CSC-101: Introduction to ICT Syllabus

General Information

Course Number	CSC-101
Credit Hours	3+1 (Theory Credit Hour = 3, Lab Credit Hours = 1)
Prerequisite	None
Course Coordinator	Not Specified

Course Objectives

This course is intended to give students a solid background in Computers, with a focus on basic computer terminology, Computer Networks, information and Communication Technologies. Topics include computer and their uses, internet and the world, interacting with computer, seeing, hearing and printing data, processing and storing of data, using operating systems and working with application software's, Networking basics, basic data communication terminologies, working in the online network and this course will cover basic Information and Communication Technologies and processes involved in design of information systems.

Catalog Description

CSC-101

Course Content

Week	Topic	Topic details

1	Overview of Information and Communication Technology Systems	• **Overview of ICT Systems**
		• **Tools of ICT**
		  ○ Computer System
		  ○ Mobile System
		  ○ Satellite System
		  ○ Radio System
		• **Computer System** (detailed overview):
		  ○ Introducing to the world of Computers
		  ▪ Computers in your life (Home, Education, Jobs, on the go)
		  ▪ What is a computer and what does it do?
		  ▪ Computer Users and Professionals
		  ▪ History and Generations of computer
		  ▪ Computers to fit every need (Embedded, Mobile, PC, Servers, Mainframe, Supercomputer)

2	Overview of Information and Communication Technology Systems	○ **The System Unit: CPU and Memory** ▪ Represent data and program instructions (Binary representation, Binary to decimal and decimal to binary conversion, ASCII, Unicode) ▪ Components located inside the system unit (CPU, RAM, ROM, Cache, Registers, Hard drives, ports, etc) ▪ Hardware vs Software ▪ Input and Output devices ▪ How the CPU Works? (Fetch, Decode, Execute and Store) ▪ Brief overview of strategies to speed up a computer? (improve architecture, improve materials, pipelining, multiprocessing and parallel processing) ○ System software, Application software and utility programs ○ How internet work?
3	Overview of Information and Communication Technology Systems	• **Mobile System** (Basic understanding) ○ Overview of Mobile phone communication technology ○ What is cellular network for mobile communication? ○ Uses of Mobile phone ○ Concepts of GSM, GPRS, and WAP ○ What is 1G, 2G, 3G, 4G and 5G? • **Satellite System** (Basic understanding) ○ What is Satellite and how Satellite works? ○ Difference between natural satellite and artificial satellite ○ What is the difference between Polar satellite and Geo-stationary satellite ○ Applications of Polar satellite ○ How following are working in Geo-stationary satellite: Transponder, TV, VSAT, GPS • **Radio System** (Basic understanding) ○ How Radio communication works? ○ Two types of Radio: Satellite based and Web based radio
4	**Storage Systems**	Overview Storage systems characteristics Hard drives Optical Discs Flash memory Other types of storage systems Overview of RAID: RAID 0 and RAID 1
MID TERM - I		

5	Operating Systems and utility programs Application Softwares	• Overview of operating system • Understand working of operating systems • Operating systems for personal computers and servers • Operating systems for mobile phones • Operating systems for larger computers • Utility programs & Application Softwares • The future of operating systems

6 & 7	**Computer Networks**	• Overview
		• What is a network
		• Network Applications
		• Network Characteristics
		• Data Transmission Characteristics
		• Networking media: wired and wireless
		• OSI reference model
		• Network Topologies: Star, Ring, Mesh, Bus, etc
		• Communications protocol and networking standards
		  ◦ TCP/IP
		  ◦ Ethernet (802.3)
		  ◦ Wi-Fi (802.11)
		  ◦ WiMAX (802.16)
		  ◦ Bluetooth
		• Types of Networks: Internet and Intranet (LAN, MAN, WAN, etc)
		• Networking Hardware
		  ◦ Network Adapters and Modems
		• Switches and Routers
		• Network Programming concepts

8	Internet and Network Security	• Overview
		• Why be concerned about internet and network security
		• Unauthorized access and Unauthorized use
		  ◦ Hacking and other ways
		• Protecting against Unauthorized access and Unauthorized use
		  ◦ Access Control Systems
		  ◦ Firewalls, Encryption, and Virtual Private Networks (VPNs)
		• Computer Viruses and Other Types of Malware
		• Identity Theft and Phishing
		• Protecting Against Identity Theft and Phishing

MID TERM -II		

9 and 10	E-Commerce and E-Government	• Overview • What is E-commerce • E-commerce business models • Security Issues • What is E-Government • Use of ICT in Government Organizations • Mode of E-Government: G2C, G2B, G2G, G2E • Objectives of E-Government in Pakistan • E-Government services in Pakistan • Main challenges for E-Governance in Pakistan
11 and 12	Databases and Database Management Systems	• Historical root: manual, file system • Problem with file system data management • What Is a Database? • A Simple Relational Database • Role and Advantages of the DBMS • Types of Databases • Why Database design is important? • Database languages: DDL and DML • ER-Diagrams • Overview of SQL • Example
13, 14 and 15	Overview of Contemporary Technologies	Artificial Intelligence and Machine Learning 5G Technology Cloud Computing Big Data Internet of Things High Performance Computing/High Throughput Computing Virtual and Augmented Reality 3D Printing Blockchain Technology Software-Defined Networking and Network Function Virtualization Group Projects Presentation
16		Complete Course Review Group Projects Presentation
FINAL EXAM		

Text Book

1. Deborah Morley, Charles S. Parker, “Understanding Computers: Today and Tomorrow, Comprehensive”, 15th/16th Edition

Reference Material

1. Peter Norton, Introduction to Computers, 7th Edition
2. Williams Sawyer, Using Information Technology: A Practical Introduction to Computer & Communications, 10th Edition
3. Computers, Communications & information: A user's introduction, Sarah, E. Hutchinson. Stacey, C. Swayer.
4. Fundamentals of Information Technology, Alexis L Mathewsleon Leon Press.

Course Learning Outcomes

	Course Learning Outcomes (CLO)
1	Understand basic functions of computer hardware and software components including operating system functions
2	Identify and describe the components of a computer system (i.e. input, process, output and storage)
3	Explain the role of system software and application software within computers
4	Describe various storage media, including appropriate use and management
5	Understand the ability of computers to communicate with one another e.g. computer networks, the Internet
6	Identify the usage of emerging hardware and software technologies and how they are being used to solve problems and create efficiency
7	To understand netiquettes and security and privacy issues of being online
8	Understand the uses of common software applications

CLO-SO Map

	SO IDs											
CLO ID	**GA1**	**GA2**	**GA3**	**GA4**	**GA5**	**GA6**	**GA7**	**GA8**	**GA9**	**GA10**	**GA11**	**GA12**
CLO 1	1	0	0	0	0	0	0	0	0	0	0	1
CLO 2	1	0	0	0	0	0	0	0	0	0	0	1
CLO 3	1	0	0	0	0	1	0	1	0	0	0	1
CLO 4	1	0	0	0	0	1	1	0	0	0	0	1
CLO 5	1	0	0	0	1	1	0	0	0	0	0	1
CLO 6	1	0	0	0	0	1	0	0	0	0	0	1
CLO 7	1	0	0	0	0	1	1	1	0	0	0	1
CLO 8	1	0	0	0	0	1	0	0	0	0	0	1

Approvals

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Approved By	
Last Update	