

SIE 370 Spring 2019 Embedded Computer Systems
MWF 2:00 PM - 2:50 PM Saguaro Hall Room 101

Instructor: Sherilyn Keaton
Office: ENGR 256 A
Office Hours: MWF 9:00 am – 11:00 am or by appointment
Email: keatons@email.arizona.edu

Lab: ENGR 256
Prerequisites: ENGR 102 and ENGR 211M or ECE 207
Website: Desire2Learn will be used for the class website (<http://d2l.arizona.edu>)

Description: Boolean algebra, combinational and sequential logic circuits, finite state machines, simple computer architecture, assembly and C/C++ language programming, and real-time computer control.

Course Objectives:

- Understanding of number systems, Boolean Algebra, Karnaugh Maps and digital logic,
- Learn how to use the C/C++ language for providing programming solutions,
- Learn how to design and build combinational and sequential logic circuits.

Expected Learning Outcomes:

- Convert numbers between the different number systems,
- Reduce and optimize circuits using Boolean Algebra, Karnaugh Maps and applying digital logic,
- Translate software implementation of a system into a hardware implementation or vice versa,
- Design, develop, debug, deploy and run software on a microcontroller,
- Use a microcontroller to interface with external hardware devices.

Grading: Regular grades are awarded for this course: A B C D E. Grade distribution:

Homework	15%
Class Participation	10%
Lab Assignments	25%
Midterm Exam	25%
Final Exam	25%

Required Textbook: None.

Reference:

- [Arduino Official Online Reference Pages](#)
- [Tinkercad](#)
- [Contemporary Logic Design, Randy H Katz and Gaetano Borriello](#), 2nd edition, Pearson Prentice Hall, 2005

Required or Special Materials:

SunFounder Arduino Mega 2560 R3 Project Super Starter Kit

Software:

We will use the Arduino IDE (Integrated Development Environment) to write C/C++ based programs (called sketches by Arduino). Online software tools will be used to simulate circuit and Arduino development. We will

work together in class to review any required software and installation instructions.

Absence and Class Participation Policy

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences> .

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings.-Absences may affect a student's final course grade. If you anticipate being absent, are unexpectedly absent, or are unable to participate in class online activities, please contact me as soon as possible. *To request a disability-related accommodation to this attendance policy, please contact the Disability Resource Center at (520) 621-3268 or drc-info@email.arizona.edu.* If you are experiencing unexpected barriers to your success in your courses, the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office is located in the Robert L. Nugent Building, room 100, or call 520-621-7057.

Assignments and Examinations: Schedule/Due Dates

Homework Quantity: 5 throughout the semester (schedule is separate TBD)

Lab Quantity: 7 throughout the semester (schedule is separate TBD)

Midterm Exam: 1 Programming Component (take home) and 1 In-Class Component TBD

Final Exam: 1 Programming Component (take home) and 1 In-Class Component (see dates below)

Policy on revision and resubmission to D2L folder of in-class assignments, homework, and programming projects:

Please feel free to submit work early and revise as you like up until the assignment deadline.

Final Examination or Project

The Final Exam will consist of two parts:

Final Project Programming Component

Take home due on the last day of class, May 1 @ 5 pm

Final Exam In-Class Component

Held May 3 from 1 pm to 3 pm in the regular classroom

“As Confirmed by the Faculty Senate: No deviation from the exam schedule, once it is published, is authorized. “

Final Exam Regulations are here:

<https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information>

and the Final Exam Schedule as set by the Office of the Registrar are here:

<http://www.registrar.arizona.edu/schedules/finals.htm>

Scheduled Topics/Activities

In separate document TBD

Classroom Behavior Policy

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).

Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

Accessibility and Accommodations

<http://drc.arizona.edu/instructors/syllabus-statement>.

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

The University Libraries have some excellent tips for avoiding plagiarism, available at <http://new.library.arizona.edu/research/citing/plagiarism>.

Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

UA Nondiscrimination and Anti-Harassment Policy

The University is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.