

Syllabus<sup>1</sup>  
TECH 3233  
Microprocessor Technology  
Spring 2024  
Ver 1.00

## Class Information

### Instructor

**Instructor:** Daniel Kohn

**Email:** [dekohn@memphis.edu](mailto:dekohn@memphis.edu)

**Office:** ET 218

**Class Website:** <http://www.tech-uofm.info>

### Lecture Meetings and Location

Class Meeting Schedule: Tuesday / Thursday 9:40 – 11:05am ET200

Lab Meeting Schedule: Tuesday 1:00 – 3:45pm ET 227

### Instructor Availability

I will be available during posted hours (see website) or by appointment for assistance, consultation and/or advisement

## Course Information

### Course Description and Purpose

TECH 3233 - Microprocessor Technology - Computer history and architecture of microprocessors and microcontrollers including bus architecture, memory, internal CPU architecture, hardware/software interaction, high and low level language programming and input and output operations. Three lecture hours and three laboratory hours per week. *PREREQUISITE: TECH 1211 and TECH 3232, TECH 2821.*

### Required Textbook

The AVR Microcontroller and Embedded Systems Using Assembly and C: Using Arduino Uno and Atmel Studio by Sarmad Naimi and Muhammad Ali Mazidi 2<sup>nd</sup> Ed (available from Amazon Books - [LINK](#))

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<sup>1</sup> Made Accessible with the help of ETSU's [Accessible Syllabus Template](#)

## Course Objectives

Upon completion of the course, the student should be:

1. Demonstrate knowledge of the vocabulary of microprocessor architecture and interfacing.
2. Demonstrate knowledge of the programmer's model, flags, registers, and program debugging.
3. Demonstrate knowledge of a specific microcontroller architecture, including instruction set, hardware features, applications design, and high level language programming.
4. Demonstrate knowledge of specific hardware interfacing including basic I/O, analog to digital conversion, timers, serial I/O and interrupts.
5. From a problem statement, design a hardware and software solution, and implement it.

## Grading

### Evaluation

The grade will be computed in accordance with the following weighting of each element:

Labs	40%
Project	25%
Tests and Final	35%

### Grading Scale

Final letter grades for the semester will be based on the standard plus/minus grading scale except for A- (usually A- is 90-92%, A is 93-97%, but for this class A is a 90-97%).

### Labs

All lab reports are due at the beginning of the next lab period (unless otherwise stated by the instructor). The lab grade is determined by the quality of the lab sheets, reports, and actual performance on the lab. Reports will be graded on the basis of content, neatness, professionalism, logical presentation, completeness, and clarity of presentation.

All labs must be demonstrated, or a grade of ZERO will result for the lab.

All programs **MUST** be commented as per instructor's specifications. Comments will be part of the grading rubric for all programming assignments.

If a group assignment is given, participation in the group will be a major part of the grade. Just because your group gets a good grade does NOT mean you will get the same grade if you did not actively participate in the effort.

Read lab handouts before asking questions. A lot of time is taken preparing lab handouts and I try to answer most of your questions in their contents. If it is obvious that you have not read them I will simply answer your question with "go read the handout".

You are expected to clean up after yourself in lab, failure to do so will result in a reduction in grade.

## Tests

There will be two or more tests (written and/or practical) during the semester and the Final will be comprehensive. There will be no makeup tests, unless prior notification and approval is given by the instructor.

## Extra Credit

From time to time, the instructor might offer extra credit opportunities. Extra credit will only apply once a student has proven proficiency in the class material by receiving a C- or above in the class.

## Communication

All assignments, handouts etc. will be distributed in electronic form from the instructor's website at:

<http://tech-uofm.info/> (under the TECH3233 Link)

Additionally, e-mails will be sent to your University of Memphis e-mail account on occasion. [if you wish to use an e-mail account other than that provided to you by the University, you need to set up forwarding of your University e-mail to another preferred address]

## Emailing Instructor

If you need to email the instructor for any reason, please:

- Write professionally (no slang, text message shortcuts, etc)
- Put the Class Number in the subject (eg "TECHxxxx - Request a meeting")
- If you are referring to an assignment or lab, include the number (eg "I have a question on Lab #3.")
- If you are requesting an appointment, please check the instructor's online schedule and include at least 3 possible meeting times/dates in your 1<sup>st</sup> email this will cut down on the number of emails to set up the appointment)

## Assignment Submission

Assignments are due at the end the class period unless otherwise announced.

All assignments must be submitted as per instructions (ie: paper, electronic submission, or both).

- If an electronic submission is required, use the "Submit Assignment" link on the class website.
- If you need to resubmit an assignment, put a number after your name (eg Fred Smith 2) when resubmitting.
- If submitting an Atmel project, ensure it is zipped (.zip) correctly before submitting (failure to submit a correct .zip file will incur a substantial grade penalty).

- If a technical issue occurs that prevents you from submitting an assignment via the web, please email it to me as an attachment and include in the message the reason (i.e. error message received) that prevented you from submitting it via the submission system.

## Attendance and Participation

### Attendance

Class attendance is mandatory. Students are responsible for all materials presented in class whether they have attended or not. If a student misses a class, lecture notes should be obtained from a fellow classmate, not from the instructor.

### Covid

Students are strongly encouraged to get vaccinated and to follow the current masking guidelines while participating the class. Students are also required to adhere to University of Memphis reporting and quarantining requirements as stated at <https://www.memphis.edu/coronavirusupdates/>.

Students who test positive and/or required to quarantine due to exposure are **STILL REQUIRED** to keep up with the class, turn in assignments and labs (when possible). Missed quizzes will be excused and missed labs can be submitted in a reasonable amount of time upon your return **ONLY IF** an email has been sent to the instructor BEFORE CLASS/LAB TIME stating the reason for the absents.

Only in the case of documented, severe covid cases, will exceptions be made to the missed tests and late work policies stated in this document.

### Missed Tests and Quizzes

Quizzes cannot be made up for any reason. Tests can only be made up if the student contacts the instructor BEFORE THE START OF CLASS (via email, voicemail or phone) and only if the student provides a reason with proof (i.e. doctor's excuse, police report etc). The final exam cannot be made up for any reason. Failure to take a test is NOT grounds for a retest, and an F in the class will result.

### Late Assignments and Excused Absence

The instructor will work with student who need to turn in an assignment late or will not be able to attend the day of a test in cases of family emergencies, illness, work related activities, job interviews, etc (with some reasonable proof).

If you know you will be missing a class, inform the instructor via email (with the subject "Missing TECHxxxx on mm/dd/yy") before the class begins (and for scheduled absences, at least one week prior).

The instructor will not accept excuses such as "I work nights and overslept", "My computer crashed" (that is what back up are for), did not have access to required software (we have computer labs with all the required software available for student use), etc.

Late assignments (if accepted by the instructor) or electronic submissions submitted under the WRONG assignment name or having the wrong file extension will incur penalty as deemed appropriate by the instructor.

## Disabilities

Any student who anticipates physical or academic barriers based on the impact of a disability is encouraged to speak with me privately. Students with disabilities should also contact Disability Resources for Students (DRS) at 110 Wilder Tower, 901.678.2880. DRS coordinates access and accommodations for students with disabilities.

# Academic Misconduct

## Academic Integrity

The Student Handbook of The University of Memphis states that students are expected to conduct themselves with personal and academic integrity. Regardless of these expectations, some students will still “cheat”.

## Academic Misconduct

The University of Memphis, Code of Student Rights and Responsibilities, defines academic misconduct as all acts of cheating and plagiarism. The full Code of Student Rights and Responsibilities may be found on the University web site by selecting Student Handbook. Academic misconduct will not be tolerated and such acts will result in the pursuit of the strictest possible sanctions against the student

The term “cheating” includes, but is not limited to:

- a. Using any unauthorized assistance in taking quizzes or tests
- b. Using sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments
- c. Acquiring tests or other academic material before such material is distributed by the instructor
- d. Misrepresenting papers, reports, assignments or other materials as the product of the student’s sole independent effort
- e. Failing to abide by the instructions of the proctor concerning test-taking procedures (examples include talking, laughing, failure to take a seat assignment, failing to adhere to starting and stopping times, or other disruptive activity)
- f. Influencing or attempting to influence any University employee in order to affect a student’s grade or evaluation
- g. Any forgery, alteration, unauthorized possession, or misuse of University documents pertaining to academic scores, including late or retroactive “drop slips” and withdrawal application forms

The term “plagiarism” includes, but is not limited to, the use by paraphrase or direct quotation of the published or unpublished work of another person without full or clear acknowledgement. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

It is important for the student to understand that not only is the person who receives unauthorized help guilty of cheating and/or plagiarism so is the party who provides this help. For this reason it is important that you protect your own work so that you do not become an unintentional victim of cheating. DO NOT give others access to your computer files, printouts, lab reports or any other information. Computer printouts that you do not plan to use should be destroyed so that they can not be retrieved from trashcans. In addition, DO NOT save files on the hard drives of lab computers.

### Sanctions for Academic Misconduct

Several sanctions are available for cases of Academic Misconduct. These range from exercise of summary discipline in which the student may receive a grade of "F" for either the assignment or the entire course, up to and including expulsion from the University.

## Other

### Records and Backups

Keep all material returned to you so you can: Study for tests, refer to notes on graded material and verify the accuracy of the grade book entries. Also keep electronic copies of ALL programs, some code will be reused in various labs, if you do not keep an electronic copy you will have to retype the code or start from scratch.

### Last Note

The instructor reserves the right to make changes in the above as needed. The instructor also reserves the right to refuse any sloppy, unorganized papers, homework, labs, programs, exams, etc. Take pride in your work and show me that you care. Strive for professionalism at all times.