Course Title: Introduction to Information Technology

Course no: CSC-101   **Full Marks:** 60+20+20

Credit hours: 3   **Pass Marks:** 24+8+8

Nature of course: Theory (3 Hrs) + Lab (3 Hrs)

Course synopsis: Fundamental concept of information technology, Computer Systems, Computer software, DBMS, and application of Computer science.

Goal: This course introduces fundamental concepts of information Technology and Computer science.

Lesson Plan

Dm: Demonstration   E: Explain   As: Assignment
Sd: Definition   Nu: Numerical   Tu: Assign tutorial

Course contents	What to teach	Method	Class Hrs
Unit 1.	**Introduction to Computer System**		**10**
1.1	Introduction to Computers • Introduction • Types of Computers • Characteristics of Computers • What Computers can do and cannot do	E, Sd	1
1.2	Classification of Digital Computers • Microcomputers • Minicomputers • Mainframe • Supercomputers • Network Computer	E, Sd	1
1.3	Anatomy of Digital Computers • Function and components of a Computer • How the CPU and Memory Works	E, Sd, Dm	1

1.4	Computer Architecture
	 • History
	 • RISC/CISC
	   o Definition
	   o Advantages/Disadvantages
	   o Difference between RISC and CISC
		E, Sd	1

1.5	Number System
	 • Introduction and Inter-conversion of
	   o Binary
	   o Octal
	   o Decimal
	   o Hexadecimal
	 • Binary Addition, Subtraction (Complement's method)
		E, Nu, Tu	1.5

1.6	Memory Units	E, Sd	1
1.7	Auxiliary Storage Devices • Magnetic Tape • Hard disk • Floppy Disk • Optical Disk	E, Sd, Dm	1.5
1.8	Input Devices • Keyboard • Mouse • Trackball	E, Sd, Dm	1

	• Joystick • Digitizing Tablet • Scanners • Magnetic Ink Character Recognition (MICR) • Optical Character Recognition (OCR) • Optical Mark Recognition (OMR) • Speech Input Devices • Touch Screen • Touch Pad • Light Pen		

1.9	Output devices
	• Monitor
	  o Classification of Monitor-Based on Color
	  o Classification of Monitor-Based on Signals
	  o Characteristic of a Monitor
	     ▪ Size
	     ▪ Resolution
	     ▪ Bandwidth
	     ▪ Refresh Rate
	     ▪ Interlaced or Non-interlaced
	     ▪ Dot-pitch
	     ▪ Convergence
	• Printer
	  o Daisy-wheel Printer
	  o Dot-matrix Printer
	  o Laser Printer
	  o LCD & LED Printers
	• Plotter
	• Sound Cards & Speakers
		E, Sd, Dm	1

Unit 2.	**Computer Software and Software Development**		**6**
2.1	Introduction to Computer Software • Introduction • Types of software	E, Sd	1
2.2	Operating System • Definition • Function • Classification	E, Sd	2

2.3	Programming Languages
	• Introduction
	• Types
	  o machine language
	  o Assembly Language
	  o Procedural Language
	  o Problem Oriented Language
	  o Natural Language
	• Compiler and Interpreter
		E, Sd	2

2.4	General Software Features and Trends
	• Introduction
	• Features
	  o Ease of use
	  o Graphical User Interface (GUI)
	  o Requirement of More powerful Hardware
	  o Multi-Platform Capability
	  o Network Capability
	  o Compatibility with other software
	  o Object linking and Embedding
		E, Sd, Dis	1

	o Group work capabilities		
	o mail Enabling		
	o Web Enabling		
Unit 3	**Database management system**		**6**
3.1	Data processing • Data vs. Information • File processing • Database Processing	E	1
3.2	Introduction to DBMS • Introduction • Quality of Information • Database and its importance • Characteristics of data in a database • Database management System and its services • Types of DBMS	E,Dis	3

3.3	Database Design
	• Database design process
	• Data Normalization
	• Keys
	• Relationships
	• Normal Forms
	  o 1NF
	  o 2NF
	  o 3NF
		E	2

Unit 4	**Telecommunications**		**8**
4.1	Introduction to Telecommunications • Analog and digital Signal • Modulation • Need of Modulation • Types of Modulation • Modems	E	2
4.2	Computer Networks • Introduction • Communication Media • Types of Network • Network Topology • Network Protocols • Network Architecture	E, Dis	3
4.3	Computer System • Radio • TV • Microwave Systemd • Communications Satellite • Radar • Fiber Optics • ISDN	E, Dis	2
4.4	Distributed System • Introduction • Distributing the processing and storage functions • Advantages and Disadvantages	E	1
Unit 5	**Internet and New Technologies in Information Technologies**		**10**
5.1	Internet • Definition • Regulatory bodies	E	3

	o IANA(Internet Assigned Numbers Authority)	E	
	o ICANN(Internet corporation for Assigned Names and Numbers)	E	
	• Internet protocols o Protocol definitions o IP, TCP, HTTP, FTP, SMTP, Telnet, Gopher, WAIS	E	
	• ISP and its functions		
	• Internet Access Media o Dial-up	E	
	o Direct(landline broadband)-Fiber, Copper, Coxial o Wi-Fi(radio modem) o 3G technology cell Phones	E,Dm	
	• Internet Addressing o IP Address o Domain Name o Electronic Mail Addresses o Uniform Resource Locator(URL)	E, Dm	
	• World Wide Web(WWW) o Web Pages o HTML o Web browser Software o Search Engines	E, Dm	
	• Common Uses/Functions of the Internet o Email o File Sharing o Instant Messaging/chat o Internet Fax o World wide web o Voice Over IP(VoIP) & Mobile VoIP o Remote Access o Collaborating/Sharing Ideas in Group o Streaming Multimedia	Dis, Dm	
5.2	Multimedia Tools and System • Definition • Multimedia Tools o PowerPoint, Freelance graphics, Micromedia, Authorware, Media Player, Digital & Video camera for Image and sound recording, CAD, CD ROM and others. • Usages of Multimedia	E Dm	1
5.3	Intranets • Definition • Difference between internet and Intranet • Difference between Intranets and Extranet • Advantages/Drawbacks of Intranets	E E E E	1
5.4	Electronic Commerce (e-commerce) • Definition • Types of E-commerce o B2B o B2C o Digital Middleman • Benefits of e-commerce	E E E	1
5.5	Hypermedia • Definition • Characteristics • Components • Application area	E, Dm	1
5.6	Data Warehouse	E	2

	• Definition
	• Advantages
	• Components
	• Structure
	• Uses
	• Definition of Data Mart
	• Data Mining
	  o Definition
	  o Advantages
	  o Technology used		

5.7	Geographical Information System
	• Definition
	• Components
	• How GIS works(By Layers)
	  o Base maps
	  o Business maps and data
	  o Environmental maps and data
	  o General Reference maps
	• Data Representation
	  o Vector
	  o Raster
	• GIS Technologies
	  o Desktop mapping
	  o CAD
	  o Remote sensing
	  o GPS
	  o DBMS
	• Usages of GIS
		E	1

Unit 6	**Applications of Information Technology**		**5**

6.1	• Business and Industry
	• Office Automation
	  o Text Management Systems
	  o Business Analysis Systems
	  o Document Management Systems
	  o Network & Communication Management systems
	• Management Information System
		E, Dis	1

6.2	Education and training • Computer aided instruction • Programming tools • Simulation and Games • Productivity tools • Computer controlled media • Presentation aids • Hypermedia and interactive multimedia • Authoring tools for students • Distance learning: Virtual schools	E, Dis	2

6.3	Computers in Entertainment, Science, Medicine and Engineering
	• Entertainment
	  o Computers in movies
	  o Computer in Music
	  o Computers in advertising
	  o Computer in Art
	• Science, medicine
	• Engineering
	  o Electronic data interchange (EDI)
	  o CAD/CAM
		E, Dis	2

		o Product data management
		o Prototyping
		o Project management

Course Title: Introduction to Information Technology   Time: 3 Hrs

Course No: CSC-101   Full Marks: 60

                                                                         Pass Marks: 24

1. **Long Questions**

 Attempt any two questions.   **2 x 10 = 20**

1.1 What are the different input devices used in computer systems? Explain.

1.2 Differentiate between Database and Database Management System. What are the
    Characteristics of data in database? Explain the services provided by Database
    Management System.

1.3 What are Data Warehouse and Data Mining? Write down advantages of data mining?
    Explain briefly the technologies used in data mining.

2. **Short Questions**

Attempt any eight questions   **8 x 5 = 40**

2.1 Classify the digital Computer on the basis of size.

2.2 Convert $(10101)_2$ Octal and Hexadecimal. Subtract 1111 from 101101.

2.3 Write down the function provided by Operating system?

2.4 What are the features of today's software? Explain briefly.

2.5 Why data Normalization is necessary in Database Management System? Explain the
     relationship between related tables in DBMS with example.

2.6 Why modulation is necessary in communication system? Explain briefly different types
of
    modulation.

2.7 What are different topologies used in computer Network? Explain briefly.

2.8 Write down the common uses of Internet in today's world.

2.9 What is GIS? Write down the benefits of GIS.

2.10 Write down the applications of Information Technology.

Note1: long questions to be selected from the following Chapters

        Chapter 1: Introduction to computer system.

        Chapter 3: Database Management System

        Chapter 4: Telecommunications

        Chapter 5: Internet and New Technologies in Information Technologies.

Note 2: Eight short questions to be selected from all chapters based on allocated lecture
hours.