SYLLABUS

Bachelor of Computer Applications

5th SEMESTER

Session 2020 - 2021

<u>Mission of SCS&IT, DAVV</u>

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: IC 2928

Subject Name: Practices & Principles of Management

Aim of the Subject

To make students understandable, updated

Objectives

Focusing upon major extract of the subject

Learning Outcomes

Understandable & easy to understand & retain

Unit 1

Introduction to Management

Unit 2

Planning

Unit 3

Oragnization

Unit 4

Staffing

Unit 5

Directing , staffing & controlling

Text Book(s)

Schand, tata mac graw

Reference Material(s)

Screen sharing

Course Name BCA 5th Semester
Subject Code: CS -2302
Subject Name: SYSTEM ANALYSIS AND 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.

Objectives

1 To design whole software, this fulfils all the requirements of customer.
2 To improve organizational systems, by applying software, this helps employees to perform business, tasks more effectively.
3 To determine specific needs of system.
4 To use appropriate methods and techniques to design software.

Learning Outcomes

• Understand the principles and tools of systems analysis and design
• Understand the application of computing in different context
• Understand the professional and ethical responsibilities of practicing the computer professional including understanding the need for quality.
• Solve a wide range of problems related to the analysis, design and construction of information systems.
• Be able to present projects
• Plan and undertake a major individual project, prepare and deliver coherent and structured verbal and written technical reports

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)

1. System Analysis and Design: Awad, EM, Galgotia Publications Pvt. Ltd
2. Systems Analysis and Design: Dennis, Wixom, Roth, Wiley

Reference Material(s)

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.

Objectives

1. Build an understanding of the fundamental concepts of data communication and computer networking.
2. Know about routing mechanisms and different routing protocols
3. Understand transport layer functions
4. Know about different application layer protocols

Learning Outcomes

1. Describe the basis and structure of an abstract layered protocol model
2. Independently understand basic computer network technology.
3. Identify the different types of network topologies and protocols.
4. Enumerate the layers of the OSI model and TCP/IP.
5. Identify the different types of network devices and their functions within a network
6. Understand and building the skills of subnetting 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)

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.

Objectives

• To understand the basic hardware and software issues of computer organization To provide an overview on the design principles of digital computing systems.

• To understand the representation of data at machine level

• To understand how computations are performed at machine level

• To understand Computer hardware and Software Problem and their Troubleshooting

Learning Outcomes

• Ability to analyze the abstraction of various components of a computer

• Ability to analyze the hardware and software issues and the interfacing

• Ability to work out the tradeoffs involved in designing a modern computer system

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, RS-232, 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-in-One Desk Reference for Dummies by Glen Clarke
5. PC Systems, Installation and Maintenance, Second Edition by R. P. Beales,

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.

Objectives

To present necessary concepts for database designing.

1.Design conceptual, logical database model and physical model. Evaluate set of query using SQL and algebra.

Concepts of RDBMS, and learn Object oriented modelling. To introduce PL/SQL.

To introduce storage structure and file management.

2.Briefly describe any course development objectives that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field).

The course is focused on to increase the design skills of students for database technology, it is expected that student will use extensively the internet in discovering new tools and implement database applications.

Learning Outcomes

1.   Introduction provides the general overview of the nature and purpose of database systems. We explain how the concept of the database systems. We explain how the concept of database system has developed, what the common features of the database system are, what the database system does for the user, and how a database system interfaces with operating systems.

2.   Database design provides the overview of the database-design process, with major emphasis on the database design using the entity relationship data model. Entity relationship data model provides a high level view of the issues in database design.

3.   Relation database introduces the relational model of data, covering basic concepts as well as the relational algebra. A brief introduction to integrity constraints and focus on the most influential of the user- oriented relational languages: SQL.

4.   SQL provide how to interface between a programming language and the database supporting SQL.

5.   Introduction to the theory of relational database design. The theory of functional dependencies and normalization is covered, with emphasis on the motivation and intuitive understanding of each normal form. An overview of relational design and relies on an intuitive understanding of logical implication of functional dependencies. This allows the concept of

normalization to be introduced prior to full coverage of functional dependency theory.

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

CS-2023: Computer Organization and Hardware Maintenance

Assignment(s)

1.Practice the shop floor processing of the concerned industry including safety precautions regarding operation of different tools and equipments, occupational hazards and safety measures related to the trade. Practice the environment management system to prevent environment pollution.

2. Prepare history Sheet of different tools and equipments.

3. Identify Processor chips and handling procedure. Identify I/O and memory chips on Microprocessor kit. Read and load memory locations. Practice assembly language programming. Carry out interfacing to microprocessors. Work on microcontroller, architecture, types and applications.

4. Identify the PC and its various vital components. List out various components of ROM and DOS software. Explain Embedded systems. Describe the AVR (Advantages, philosophy, architecture).

5. Identify ports of a PC. Practice to Connect and Disconnect the I/O devices to PC. Check system configuration and specifications. Check connectivity of devices. Identify IRQ and DMA settings. Modify IRQ settings. Identify device drivers and location. Disable/Uninstall and enable/install devices. Practice to Solder and De-Solder Measure voltage Different Circuits.

6. Install Keyboard. Set keyboard features. Clean keyboard. Identify defect in keyboards. Replace parts of keyboards. Troubleshoot defects. Install Mouse. Set properties of mouse. Clean Mouse. Identify defective Mouse. Replace parts of mouse and troubleshoot defects.

7. Install Printer. Set printer properties. Repair printer cable. Remove and replace ribbon/toner cartridge. Run Printer tools/utility. Practice maintenance of printers. Refill tape/toner.

8. Install CD Players and CD writers. Burn different types of CD using writer. Install DVD players and DVD writers. Install Combo drive and using writers. Troubleshoot and Repair CD and DVD.

9. Identify different types of motherboard form factors and specifications. Identify components on a motherboard. Identify different types of buses and raisers. Identify Processor, form factor and specifications. Identify jumpers on the motherboard and functions. Identify RAM slot, type, size, expandability. Identify CMOS capacity. Lithium battery.

10.Identify the type of HDD. Identify specification of HDD. Practice maintenance of HDD. Partition IDE/ATA Drives, SCSI drives. Format IDE/ATA drives, SCSI drives. Practice Jumper settings. Install and test Pen drives/Thumb drives. Test SMPS, Half wave, Full wave & Bridge rectifiers.

11. Repair and Maintain different makes and types of monitors.

12. List the features of micro controller boards. Configure ports and control their status, interrupts and timers. Compare Polling vs. Interrupt driven approaches.

13. Work with Laptop/notebook computers. Practice the disassembling and reassembling procedures. Replace processor. Replace memory. Replace add-in cards. Troubleshoot and repair/replace battery/mains adaptor.

14. List the features of micro controller boards. Configure ports and control their status, interrupts and timers. Compare Polling vs. Interrupt driven approaches.

15. Practice Supported communication protocols UART (RS-232) I2C SPI.

16. Explain Real time system concepts (OS vs. RTOS). Describe the need for an RTOS/scheduler. Identify RTOS components, Target RTOS.

17. Troubleshoot and rectify the faults of finished product. Work with the latest technology adapted in the industry at the time of training.

18. Install different device drivers Install different Application Software Practice to Run All Dos Command (Internal and External Dos Command) Practice taking Data Backup Install application Software : Photoshop 7.0, Page Maker 6.5, CorelDraw Install CD-DVD Burning Software like: Nero 7.0 & PowerISO 4.0 Install Tally 7.2 and Tally ERP 9.0 and Tack Data Backup Install and Troubleshoot Different types of Antivirus Software Install Dual Operating System like: Windows XP and Linux Install Dual Operating System using VMWare Run All Types of Network Troubleshooting Command.

CS -2302 SYSTEM ANALYSIS AND DESIGN

Assignments

Assignment-1

1. What is a system? Explain with example
2. What are characteristics of a system?
3. Which are the elements of a computer system? Explain it.
4. Define the System Concepts.
5. Explain prototyping method with its steps and uses.
6. What is system analyst? The roles of the System analyst.
7. Discuss Structured English with types and Example.
8. Explain feasibility study and cost benefit analysis.
9. List and Explain fact finding technique with its merits and demerits of each method.
10. Who is system analyst? Explain the role of system analyst in system development.
11. Which are the different methods for system development? Explain one of them.
12. Write a short note on system prototype method.
13. Explain feasibility study and cost-benefit analysis.

Assignment-2

1. Explain the benefits and weakness of code tools.
2. Why code is required? Explain four significant codes with suitable example.
3. Which are the basic principles of output design? When you design output which consideration you keep in mind.
4. Write the principals of code design.
5. What are the form design considerations?
6. What is data validation? Explain validation checks with example.
7. Explain basic steps for data capture.
8. Explain principals of input and output design.
9. What is code? Write down the type of code in detail.

Assignment-3

1. The difference between Logical DFD and Physical DFD.

2. What is DFD? List out the Symbol used in DFD.
3. Draw the Payroll System.

4. Draw the Inventory System.
5. Draw the Library System.
6. Draw the Finance Accounting System.
7 .What is a data dictionary?
8 .Why is a data dictionary necessary?
9. What are the main advantages of creating a data dictionary?
10. What data about a data element is stored?