

Syllabus<sup>1</sup>  
TECH 3821  
Industrial Electronics  
Fall 2020  
Ver 0.90

## Class Information

### Instructor

**Instructor:** Daniel Kohn

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

**Phone:** 678-4515

**Office:** ET 218

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

## Covid-19 Statement

As per Pres Rudd's email (July 30, 2020):

*For the first month of the fall semester, curriculum delivery will be virtual/remote. We will reassess in early September and evaluate the possibility for some regular on-ground and hybrid courses to voluntarily return to campus if health data allows for a safe transition.*

For **this class** we will START the semester online via ZOOM during class time (with video recordings and materials to be made available after class). Labs for this class are difficult to replicate remotely, but from time to time we will meet via ZOOM during lab time for demos and "labs", these will be announced during lecture on Tuesday (for Thursday night labs).

If UofM does reopen, the instructor will discuss options with the class before determining how we will proceed and then inform the class. Depending on multiple factors the class/lab might switch to hybrid, in class (with social distancing as required) or remain in a remote mode.

If the University of Memphis does reopen, the following policies will be in place:

### **COVID-19 Health and Safety Policy - Masks and Social Distancing**

All students, faculty and staff will wear masks in all public spaces, including our classroom (lab) per the COVID-19 policy. The first time a student enters a classroom without wearing a face covering, the student will be asked to leave the class until they return a covering. Further violations will be referred to the Office of Student Accountability. Students who repeatedly or flagrantly violate these community expectations may be referred for discipline under the Student Code and, if appropriate, immediately removed from campus by the Dean of Students.

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

### **Student Health**

Students who are experiencing symptoms such as sneezing, coughing or a higher than normal temperature should inform me by email so they can be excused from class and should stay home. Students should contact their health care provider or the Student Health Center at <https://www.memphis.edu/health/>.

Students who have a positive COVID-19 test should contact the Dean of Students at [deanofstudents@memphis.edu](mailto:deanofstudents@memphis.edu).

[If the instructor is showing symptoms, an email will be sent to the class to specify if the class is be canceled or moved to zoom.]

### **Student Accommodations**

If or when we return to class, students seeking to remain remote for health or other serious reasons should discuss their options with me. Students with accessibility issues or with other learning accommodation needs due to a disability should contact Disability Resources for Students (DRS) to submit an official request for course accommodations. Contact DRS at 901.678.2880 or at [drs@memphis.edu](mailto:drs@memphis.edu). (<https://www.memphis.edu/drs/index.php>)

### **Student Resources**

Students who need additional resources can contact the Dean of Students Office at <https://www.memphis.edu/deanofstudents/crisis/index.php>.

## **Lecture Meetings and Location**

Classroom: ET 200 or ZOOM (see class website for link)

Class Meeting Schedule: Tuesday, Thursday 5:30pm to 6:25pm

## **Lab Meetings and Location**

Classroom: ET 204 or ZOOM (see class website for link)

Class Meeting Schedule: Thursday 6:40pm to 9:25pm

## **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**

Electronic circuits and systems in industry; principles of signal conditioning, DC and AC motors and drives, sensors; process control and PLCs; theory and application of devices such as unijunction transistors, silicon controlled rectifiers, diacs, triacs. Two lecture hours, three laboratory hours per week. PREREQUISITE: TECH 2831 and 3044

### **Course Objectives**

1. Demonstrate knowledge of the principle of operational and instrumentation amplifiers as they are used in industrial applications.
2. Students will be able to design V/F and F/V, A/D, and D/A converters and a simple two level comparator
3. Demonstrate knowledge of the principle of operation of SCR and UJT as they are used in industrial process control.
4. Students are expected to perform an actual experiment with SCR.
5. Demonstrate knowledge of the principle of temperature, humidity, LVDT, and proximity sensor, and their applications in industrial control.
6. Students will be able to analyze use of these sensors in different environment such as warehouse humidity, furnace, and fluid level control.
7. Students will be able to analyze on/off, proportional, PID control.
8. Students will be able to design a logic circuit for a given practical problem.

## Major Topics

1. Operational Amplifiers Industrial Applications
2. Linear Integrated Circuits
3. Industrial Control Devices
4. Power Control Circuits
5. Transducers
6. Industrial Process Control
7. Sequential Process Control

## Course Requirements

### Textbook

[Lessons in Industrial Instrumentation](#) (online text) Socratic Instrumentation (Tony R. Kuphaldt) / CC BY 3.0

## Course Policies and Expectations

### Communication

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

<http://tech-uofm.info/> (under the TECH3821 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)

## Attendance and Participation

~~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.~~

Due to covid-19, the attendance and participation policy has been suspended for this class **BUT** you are responsible for all material, assignments, and labs. If you choose to watch the videos instead of attending live via zoom, I will not be available to answer questions or provide additional insight if you do not understand what is presented, so attend class LIVE if at all possible.

## Extra Credit

There will be opportunities for extra credit during the semester. Extra credit only applies once a student has proven proficiency in the class material by receiving a C- or above in the class.

## Cell Phones

Disruptions to class meetings are to be avoided. For this reason, all cellular telephones are to be turned off before entering the classroom unless your equipment has an inaudible alert feature (vibratory alert). First infractions of this policy will result in a verbal warning; each subsequent infraction will result in a two-(2) percentage point penalty against your final course grade. If required, further action will be taken as outlined in the Student Handbook under the heading "Classroom Misconduct."

## 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.

## Missed Tests and Quizzes

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.

## Testing Policy

Before a test, students will be informed as to what resources will be available during the test such as calculators, notes, textbooks, formula sheets, etc. Using resources NOT allowed and will be treated as “Academic Misconduct.”

## Assignment Submission

Assignments are due at the beginning of the class period on the due date due (typically one week for labs, one class for assignments).

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 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.

## 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.

## Grading

Grades will be computed in accordance with the following weighting of each element (subject to change):

Homework and quizzes	10%
Test	30%
Final (Comprehensive)	20%
Labs (or lab assignments)	40%

Labs assigned with formal write ups will be worth 3x as many points as informal labs.

All circuits must be demonstrated to the instructor for points to be awarded for completing the lab.  
**NO DEMONSTRATION will result in a ZERO for the LAB!**

Final letter grades for the semester will be based on the standard plus/minus grading scale as follows:

Grade	Percentage	Quality Points
A+	98% - 90%	4.00
A	93% - 87%	4.00
A-	90% - 82%	3.84
B+	88% - 80%	3.33
B	83% - 77%	3.00
B-	80% - 72%	2.67
C+	78% - 70%	2.33
C	73% - 67%	2.00
C-	70% - 62%	1.67
D+	68% - 60%	1.33
D	60% - 54%	1.00
F	0% - 59%	0.00

## 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:

- Using any unauthorized assistance in taking quizzes or tests
- Using sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments
- Acquiring tests or other academic material before such material is distributed by the instructor
- Misrepresenting papers, reports, assignments or other materials as the product of the student’s sole independent effort
- 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 cannot 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.

### 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.