



Syllabus for Digital Electronics & Computer Architecture

Credits: 3

CS 1105

Instructor Contact Information:

You can also always send your instructor a private message through the Moodle Messaging system. Once logged into your course, click your instructor's Moodle profile page to be provided the ways in which to communicate with your instructor. Your instructor's email will also be listed in their profile.

Course Description

This course covers digital electronics, logic design, computer arithmetic, memory systems, programmable logic devices, and computer architecture. Students will be able to explain the principles of digital circuits and logic. We will use an online hardware simulator to actually “build” a computer and develop an assembler from the ground using concepts we will learn in class. Topics include number systems, Boolean logic, combinational and sequential circuits, computer arithmetic, memory hierarchies, and CPU (Central processing unit) design. By course completion, students will be equipped to contribute to the field of digital design, with skills in circuit design and microprocessor understanding.

Learning Objectives

Program Learning Outcomes (PLOs):

- PLO1: Students will be able to Provides a framework in applying strategies for the effective design of computing systems.
- PLO2: Students will be able to explain apply appropriate methods in the planning, development, and management of design projects
- PLO3: Students will be able to covers the knowledge and skills needed to analyze problems from multiple perspectives and seek resolution through multiple methods and tools.
- PLO4: Students will be able to apply mathematics methods effectively to analyze and resolve problems.
- PLO5: Students will be able to communicate effectively using well organized arguments and credible supporting evidence.
- PLO6: Students will be able to enhance a command of critical thinking with respect to computer ethics, privacy, and security.

Course Learning Outcomes (CLOs):

- CLO1: Explain the principles of Digital Circuits Logic, Boolean Algebra, and concepts of number systems.
- CLO2: Analyze the principles of logic gate combinations and sequential logic design.
- CLO3: Describe the basic principles of memory and the ALU (Arithmetic and Logic Unit) within a computer system.
- CLO4: Recognize the relationship between machine language and the functioning of a computer

system.

CLO5: Examine basic assembler coding techniques.

CLO6: Explain the concept of computer language hierarchy.

Co/Prerequisites

None

Course 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. This course does not have a primary textbook. All required readings and resources will be provided in the weekly Learning Guide.

Technology Requirements

Students are required to have access to a computer with a reliable Internet connection in order to complete all requirements for a course. Students must also have the ability to save documents and files. Typically, University of the People learning materials are provided to students in either Adobe PDF or Microsoft Office compatible formats. Therefore, students need to be able to open and save documents in these formats as well.

This course will require the use of two software packages: Logism and TECS. Both require that your computer have a Java v1.5 JRE (Java Run Time) installed.

Note that the information on how to install the software has been included in the Learning Guide of Unit 1, under the heading Download and Install Software.

Campus Tech Support Email for English programs: support@uopeople.edu

Regular and Substantive Interaction

As your instructor, they will interact and engage with each of you on a regular basis throughout the term to support your learning. They will provide direct instruction related to the course's learning objectives, respond to your questions, grade and/or provide feedback on your submitted coursework, post regular announcements, and engage in the course discussion areas regarding academic course content when appropriate.

Course Expectations and Learning Activities

Discussions

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 posed 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. 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

Assignment Activity is 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 be available for students to complete between 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

Participation Expectations

- Be involved and active in your courses.
- Be highly motivated and disciplined.
- Check the course homepage, calendar and assignment page, the course syllabus, your UoPeople email, and the Moodle course discussion forums several times a week.
- Post the required comments and responses to the discussion forum for your course.
- Keep up with your assignments and online quizzes/exams (as applicable) and manage your time well. These quizzes test your knowledge and comprehension of the new content.
- Participate actively in class discussions.
- Be polite and respectful.
- Use good grammar and correct spelling.
- Be honest and original. Plagiarism will not be tolerated in any online course.



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.
- 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.

Feedback and Suggestions

We value your input and would encourage you to complete the end of course survey to provide us with course feedback and suggestions, and report issues

Evaluation and Grading Scale

Grading Weights:

Category	% Of Grade	Grade Items (Learning Activities)	Associated Learning Objectives/Outcomes
Discussion Forums	30%	1. Discussion Forum – Unit 1	• CLO2
		2. Discussion Forum – Unit 2	• CLO2
		3. Discussion Forum – Unit 3	• CLO2
		4. Discussion Forum – Unit 4	• CLO1
		5. Discussion Forum – Unit 5	• CLO3
		6. Discussion Forum – Unit 6	• CLO4
		7. Discussion Forum – Unit 7	• CLO6
		8. Discussion Forum – Unit 8	• CLO1, CLO2, CLO4, CLO5
Assignment Activities	40%	1. Assignment Activity – Unit 1	• CLO1
		2. Assignment Activity – Unit 2	• CLO2, CLO3
		3. Assignment Activity – Unit 3	• CLO2
		4. Assignment Activity – Unit 4	• CLO1, CLO3
		5. Assignment Activity – Unit 5	• CLO2, CLO3
		6. Assignment Activity – Unit 6	• CLO4
		7. Assignment Activity – Unit 7	• CLO4, CLO5
		8. Assignment Activity – Unit 8	• CLO4
Graded Quizzes	10%	1. Graded Quiz – Unit 3	• CLO1, CLO2, CLO3
		2. Graded Quiz – Unit 6	• CLO1, CLO2, CLO3, CLO4
Final Exam	20%	1. Final Exam – Unit 9	• CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
TOTAL 100%			



Grading Scale:

Letter Grade	% Grade	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	<60	0.00
W	N/A	N/A

Students may also be granted Withdrawal (W), if they withdraw from the course, or an Incomplete (I) should their circumstances permit. A student who feels they were graded unfairly, or who seeks to dispute a grade, may initiate a grade appeal process. Refer to [University Policies](#) for more information on withdrawals and appeals.

Course Schedule

UNIT 1: Introduction to Digital Design

- Watch/Read the reading assignments due by Saturday or Sunday.
- Discussion first response due by Sunday.
- Discussion replies due by Wednesday.
- Assignment Activity submission due by Wednesday.
- Self-Quiz submission.

UNIT 2: Combinational Logic Design

- Watch/Read the reading assignments due by Saturday or Sunday.
- Discussion first response due by Sunday.
- Discussion replies due by Wednesday.
- Assignment Activity submission due by Wednesday.
- Self-Quiz submission.



UNIT 3: Sequential Logic Design

- Watch/Read the reading assignments due by Saturday or Sunday.
- Discussion first response due by Sunday.
- Discussion replies due by Wednesday.
- Assignment Activity submission due by Wednesday.
- Self-Quiz submission.
- Graded Quiz submission due by Wednesday.

UNIT 4: Computer Arithmetic

- Watch/Read the reading assignments due by Saturday or Sunday.
- Discussion first response due by Sunday.
- Discussion replies due by Wednesday.
- Assignment Activity submission due by Wednesday.
- Self-Quiz submission.

UNIT 5: Memory and Programmable Logic

- Watch/Read the reading assignments due by Saturday or Sunday.
- Discussion first response due by Sunday.
- Discussion replies due by Wednesday.
- Assignment Activity submission due by Wednesday.
- Self-Quiz submission.

UNIT 6: Computer Architecture

- Watch/Read the reading assignments due by Saturday or Sunday.
- Discussion first response due by Sunday.
- Discussion replies due by Wednesday.
- Assignment Activity submission due by Wednesday.
- Self-Quiz submission.
- Graded Quiz submission due by Wednesday.

UNIT 7: Assembler Language: Concepts and Techniques

- Watch/Read the reading assignments due by Saturday or Sunday.
- Discussion first response due by Sunday.
- Discussion replies due by Wednesday.
- Assignment Activity submission due by Wednesday.
- Self-Quiz submission.

UNIT 8: Compiler Processes Overview

- Watch/Read the reading assignments due by Saturday or Sunday.
- Discussion first response due by Sunday.



- Discussion replies due by Wednesday.
- Assignment Activity submission due by Wednesday.
- Self-Quiz submission.

UNIT 9: Final Exam

- Final Exam due by Sunday.

University Policies & Processes

Late Work/Make-up Policy

Please review the [Late Work](#) policy in the University Catalog.

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 [General Code of Conduct](#) in the University Catalog.

Procedures for Resolving Academic Grievances/Appeals

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 fourteen days of the last day of the term. For more information on this topic, please review the [Grievance Policy](#) and [Grade Appeals](#) Procedure in the University Catalog.

Withdrawal and Drop Date Policy

Please review the [Course Drops and Withdrawals](#) policy of the University Catalog.

Academic Integrity and Plagiarism

Please review the [Code of Academic Integrity](#) in the University catalog.

Intellectual Property

UoPeople respects the intellectual property rights of others who seek to create, preserve, and disseminate knowledge through teaching, collective learning, and continued research at the University at large. For more information on this topic, please review the [Intellectual Property](#) policy in the University catalog.

Reasonable Accommodations

Contact your Program Advisor to open a request for support.



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Student Support Services & Resources

English Programs

Academic Advising: advising@uopeople.edu

Financial Aid: financial.aid@uopeople.edu

Library Resources: library@uopeople.edu

Payment Processing: payments@uopeople.edu

Student Services: student.services@uopeople.edu

Technical Support: support@uopeople.edu