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👨‍👨‍👧‍👧 “Please remember me and my family in your prayers.” 🌸

📚 Bachelor of Science in Computer Science

🎓 University of the People

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Computer Science

CS 1111 Introduction to computer Science

UNIVERSITY OF THE PEOPLE
The Education Revolution

CS 1111: Introduction to Computer Science

Prerequisites: None.

Course Description: This course is designed to provide students with foundational understanding of key computer science principles such as an exploration of diverse topics including number systems, logic gates, operating systems, computer networks, security, databases, programming fundamentals, and different aspects of the field of computer science. With a structured approach and a balanced blend of theory and practical insights, this course endeavors to lay robust groundwork for aspiring computer scientists, fostering their proficiency and insight across this dynamic discipline.

Required Textbook and Materials: UoPeople courses use open educational resources (OER) and other materials specifically donated to the University with free permissions for educational use. Therefore, students are not required to purchase any textbooks or sign up for any websites that have a cost associated with them. The main required textbooks for this course are listed below, and can be readily accessed using the provided links. There may be additional required/recommended readings, supplemental materials, or other resources and websites necessary for lessons; these will be provided for you in the course's General Information and Forums area, and throughout the term via the weekly course Unit areas and the Learning Guides.

- This course does not contain a main textbook; resources to all required reading will be provided in the course Learning Guide for each week.

Software Requirements/Installation: No special requirements.

Learning Objectives and Outcomes:

By the end of this course students will be able to:

1. Demonstrate basic foundational knowledge of computer systems.
2. Identify and apply basic concepts of Number Systems, Boolean Algebra, and Logic Gates.
3. Explain the working fundamentals of operating systems, computer networks, security and databases.
4. Describe programming paradigm problems and identify and correct the syntax.
5. Discuss emerging trends in the field of computing.

Course Schedule and Topics: This course will cover the following topics in eight learning sessions, with one Unit per week. The Final Exam will take place during Week/Unit 9 (UoPeople time).

Week 1: Unit 1 - Introduction to Computer Systems

Unit Learning Outcomes:

By the end of this Unit, you will be able to:

1. Compare and contrast different computer system architectures and their implications on performance.
2. Explain the concept of the stored-program concept and its importance in modern computing.
3. Explain the role of secondary storage devices in terms of data persistence, capacity, and access speed.
4. Differentiate between system software, application software and embedded software, and their roles in a computing environment.

Week 2: Unit 2 - Number Systems and Codes

Unit Learning Outcomes:

By the end of this Unit, you will be able to:

1. Explain the conversion of numbers between binary, decimal, octal, and hexadecimal number systems.
2. Compare and contrast the different coding representations in terms of character set size, compatibility, and usage in various industries.

Week 3: Unit 3 - Boolean Algebra and Logic Gates

Unit Learning Outcomes:

By the end of this Unit, you will be able to:

1. Utilize the laws of Boolean algebra to simplify complex Boolean expressions.
2. Explain the relationship between De Morgan's theorems and other Boolean algebra laws in solving logical problems.
3. Construct truth tables for different logic gates and combinations of gates.
4. Determine the equivalence of Boolean expressions using algebraic manipulation and truth tables.

Week 4: Unit 4 - Operating Systems

Unit Learning Outcomes:

By the end of this Unit, you will be able to:

1. Examine the core functions of an operating system, such as process management, memory management, file system management, and device management.
2. Discuss the advantages and challenges associated with various types of operating systems in terms of performance, scalability, and fault tolerance.
3. Discuss the key features and characteristics of mobile operating systems.

Week 5: Unit 5 - Overview of Databases Management System

Unit Learning Outcomes:

By the end of this Unit, you will be able to:

1. Explain the core components and applications of databases, including their advantages and disadvantages.
2. Explain the concepts of data abstraction and data independence.

Week 6: Unit 6 - Computer Networks and Security

Unit Learning Outcomes:

By the end of this Unit, you will be able to:

1. Explain network fundamentals, including types, topologies, and connecting devices.
2. Explain the internet components and security principles.

Week 7: Unit 7 - Programming Fundamentals

Unit Learning Outcomes:

By the end of this Unit, you will be able to:

1. Elaborate on the fundamental principles that distinguish the different programming paradigms and their respective applications.
2. Illustrate the importance of thorough problem analysis and efficient design in developing resilient software solutions.
3. Create algorithms that involve sequencing, conditional selection, and iterative loops to solve specific tasks.

4. Use debugging techniques and tools to identify and rectify logical errors.

Week 8: Unit 8 - Overview of Emerging Trends

Unit Learning Outcomes:

By the end of this Unit, you will be able to:

1. Elaborate on the concepts of machine learning.
2. Explain cloud computing, big data processing, and blockchain technology.
3. Explain the IoT and robotics systems.
4. Discuss the notion of virtual reality (VR).

Week 9: Unit 9 - Course Review and Final Exam

Course Requirements:

Discussion Assignments & Response Posts/Ratings

Some units in this course require that you complete a Discussion Assignment. You are required to develop and post a substantive response to the Discussion Assignment in the Discussion Forum. A substantive response is one that fully answers the question that has been posted by the instructor. In addition, you must extend the discussion by responding to at least two (2) of your peers' postings in the Discussion Forum. Your discussion posts will be assessed by your instructor. Discussion Forums are only active for each current and relevant learning week, so it is not possible to contribute to the forum once the learning week has come to an end.

Assignment Activities

The assignment activities are graded by your instructor. The grading rubric is listed under the assignment instructions. The grading rubric is a document that outlines the criteria that your instructor will use to grade your work.

Quizzes

This course will contain three types of quizzes – the Self-Quiz, the Graded Quiz, and the Review Quiz. These quizzes may contain multiple choice, true/false, or short answer questions. The results of the Self-Quiz will not count towards your final grade. However, it is highly recommended that you complete the Self-Quiz to ensure that you have adequately understood the course materials. Along with the Reading Assignments, the results of the Self-Quiz should be used as part of an iterative learning process, to thoroughly cover and test your understanding of course material. You should use the results of your Self-Quiz as a guide to go back and review relevant sections of the Reading Assignments. Likewise, the Review Quiz will not count towards your final grade, but should also be used to assist you in a comprehensive review and full understanding of all course material, in preparation for your Final Exam. Lastly, the results of the Graded Quiz will count towards your final grade. Specific instructions on the format and content of the Graded Quiz will be provided by your instructor.

Final Exam

The Final Exam will take place during the Thursday and Sunday of Week/Unit 9, following the completion of eight units of work. The format of the Final Exam is similar to that of the quizzes, and may contain a combination of different question types. You will have one attempt to take the exam, and it will be graded electronically. Specific instructions on how to prepare for and take the exam will be provided during Week/Unit 8.

Course Forum

The Course Forum is the place to raise issues and questions relating to the course. It is regularly monitored by the instructors and is a good place to meet fellow students taking the same course. While it is not required to participate in the Course Forum, it is highly recommended.

Class Introductions

This section is your opportunity to introduce yourself to your classmates and create a vibrant learning community. By sharing your background, interests, and goals, you can create meaningful connections and discover commonalities with your peers.

Course Policies:

Grading Components and Weights

Each graded component of the course will contribute some percentage to the final grading scale, as indicated here:

Items	Number of assignments	Weight

Discussion Forum	5	30%
Assignment Activity	6	35%
Graded Quiz (Unit 3 and Unit 6)	2	20%
Final Exam	1	15%

Grading Scale

This course will follow the standard 100-point grading scale defined by the University of the People, as indicated here:

Letter Grade	Grade Scale	Grade Points
A+	98-100	4.00
A	93-97	4.00
A-	90-92	3.67
B+	88-89	3.33
B	83-87	3.00
B-	80-82	2.67
C+	78-79	2.33
C	73-77	2.00
C-	70-72	1.67
D+	68-69	1.33
D	63-67	1.00
D-	60-62	0.67
F	Under 60	0.00

Grade Appeal

If you believe that the final grade you received for a course is erroneous, unjust, or unfair, please contact your course instructor. This must be done within seven days of the posted final grade. For more information on this topic, please review the Grade Appeal Procedure in the University Catalog.

Participation

Non-participation is characterized by lack of any assignment submissions, inadequate contributions to the Discussion Forums, and/or lack of peer feedback to Discussion/Written Assignments. Also, please note the following important points about course participation:

- Assignments must be submitted on or before the specified deadline. A course timeline is provided in the course schedule, and the instructor will specify deadlines for each assignment.
- Any student showing non-participation for two weeks (consecutive or non-consecutive) is likely to automatically fail the course.
- Occasionally there may be a legitimate reason for submitting an assignment late. Most of the time, late assignments will not be accepted and there will be no make-up assignments.
- All students are obligated to inform their instructor in advance of any known absences which may result in their non-participation.

Academic Honesty and Integrity

When you submit any work that requires research and writing, it is essential to cite and reference all source material. Failure to properly acknowledge your sources is known as “plagiarism” – which is effectively passing off an individual’s words or ideas as your own. University of the People adheres to a strict policy of academic honesty and integrity. Failure to comply with these guidelines may result in sanctions by the University, including dismissal from the University or course failure. For more information on this topic, please review the Academic Integrity Policy in the University Catalog.

Any materials cited in this course should be referenced using the style guidelines established by the American Psychological Association (APA). The APA format is widely used in colleges and universities across the world and is one of several styles and citation formats required for publication in professional and academic journals. Refer to the UoPeople APA Tutorials in the LRC for help with APA citations. For help with using library, kindly refer to UoPeople Library.

Code of Conduct

University of the People expects that students conduct themselves in a respectful, collaborative, and honest manner at all times. Harassment, threatening behavior, or deliberate embarrassment of others will not be permitted. Any conduct that interferes with the quality of the educational experience is not allowed and may result in disciplinary action, such as course failure, probation, suspension, or dismissal.

For more information on this topic, please review the Code of Conduct Policy in the University Catalog.