Department	International College of Liberal Arts		
Semester	Spring 2024	Year Offered (Odd/Even/Every Year)	Every Year
Course Number	DATA100		
Course Title	Introduction to Computer Science		
Prerequisites	None		
Course Instructor	PARIDA Abhishek	Year Available (Grade Level)	1
Subject Area	Interdisciplinary Data Science	Number of Credits	3
Class Style	Lecture	Language of instruction	English

(NOTE 1) Depending on the class size and the capacity of the facility, we may not be able to accommodate all students who wish to register for the course

Course Description	Computer Science is a vast field, encompassing various topics ranging from organization and architectures designs, operating systems, programming languages, data structures, software engineering techniques, communication and networking, and many others. The field is growing faster than any other profession and offers many opportunities provided one thoroughly adopts the current developments. Moreover, knowledge about various technical concepts develops critical thinking and helps understand technology profoundly. The course is intended for all students and articulates various essential topics in Computer Science and Information Technology. It is specially crafted for students in Liberal Arts and describes all the vital topics required to understand the newly emerging field of Data Science and more. After covering the essentials, the course orients students towards data used in society and several areas of Artificial Intelligence in the present scenario.
Class plan based on course evaluation from previous academic year	N/A

Course related to the instructor's practical experience (Summary of experience)	The instructor has extensive programming experience, which is evident in both professional work and research.
Learning Goals	The course is prepared for beginners to Computer Science and intended mainly for students from a non-technical background like the Liberal Arts and related. After completing the course, students would have a moderate level of computer basics. The subject's scope is vast and builds a pavement for the Data Science curriculum by covering all essential materials.

iCLA Diploma Policy	DP1／DP2

iCLA Diploma Policy

(DP1) To Value Knowledge - Having high oral and written communication skills to be able to both comprehend and transfer knowledge

(DP2) To Be Able to Adapt to a Changing World - Having critical, creative, problem-solving, intercultural skills, global and independent mindset to adopt to a changing world

(DP3) To Believe in Collaboration - Having a disposition to work effectively and inclusively in teams

(DP4) To Act from a Sense of Personal and Social Responsibility - Having good ethical and moral values to make positive impacts in the world

Active Learning Methods	Problem-Based Learning／Discussion, Debate
More details/supplemental information on Active Learning Methods	N/A
Use of ICT	N/A. The course will be taught on pen and paper/ whiteboard.

Contents of class preparation and review	Students are advised to take handwritten notes; this will drastically increase their ability to retain the information. Further, they are expected to practice regularly. One to two hours of study is required before the class preparation, and an equal amount of practice is needed after each lecture.	Hours expected to be spent preparing for class (hours per week)	3 hours	Hours expected to be spent on class review (hours per week)	3 hours
Feedback Methods	The best way to correspond during the course is the UNIPA system or direct emails. Please check the UNIPA account regularly for updates related to classes. To have a better grade, be regular in the study, active and attentive in the class, do a revision of classwork regularly, and participate in-class quizzes.				

Grading Criteria		
Grading Methods	Grading Weights	Grading Content
Understanding of Concepts	40%	In-class participation, Homework Assignments, Class Quizes and Final Exam
Correctness	30%	In-class participation, Homework Assignments, Class Quizes and Final Exam
Timeliness	30%	Homework Assignments

Required Textbook(s)	Handouts/ Notes will be provided to students. These notes would be indicative, and students may refer to materials online to suffice their understanding. However, they are encouraged to take proper class notes to refer them later. William Stallings - Computer Organization and Architecture William Stallings - Operating Systems: Internals and Design Principles Thomas L. Floyd - Digital Fundamentals Kenneth H. Rosen - Discrete Mathematics and Its Applications
Other Reading Materials/URL	N/A
Plagiarism Policy	Plagiarism is the dishonest presentation of others' work as if it were one's own. Duplicate submission is also treated as plagiarism. Depending on the nature of plagiarism, one may fail the assignment or the course. The repeated act of plagiarism will be reported to the University, which may apply additional penalties.

Other Additional Notes (Outline crucial policies and info not mentioned above)	N/A

(NOTE 2) Class schedule is subject to change

Class Schedule	
Class Number	Content
Class 1	Module 1: An Overview of a Computer System Lecture 1 - Opening remarks and relevance of studying Computers fundamentals; Overview of a Computer system; History/ Evolution of Computers; How do Computers Work?; Types of Computer System
Class 2	Lecture 2 - Fundamentals of Computer Organization- (John) von Neumann Architecture; Classification of Computer Language
Class 3	Lecture 3 - Classification of softwares; Operating system basics: Introduction and objectives; Types of Operating System
Class 4	Lecture 4 - Process state diagram; Process and Threads; Scheduling Algorithms
Class 5	Lecture 5 - Process Scheduling Algorithms (exercises)
Class 6	Lecture 6 - Number Systems: Positional versus non-positional numbering systems; Binary, Octal, Decimal, Hexadecimal

Class 7	Lecture 7 - Quiz 1 - Module 1 (Computer Systems)
Class 8	Lecture 8 - The language of 0s and 1s: Representation of data in Computer memory; Binary arithmetic;
Class 9	Lecture 9 - Representing floating point numbers
Class 10	Lecture 10 - Number Systems (Exercises)
Class 11	Lecture 11 - Exercises - Scheduling Algorithms and Number System
Class 12	Lecture 12 - Quiz 2 - Module 1 (Scheduling Algorithms and Number System)
Class 13	Module 2: Propositional Logic Lecture 13 - Propositions and Compound Statements; Logical Operations and truth tables; Logical Equivalence; Tautology and Contradictions; Mathematical Arguments; Exercises
Class 14	Lecture 14 - Quiz 3 - Module 2
Class 15	Module 3: Theory of Computation Lecture 15 - Theory of Computation: Introduction, Preliminaries - language and grammar

Class 16	Lecture 16 - Finite State Machines; Difference between DFA and NFA; Exercises
Class 17	Lecture 17 - Minimizing the DFA; Regular Expressions
Class 18	Lecture 18 - Pushdown automata, Turing Machine
Class 19	Lecture 19 - Exercises
Class 20	Lecture 20 - Quiz 4 - Module 3
Class 21	Module 4: Data Structures and Algorithms Lecture 21 - Flowcharts and pseudo-codes; Fundamental (linear) Data Structure: array, linked list, stack, queue
Class 22	Lecture 22 - Sorting and Searching algorithm
Class 23	Lecture 23 - Non-linear Data Structures - Tree, Heap, Graph
Class 24	Lecture 24 - Non-linear Data Structures - Graph (Exercises)

Class 25	Lecture 25 - Exercises
Class 26	Lecture 26 - Quiz 5 - Module 4
Class 27	Module 5: Computer Networks Lecture 27 - Preliminaries; Types of Networks; OSI model
Class 28	Lecture 28 - APIs; Monoliths versus Microservices
Class 29	Module 6: New Technologies (Data used in Society/ Artificial Intelligence) Lecture 29 - Blockchain; chat GPT
Class 30	Lecture 30 - Internet of Things