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| Course Title | Introduction to Information and Communication Technologies | | | |
| Course Code: | | COMP-105 | **Semester:** | Fall 2024 |
| Credit Hours: | | 2 | **Prerequisite(s):** | None |
| Instructor: | | Mr. Umer Farooq | **Class:** | BS(CS) |
| Office: | | Academic Block | **E-mail:** | umerfarooq510@ymail.com |
| Lecture Days: | | Monday, Tuesday | **Consultation Hours:** | All the day |
| Classroom: | | B1207-B2207, C2-1CL | **Knowledge Group:** | AI |

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| Course Description: | |
|  | Basic introduction to information and communication technologies and their application in the workplace. Basic understanding of computer software, hardware, and associated technologies. Basic learning about using computers in the workplace. |
| Course Objectives: | |
|  | To provide basic understanding of information andcommunication technologies Discuss the fourmain functions of computer hardware: input,processing, output, and storage also Identify anddescribe major hardware components.Second Part Objectives After completion of the second part, the students will be able tounderstand basic concepts of computer programming. Which includescomputer and computer Program, CPU level execution of program,overview of programming language, different levels of programminglanguage, basic structure and elements of a C Program, input andoutput variables, data types, format specifiers, escape sequences,arithmetic operators, arithmetic assignment operators, precedence ofoperators, loops, conditional statements, switch |

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| Course Learning Outcomes (CLOs): | | |  |  |
| At the end of the course the students will be able to: | | | **PLO** | **BT Level\*** |
|  | 1. Describe the fundamentals of various parts of computer system and their usage. | | 1 | C-1 |
|  | 1. Understand the fundamentals of operating systems, databases, computer networks and internet. | | 2 | C-3 |
|  | 1. Analyze and solve real-world engineering problems using fundamental concepts of ICT. | | 3 | C-3 |
|  |  | \* BT= Bloom’s Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain | | |

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| Mapping of CLOs to Program Learning Outcomes |
| |  |  |  |  | | --- | --- | --- | --- | | **PLOs/CLOs** | **CLO1** | **CLO2** | **CLO3** | | PLO 1 (Engineering Knowledge) | √ |  |  | | PLO 2 (Problem Analysis) |  | √ |  | | PLO 3 (Design/Development of Solutions) |  |  | √ | | PLO 4 (Investigation) |  |  |  | | PLO 5 (Modern tool usage) |  |  |  | | PLO 6 (The Engineer and Society) |  |  |  | | PLO 7 (Environment and Sustainability) |  |  |  | | PLO 8 (Ethics) |  |  |  | | PLO 9 (Individual and Team Work) |  |  |  | | PLO 10 (Communication) |  |  |  | | PLO 11 (Project Management) |  |  |  | | PLO 12 (Lifelong Learning) |  |  |  | |

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| Mapping of CLOs to Assessment Modules and Weightages | |
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| Books: | |
| Textbook: | 1. INFORMATION TECHNOLOGY SCIENCE By DR P K Patel |
| Reference Books: | 1. Charles S. Parker, Understanding Computers: Today and Tomorrow, Course Technology, 25 Thomson Place, Boston, Massachusetts 02210, USA 2. Zawacki-Richter, Olaf, and Colin Latchem. "Exploring four decades of research in Computers & Education." Computers & Education 122 (2018): 136-152 3. Sinha, Pradeep K., and Priti Sinha. Computer fundamentals. BPB publications, 2010. 4. Goel, Anita. Computer fundamentals. Pearson Education India, 2010 |

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| Lec. # | Topic |
| Week 1 | **Introduction to Computers and Computing:**   * Advancements in computers * Users * Information Technology * Data Vs Information * Hardware Vs software. * Application software vs System Software * Types and classifications of Computers * What is Computing |
| Week 2 | **Data Storage and Number Systems:**   * Bits and storage * The Binary System * Storing Integers and Fractions  Common number systems, Conversions among basis ExercisesCommon powersBinary MultiplicationBinary Additions  * Fractions |
| Week 3 | **Professional modes of Communication**   * Using Digital Communication Technologies * Advantages and Dis Advantages * Types of online communication * Email Etiquettes * Composing emails * Appropriate vs Inappropriate emails * Generating a professional Email-address * Writing Meaningful Subject * Scanning through Punctuation and Grammar * Using suitable tone * What is CC, BCC * Adding your signature to email |
| Week 4 | **Information System Overview:**   * Information System Concept * Value if IS * Comp. based Info. Sys   + Telecommunication   + Networks   + Internet   + Intranet   + Extranet * Business Info. Systems * M-Commerce * E-Commerce   + B2B   + C2C   + B2C * Traditional Processes VS E-Commerce * Transaction Processing Systems * Enterprise Resource Planning   + Benefits of ERP * Management Information Systems * Decision Support Systems * Information Systems in Society * Information Systems Activities |
| Week 5 | **Computer Networks:**   * Introduction to Networks * Types of Networks * Components of Network * Security |
| Week 6 | Operating System:Tasks OS can performGoals of OSStorage StructureTypes of OSOS ServicesBIOSBoot loaderKernel |
| Week 7 | AlgorithmsThe concept of Algorithms  * Algorithms and Role of Algorithms  Representations and DiscoveryIterative and RecursiveEfficiency and correctnessSimple algorithm exampleProblem Solving and improving logic in computing  * Program development cycle and tools * Machine language * Assembly language * High level language * Flow charts * Pseudocode * Tips to improve logic in Programming |
| Week 8 | Programming languagesHistoryTraditional Programming conceptsProgramming paradigmsProcedural unitsLanguages implementationsObject Oriented Programming |
| Week 9 | Mid Term |
| Week 10 | Data AbstractionsAbstractionBasic Data StructuresImplementing Data StructuresCustomized Data types |
| Week 11 | **Web development:**   * Introduction to html and its basic tags * Inserting images * Designing Tables * Adding Animation   **Lab Practice by creating a website** |
| Week 12 | **Data Management and its applications:**   * Role of data in computer science, types of data (structured, semi structured, unstructured), * Introduction to database system |
| Week 13 | **Artificial Intelligence**   * Basic introduction to the field and its commonly used applications * Intelligence and machines * Artificial Neural Networks * Robotics |
| Week 14 | **Computer Graphics:**   * Introduction to the field + Use of simple animation tools * Animation |
| Week 15-16 | **Student Presentations** |
| Week 17 | **Exam** |

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| Tools / Software Requirement: | |
|  | Tools: Office 365 |

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| Grading Policy: | |
| Quiz Policy: | The quizzes will be unannounced and normally last for ten minutes. The question framed is to test the concepts involved in last few lectures. Number of quizzes that will be used for evaluation is at the instructor’s discretion. Grading for quizzes will be on a fixed scale of 0 to 10. A score of 10 indicates an exceptional attempt towards the answer and a score of 1 indicates your answer is entirely wrong but you made a reasonable effort towards the solution. Scores in between indicate very good (8-9), good (6-7), satisfactory (4-5), and poor (2-3) attempt. Failure to make a reasonable effort to answer a question scores a 0. |
| Assignment Policy: | In order to develop comprehensive understanding of the subject, assignments will be given. Late assignments will not be accepted / graded. All assignments will count towards the total (No ‘best-of’ policy). The students are advised to do the assignment themselves. Copying of assignments is highly discouraged and violations will be dealt with severely by referring any occurrences to the disciplinary committee. The questions in the assignment are meant to be challenging to give students confidence and extensive knowledge about the subject matter and enable them to prepare for the exams. |
| Plagiarism: | PAF-IAST maintains a zero tolerance policy towards plagiarism. While collaboration in this course is highly encouraged, you must ensure that you do not claim other people’s work/ ideas as your own. Plagiarism occurs when the words, ideas, assertions, theories, figures, images, programming codes of others are presented as your own work. You must cite and acknowledge all sources of information in your assignments. Failing to comply with the PAF-IAST plagiarism policy will lead to strict penalties including zero marks in assignments and referral to the academic coordination office for disciplinary action. |

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