, individual Decision Making Models.

Unit 3

Organising: Nature and Purpose of Organising, Bases of Departmentation, Span of

Management, Determinants of Span of Management, Line and Staff Relationship, Line-Staff

Conflict, Bases of Delegation, Kinds of Delegation, Delegation and Decentralisation,

Methods of Decentralisation,

Staffing : staffing Fundamentals, manpower planning, recruitment, selection, train& develop, promotion, appraisal

Unit 4

Directing: Nature And Purpose of Directing, Motivation, Leadership And Communication.

Unit 5

Controlling :Concept Of control, Process Of Control,

Principles Or Requirements Of Good Control System, Techniques Of Controlling.

Text Book(s)

Harold Koontz, O'Donnell and HeinzWeihrich, "Essentials of Management", New Delhi, Tata McGraw Hill, 2019.

R. D. Agrawal, "Organization and Management", New Delhi, Tata McGraw Hill

Principles and Practices of Management by RSN Pillai, S.Kala, S. Chand publication

Reference Material(s)

notes will be provided