

Course Title: Introduction to Information Technology

Course no: CSC-101

Credit hours: 3

Full Marks: 60+20+20

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 <ul style="list-style-type: none"> • Introduction • Types of Computers • Characteristics of Computers • What Computers can do and cannot do 	E, Sd	1
1.2	Classification of Digital Computers <ul style="list-style-type: none"> • Microcomputers • Minicomputers • Mainframe • Supercomputers • Network Computer 	E, Sd	1
1.3	Anatomy of Digital Computers <ul style="list-style-type: none"> • Function and components of a Computer • How the CPU and Memory Works 	E, Sd, Dm	1
1.4	Computer Architecture <ul style="list-style-type: none"> • History • RISC/CISC <ul style="list-style-type: none"> ○ Definition ○ Advantages/Disadvantages ○ Difference between RISC and CISC 	E, Sd	1
1.5	Number System <ul style="list-style-type: none"> • Introduction and Inter-conversion of <ul style="list-style-type: none"> ○ Binary ○ Octal ○ Decimal ○ Hexadecimal • Binary Addition, Subtraction (Complement's method) 	E, Nu, Tu	1.5
1.6	Memory Units	E, Sd	1
1.7	Auxiliary Storage Devices <ul style="list-style-type: none"> • Magnetic Tape • Hard disk • Floppy Disk • Optical Disk 	E, Sd, Dm	1.5
1.8	Input Devices <ul style="list-style-type: none"> • Keyboard • Mouse • Trackball 	E, Sd, Dm	1

	<ul style="list-style-type: none"> • 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	<p>Output devices</p> <ul style="list-style-type: none"> • Monitor <ul style="list-style-type: none"> ○ Classification of Monitor-Based on Color ○ Classification of Monitor-Based on Signals ○ Characteristic of a Monitor <ul style="list-style-type: none"> ▪ Size ▪ Resolution ▪ Bandwidth ▪ Refresh Rate ▪ Interlaced or Non-interlaced ▪ Dot-pitch ▪ Convergence • Printer <ul style="list-style-type: none"> ○ Daisy-wheel Printer ○ Dot-matrix Printer ○ Laser Printer ○ LCD & LED Printers • Plotter • Sound Cards & Speakers 	E, Sd, Dm	1
Unit 2.	Computer Software and Software Development		6
2.1	<p>Introduction to Computer Software</p> <ul style="list-style-type: none"> • Introduction • Types of software 	E, Sd	1
2.2	<p>Operating System</p> <ul style="list-style-type: none"> • Definition • Function • Classification 	E, Sd	2
2.3	<p>Programming Languages</p> <ul style="list-style-type: none"> • Introduction • Types <ul style="list-style-type: none"> ○ machine language ○ Assembly Language ○ Procedural Language ○ Problem Oriented Language ○ Natural Language • Compiler and Interpreter 	E, Sd	2
2.4	<p>General Software Features and Trends</p> <ul style="list-style-type: none"> • Introduction • Features <ul style="list-style-type: none"> ○ Ease of use ○ Graphical User Interface (GUI) ○ Requirement of More powerful Hardware ○ Multi-Platform Capability ○ Network Capability ○ Compatibility with other software ○ Object linking and Embedding 	E, Sd, Dis	1

	<ul style="list-style-type: none"> ○ Group work capabilities ○ mail Enabling ○ Web Enabling 		
Unit 3	Database management system		6
3.1	Data processing <ul style="list-style-type: none"> • Data vs. Information • File processing • Database Processing 	E	1
3.2	Introduction to DBMS <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Database design process • Data Normalization • Keys • Relationships • Normal Forms <ul style="list-style-type: none"> ○ 1NF ○ 2NF ○ 3NF 	E	2
Unit 4	Telecommunications		8
4.1	Introduction to Telecommunications <ul style="list-style-type: none"> • Analog and digital Signal • Modulation • Need of Modulation • Types of Modulation • Modems 	E	2
4.2	Computer Networks <ul style="list-style-type: none"> • Introduction • Communication Media • Types of Network • Network Topology • Network Protocols • Network Architecture 	E, Dis	3
4.3	Computer System <ul style="list-style-type: none"> • Radio • TV • Microwave Systemd • Communications Satellite • Radar • Fiber Optics • ISDN 	E, Dis	2
4.4	Distributed System <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Definition • Regulatory bodies 	E	3

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	<ul style="list-style-type: none"> ○ IANA(Internet Assigned Numbers Authority) ○ ICANN(Internet corporation for Assigned Names and Numbers) ● Internet protocols <ul style="list-style-type: none"> ○ Protocol definitions ○ IP, TCP, HTTP, FTP, SMTP, Telnet, Gopher, WAIS ● ISP and its functions ● Internet Access Media <ul style="list-style-type: none"> ○ Dial-up ○ Direct(landline broadband)-Fiber, Copper, Coaxial ○ Wi-Fi(radio modem) ○ 3G technology cell Phones ● Internet Addressing <ul style="list-style-type: none"> ○ IP Address ○ Domain Name ○ Electronic Mail Addresses ○ Uniform Resource Locator(URL) ● World Wide Web(WWW) <ul style="list-style-type: none"> ○ Web Pages ○ HTML ○ Web browser Software ○ Search Engines ● Common Uses/Functions of the Internet <ul style="list-style-type: none"> ○ Email ○ File Sharing ○ Instant Messaging/chat ○ Internet Fax ○ World wide web ○ Voice Over IP(VoIP) & Mobile VoIP ○ Remote Access ○ Collaborating/Sharing Ideas in Group ○ Streaming Multimedia 	<p>E</p> <p>E</p> <p>E</p> <p>E</p> <p>E,Dm</p> <p>E, Dm</p> <p>E, Dm</p> <p>Dis, Dm</p>	
5.2	<p>Multimedia Tools and System</p> <ul style="list-style-type: none"> ● Definition ● Multimedia Tools <ul style="list-style-type: none"> ○ PowerPoint, Freelance graphics, Micromedia, Authorware, Media Player, Digital & Video camera for Image and sound recording, CAD, CD ROM and others. ● Usages of Multimedia 	<p>E</p> <p>Dm</p>	1
5.3	<p>Intranets</p> <ul style="list-style-type: none"> ● Definition ● Difference between internet and Intranet ● Difference between Intranets and Extranet ● Advantages/Drawbacks of Intranets 	<p>E</p> <p>E</p> <p>E</p> <p>E</p>	1
5.4	<p>Electronic Commerce (e-commerce)</p> <ul style="list-style-type: none"> ● Definition ● Types of E-commerce <ul style="list-style-type: none"> ○ B2B ○ B2C ○ Digital Middleman ● Benefits of e-commerce 	<p>E</p> <p>E</p> <p>E</p>	1
5.5	<p>Hypermedia</p> <ul style="list-style-type: none"> ● Definition ● Characteristics ● Components ● Application area 	<p>E, Dm</p>	1
5.6	<p>Data Warehouse</p>	<p>E</p>	2

	<ul style="list-style-type: none"> • Definition • Advantages • Components • Structure • Uses • Definition of Data Mart • Data Mining <ul style="list-style-type: none"> ○ Definition ○ Advantages ○ Technology used 		
5.7	<p>Geographical Information System</p> <ul style="list-style-type: none"> • Definition • Components • How GIS works(By Layers) <ul style="list-style-type: none"> ○ Base maps ○ Business maps and data ○ Environmental maps and data ○ General Reference maps • Data Representation <ul style="list-style-type: none"> ○ Vector ○ Raster • GIS Technologies <ul style="list-style-type: none"> ○ Desktop mapping ○ CAD ○ Remote sensing ○ GPS ○ DBMS • Usages of GIS 	E	1
Unit 6	Applications of Information Technology		5
6.1	<ul style="list-style-type: none"> • Business and Industry • Office Automation <ul style="list-style-type: none"> ○ Text Management Systems ○ Business Analysis Systems ○ Document Management Systems ○ Network & Communication Management systems • Management Information System 	E, Dis	1
6.2	<p>Education and training</p> <ul style="list-style-type: none"> • 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	<p>Computers in Entertainment, Science, Medicine and Engineering</p> <ul style="list-style-type: none"> • Entertainment <ul style="list-style-type: none"> ○ Computers in movies ○ Computer in Music ○ Computers in advertising ○ Computer in Art • Science, medicine • Engineering <ul style="list-style-type: none"> ○ Electronic data interchange (EDI) ○ CAD/CAM 	E, Dis	2

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	<ul style="list-style-type: none">○ Product data management○ Prototyping○ Project management		
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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.