

Syllabus<sup>1</sup>  
TECH 3812  
Digital Electronic Communications  
Spring 2025  
Ver 1.00

## Class Information

### Instructor

**Instructor:** Daniel Kohn

**Email:** dekohnd@memphis.edu

**Office:** ET 218

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

### Meetings and Location

Class Meeting Schedule: Tuesday 7:10 – 8:35pm / Thursday 5:30 – 6:55pm ES 220

Lab Meeting Schedule: Tuesday 8:40 – 11:25pm ET 204

### Instructor Availability

Instructors will be available during posted hours or by appointment for assistance, consultation and/or advisement

## Course Information

TECH 3812 – Digital Electronic Communication

Credit Hours: (4) Description: Principles of digital communications, spectrum and signal transmission through various mediums. Modulation/demodulation techniques, data rates, quality of signal, current protocols and data packets. Three lecture and three laboratory hours per week. PREREQUISITE: TECH 2821, TECH 2822 and TECH 3232

### Course Objectives

1. Demonstrate a basic understanding of Electronic Communication Media, Wave Propagation, Amplitude Modulation, Frequency Modulation, and Digital Signal Modulation methods.
2. Demonstrate an understanding of digital encoding / decoding and multiplexing / demultiplexing techniques.
3. Understand similarities and differences of Wireless Communications Standards such as Bluetooth, ZigBee, WiFi, Cellular etc.
4. Have a working knowledge of communications standards.
5. Have a working understanding of packets and datagrams.
6. Demonstrate the ability to interpret packet and datagram data.
7. Gain an understanding of Internet, Internet of Things and Industrial Communications Protocols.
8. Demonstrate knowledge on selecting the best communications standard(s) and/or protocol(s) for a given application.

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

## Major Topics

1. Introduction to Communications Electronics (approx. 1/3 of course)
  - a. History of Communication
  - b. Electromagnetic Waves, Frequency Allocation, Bandwidth
  - c. Communications Media
  - d. Antennas
  - e. Signal-to-noise ratio and information capacity
  - f. Amplitude and Frequency Modulation
  - g. Digital Modulation
2. Digital Communications (approx. 2/3 of course)
  - a. Digital Encoding and Decoding
  - b. Multiplexing
  - c. Digital Communications Standards
  - d. Internet Protocols
  - e. Internet of Things
  - f. Industrial Communications Protocols

## Grading

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

|                      |     |
|----------------------|-----|
| Homework and quizzes | 5%  |
| Labs                 | 40% |
| Test (3 or more)     | 45% |
| Participation        | 10% |

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

All labs 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!**

## 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%).

## 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.

## Communication

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

<http://tech-uofm.info/> (under the TECH3812 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 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 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.

# 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.

## 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.

## 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."

## 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

## Disruptions in class

Disruptions to class meetings are to be avoided. For this reason, show up on time and be seated well before the start of class.

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."

## 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 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.

### Other

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.