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

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.