Computer Architecture

CS - 2810 001

Course Student Learning Outcomes

- Demonstrate a basic understanding of each of the following topics as they impact the hardware/software interface: integer, floating point, character formats, instruction set formats, the direct relationship between assembly language instructions and machine instructions, computer arithmetic, Datapath and control, pipelining, memory hierarchies, peripherals.
- Demonstrate the logic and write the assembly language source code that performs the necessary numerical calculations and other operations to solve a computer based problem.
- Develop and build electronic digital system based on a micro controller.

Course Prerequisites

CSIS-1410 or equivalent

Engagement Plan

Example language:

- I will respond to email within 24 hours I will offer feedback on major assignments within 48 hours. The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication.
- In this course I will be posting interactive announcements which will offer specific opportunities for class questions and extra credit every other week.
- Additionally, I will be participating in the discussion forums with you to share my perspective within the discipline and to offer some nuances of interpretation that may not be present in your textbook.

- Lastly, we'll be holding small group Q & A sessions, where we can learn from our peers (and faculty) on some of the more difficult units within the course.

Brief Description of Assignments/Exams

- Homework (30%): Homework assignments are due one week after the lecture on that chapter is finished. Assignments should be submitted in PDF or MS Office format.
    - Include your name
    - Each problem should be identified
    - Your answer must be identified by highlighting or boxing in.
    - Late work may be submitted up to one week (7 calendar days) following the due date, but a 20% penalty will be assessed. Homework will not be accepted more than one week after the due date.
- Arduino Labs (15%): All labs will be done in class to prepare you to build the final project.
- Quizzes/ Exams (20%): Weekly Quizzes are available on Canvas . Your chances of success in this course are improved by regular attendance in class; class attendance also gives greater opportunity to work on your group project with your group members. If you know in advance that you will miss a class, please message me via Canvas to be excused.
- Final Microcontroller Project (35%): You will participate in a group project involving at least one microcontroller and write a white paper based on the project. You will also create and give a presentation summarizing your project. You will present your paper to the class.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Any Questions?	Discussion	0

Due Date	Assignment Name	Assignment Type	Points
	Chapter 1: Computer Abstractions and Technology	Quiz	25
	Chapter 2 : Instructions – Language of the Computer.	Quiz	20
	Chapter 3: Arithmetic for Computers	Quiz	20
	Chapter 4: The Processor	Quiz	20
	Chapter 5: Memory Hierarchy	Quiz	20
	How to write a white paper for your final project	Assignment	
	Introduce Yourself	Discussion	0
	Lab 9. Sensor_Buzzer	Assignment	15
	Lab AVRDUDESS must be version 7.0 for Labs	Discussion	0
	Quiz Orientation	Quiz	10
	Roll Call Attendance	Assignment	100
8/29/25	Introduce Yourself	Discussion	10
9/3/25	Chapter 1 discussion	Assignment	10
9/17/25	Arduino Team	Assignment	10

Due Date	Assignment Name	Assignment Type	Points
9/17/25	Chapter 1 Class Exercises.	Assignment	15
9/22/25	Lab 2. Traffic Light	Assignment	15
9/22/25	Assignment Chapter 1	Assignment	30
9/22/25	Lab 1. Blink	Assignment	15
9/24/25	Project Scope	Assignment	10
10/1/25	Lab 4. LCD Display with potentiometer	Assignment	15
10/1/25	CE. MIPS Exercise 1	Assignment	10
10/6/25	Assignment 2.2 - First Assembly Program	Assignment	25
10/8/25	Assignment 3.1 - Basics of Logic Design	Assignment	30
10/8/25	Midterm Exam	Assignment	30
10/8/25	Assignment 2.1: Current Event 1	Assignment	10
10/8/25	Assignment 2.4 - MIPS Instruction Worksheet	Assignment	10
10/13/25	Lab 6. Logic Gates	Assignment	15
10/13/25	Assignment 2.3 - Procedures	Assignment	25
10/15/25	Final project Team Discussion	Assignment	15
10/15/25	Assignment 3.2. Multiplication	Assignment	20

Due Date	Assignment Name	Assignment Type	Points
10/15/25	Team Project Update	Assignment	10
10/16/25	Chapter 3.1-3.3. Quiz 1.Arithmetic for Computers	Quiz	30
10/17/25	Assignment 2.5. MIPS's PROGRAMS	Assignment	40
10/20/25	Assignment 3.3. Division	Assignment	20
10/22/25	Final project Team Discussion	Assignment	15
10/22/25	Assignment 3.4 - Floating Point	Assignment	20
10/22/25	Lab 8. Timer	Assignment	15
10/29/25	Lab 7. 7-Segments Display	Assignment	15
11/3/25	Assignment 4.1- Data path	Assignment	30
11/3/25	Final project Team Discussion	Assignment	10
11/3/25	Lab 5. LED Bar Graph	Assignment	15
11/5/25	Assignment 4.2 - Processor | Pipelining	Assignment	30
11/10/25	Final project Team Discussion	Assignment	10
11/24/25	Final project Team Class Evaluation	Assignment	20

Due Date	Assignment Name	Assignment Type	Points
11/26/25	Assignment 7a - Cache Basics	Assignment	30
12/3/25	Research 02 - Paper & Presentation_PLO-CS-4	Assignment	100
12/8/25	Arduino Project_PLO-CS-5_PLO-CS-7	Assignment	100
12/8/25	Jamboree Video	Assignment	15
12/8/25	Project Team Evaluation	Assignment	15
12/8/25	Team Project White Paper	Assignment	100
12/11/25	Course evaluation	Assignment	15

Grading Scale

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How to Navigate to Canvas

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

For more information, navigate to the Institutional Policies tab on the Institutional Syllabus page.

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, visit the Institutional Syllabus page under the Tutoring and Learning Support tab. We encourage you to take advantage of these resources to help you succeed in your studies. If you have any

questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, visit the Institutional Syllabus page under the Advising and Counseling Support Services tab. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

SLCC Student Academic Calendar