Aror University of Art, Architecture, Design & Heritage Sukkur.

ARTIFICIAL INTELLIGENCE
F-24 SECTION (A,B,C)
2024
Application of Information & Communication Technologies

Course Title: Application of Information & Communication Technologies
Course Code: CSC102
Credit Hours: (2+1)
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Aims and Objectives / Description:

This is an introductory course in Computer Science designed for beginners. Apart from leading the participants through a whirlwind history of computing, the course also develops a feel for web programming through a series of lectures that help the students develop their own web page. Main objective of the course is to build an appreciation for the fundamental concepts in computing and to become familiar with popular PC productivity software.

Marks Distribution

S. No	Assessment Activities	Percentage	Total Activities
1.	Sessional: Quizzes/ Assignments (Quizzes & Assignments)	30%	1
2.	Mid Term Exam	30%	1
3.	Final Exam	40%	1

Course Learning Outcomes (CLOs)

No.	Course Learning Outcome	Domain	Level	Assessment Tool
C1	Understand basics of computing technology	C	1	Assignments, Exams
C2	Perform number system conversions	C	2	Assignments, Exams
C3	Have knowledge of types of software and hardware	C	2	Assignments, Exams
C4	Have knowledge of computing related technologies and skills.	C	3	Lab Task

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Domains: C=Cognitive, A=Affective, P=Psychomotor
Levels:
Cognitive = {1: Remembering, 2: Understanding, 3: Applying, 4: Analyzing, 5: Evaluating, 5: Creating}
Affective = {1: Receiving, 2: Responding, 3: Valuing, 4: Organizing, 5: Characterizing}
Psychomotor= {1: Imitation, 2: Manipulation, 3: Precision, 4: Articulation, 5: Naturalization}

Text Books

1- Deborah Morley, Charles S. Parker, "Understanding Computers: Today and Tomorrow, Comprehensive", 16th Edition

Reference Books

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

Detailed Course Outline:

Week	Topics	Subtopics	References	CLO- GO	(%) Course Covered
1	**Introduction to Computing**	1. What is a Computer? 2. History and Evolution of Computers 3. Types of Computers 4. Basic Components of a Computer 5. Overview of Input and Output Devices	Book [1], Chapter 1	CLO1 - GA1, GA2, GA10	3.00%
2	**Computer Hardware**	1. Basic Hardware Components: Input Devices, Output Devices, CPU, RAM, Storage 2. The Role of the Motherboard and Ports 3. Overview of Storage Devices: HDD, SSD, Optical	Book [1], Chapter 1	CLO1 - GA1, GA2, GA3	10%
3	**Software Basics**	1. What is Software? 2. Types of Software: System Software vs Application Software 3. Introduction to Operating Systems (OS) 4. Functions of the OS	Book [2], Chapter 1	CLO2- GA1, GA2, GA4	8%
4	**Introduction to Networking**	1. What is Networking? 2. Types of Networks: LAN, WAN,	Book [2], Chapter 2	CLO2- GA1, GA2, GA4	8%

		MAN 3. Introduction to Network Components: Router, Switch, Modem 4. Basic Networking Concepts: IP Addresses, DNS, HTTP			
5	**The Internet and Web Basics**	1. What is the Internet? 2. History and Development of the Internet 3. Basic Internet Services: Email, Web Browsing, FTP 4. Introduction to Web Servers and Clients	Book [3], Chapter 1	CLO1 - GA1, GA2	8%
6	**Basic Computer Security**	1. Introduction to Cybersecurity 2. Simple Security Threats: Viruses, Malware, Phishing 3. How to Protect Your Computer: Antivirus, Firewalls 4. Basic Encryption Concepts	Book [3], Chapter 2	CLO2 - GA1, GA2, GA5	8%
7	**Understanding Operating Systems**	1. Functions of an Operating System: Process Management, Memory Management 2. Types of Operating Systems: Windows, Linux, macOS 3. File System Basics: Files, Folders, Permissions	Book [2], Chapter 3	CLO2 - GA1, GA2, GA4	8%
8	**Basic Number Systems**	1. Binary and Decimal Systems 2. Understanding Data Representation: 0s and 1s 3. Simple Binary Arithmetic 4. Hexadecimal System	Book [4], Chapter 1	CLO2- GA1, GA2, GA3	8%
09	**Introduction to Applications**	1. Popular Computer Applications: Word Processing, Spreadsheets, Presentation Software 2. Basic Functions and Use Cases: Creating Documents, Spreadsheets, and Presentations 3. Introduction to Cloud-Based Applications	Book [5], Chapter 1	CLO1- GA1, GA3	8%
10	**Introduction to Artificial Intelligence (AI)**	1. What is AI? 2. Types of AI: Narrow AI vs. General AI 3. Applications of AI in Everyday Life: Smart Assistants, Self-Driving Cars 4. Overview of Machine Learning	Book [5], Chapter 2	CLO3- GA1, GA3, GA5	8%
11	**Introduction to Machine Learning**	1. What is Machine Learning? 2. Basic Concepts of Supervised and Unsupervised Learning	Book [5], Chapter 3	CLO3- GA1, GA3	8%

		3. Example Algorithms: Linear Regression, Decision Trees 4. Hands-on: Simple Data Classification Example			
12	**Cloud Computing Overview**	1. What is Cloud Computing? 2. Types of Cloud Services: IaaS, PaaS, SaaS 3. Introduction to Cloud Storage: Google Drive, OneDrive 4. Benefits and Challenges of Cloud Computing	Book [6], Chapter 1	CLO2- GA1, GA2, GA4	8%
13	**Emerging ICT Technologies**	1. Overview of New Technologies: Blockchain, Internet of Things (IoT) 2. Impact of Emerging Technologies on Society 3. ICT in Smart Cities	Book [7], Chapter 1	CLO3- GA1, GA2, GA5	6%
14	**Ethics in ICT**	1. Ethical Issues in Computing: Privacy, Security, and Digital Rights 2. Social and Environmental Impact of ICT 3. Internet Governance and Digital Ethics	Book [8], Chapter 1	CLO2- GA1, GA10	6%
15	**ICT in Everyday Life**	1. How ICT is Used in Education, Healthcare, Business, and Government 2. The Role of ICT in Global Development 3. Digital Divide: Access to Technology and Education	Book [8], Chapter 2	CLO1, CLO2- GA1, GA3, GA7	6%
16	**Review and Exam Preparation**	1. Key Topics Recap 2. Practice Exercises and Example Questions 3. Exam Preparation Tips 4. Review of Key Concepts and Practical Skills	All Books	CLO1, CLO2, CLO3- GA1, GA3, GA10	6%

CLO-PLO Map

CLOs	Graduate Attribute (PLOs)											
	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10	GA11	GA12
CLO1	1	0	0	0	0	0	0	0	0	0	0	0
CLO2	1	0	0	0	0	0	0	0	0	0	0	0
CLO3	1	0	0	0	0	0	0	0	0	0	0	0
CLO4	1	0	0	0	0	0	0	0	0	0	0	0

GA: Graduate Attributes

GA1 Computing Knowledge: An ability to apply knowledge of mathematics, science, computing fundamentals and computing specialization to the solution of complex computing problems.

GA2 Problem Analysis: An ability to identify, formulate, research literature, and analyze complex computing problems reaching substantiated conclusions using first principles of mathematics, natural sciences and computing sciences.

GA3 Design/Development of Solutions: An ability to design solutions for complex computing problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

GA4 Investigation: An ability to investigate complex computing problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.

GA5 Modern Tool Usage: An ability to create, select and apply appropriate techniques, resources, and modern IT tools, including prediction and modeling, to complex computing activities, with an understanding of the limitations.

GA6 The Computer Scientist and Society: An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional computing practice and solution to complex computing problems.

GA7 Environment and Sustainability: An ability to understand the impact of professional computing solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

GA8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of computing practice.

GA9 Individual and Team Work: An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.

GA10 Communication: An ability to communicate effectively, orally as well as in writing, on complex

computing activities with the computing community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

GA11 Project Management: An ability to demonstrate management skills and apply computing principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.

GA12 Lifelong Learning: An ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments