Course Description: Employment of modern electronic devices and circuits as applied to instrumentation and data collection associated with biomedical applications and related fields. Topics include characteristics and applications of semiconductors, small signal amplifiers, operational amplifiers, oscillators, and multivibrators to biomedical instruments; and the fundamentals of digital logic including digital logic devices and circuits in biomedical applications. The course includes an electronic laboratory component which emphasizes a hands-on active-learning environment to provide biomedical engineering students with experience in designing, assembling, testing, and employing amplifiers, filters, digital logic circuits used for collecting and analyzing data related to biomedical engineering applications. The NI myDAQ system will continued to be used as an extension of the concepts presented in BME/ISE 3511.

Course Objectives: This course provides biomedical engineering students with the knowledge, understanding, and ability to apply the operational use of semiconductors, diodes, field-effect transistors, bipolar junction transistors as switches in biomedical devices and as amplifiers of biomedical signals; the use of operational amplifiers in biomedical instrumentation functions; and the use digital logic devices/circuits in biomedical engineering applications.

Course Requirements and Evaluation: Students are expected to attend and participate in all scheduled classes. Course grades will be based on several criteria including a subjective evaluation of effort, learning, understanding as well as class participation.

Email: Students are responsible for any course related information sent to their official Wright State University email account. It is strongly recommended you check your email at least twice a week as well as the course web page before every class.


Class Participation (Homework, Attendance, In-Class Activities, Quizzes): Homework will be assigned throughout the quarter. Although homework is not graded, it is nevertheless considered to be an important part of the learning process and students are expected to complete all assignments in a timely manner. Students are encouraged to work collaboratively on the homework problems and to seek help from the recitation teaching assistants as needed. If a student is absent from class, the student is expected to complete all missed in-class activities, however, no credit will be awarded. Quizzes covering the concepts previously discussed in class and/or the ideas that were emphasized in the in-class activities will be conducted during lecture periods. No makeup quizzes will be available. Students who are absent from class will receive zero participation points for that day.

Laboratory Exercises: Active participation in the laboratory sessions for Spring 2017 BME/ISE 3512 is mandatory. You are expected to attend the laboratory sections for which you are registered. Graded laboratory exercises and laboratory reports contribute a significant portion to your overall course grade. You may make-up any missed lab exercise on your own; but do not expect special consideration from the lab teaching assistant. Late submittal of laboratory reports will result in a substantial reduction in points.

Recitation: Learning Assistants (recitation instructors) have been assigned to help students. Weekly recitation periods are TBD.

Tests: A series of eight tests are anticipated for Spring 2017. Please refer to BME/ISE 3512 Spring 2017 Grading Policy for information regarding class absences and make-up tests.

Academic Integrity: The instructor fully endorses the Wright State University policy to uphold and support standards of personal honesty and integrity for all students consistent with the goals of a community of scholars and students seeking knowledge and truth. Although collaborative learning is encouraged for studying and for solving homework problems; exercises, quizzes, and tests are to be individual effort only.

Reasonable Accommodations Policy: Any student with a disability that may prevent them from fully demonstrating their abilities should contact me personally as well as the Office of Disability Services as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

Grading Criteria: There is no extra credit; course grades are based on test scores, participation (attendance, in-class activates, and quizzes) and laboratory exercise/report grades. Please refer to the ISE 2211 Spring 2017 Grading Policy.

Grades will be awarded as follows:

- 90 - 100% A
- 80 - < 90% B
- 70 - < 80% C
- 60 - < 70% D
- < 60% F
Course Requirements and Evaluation: Students are expected to participate in all scheduled classes. Course grades will be based on several criteria including a subjective evaluation of effort, class participation, learning, understanding of the material, and achievement of the course objectives.

Attendance: The instructor recognizes there are many learning styles and models for the delivery-of-instruction including lecture, seminar, laboratory experience, recitation, self-study and others. The Spring 2017 offering of BME/ISE 3512 is based on a modified SCALE-UP (Student Centered Active Learning Environment - Upside Down Pedagogy) concept which places particular emphasis on attendance and class participation. As such, the following general policy shall apply.

Participation: Participation will be determined based on Attendance, In-Class Activities, and Quizzes. Participation is considered to be an instructional opportunity rather than an evaluation tool. Nevertheless, the instructor’s estimate of a student’s participation will be a factor in the instructor’s subjective evaluation of the student’s overall performance.

Absences: There are no "excused" absences, nor are there any "unexcused" absences, only absences! Students who are absent from class will receive zero participation points for that day. No makeup quizzes or in-class activities points will be available; however students are responsible for completing these learning opportunities on their own.

Laboratory Exercises: Attendance at scheduled laboratory sessions is mandatory. Students may make-up any missed lab exercise on their own; but should not expect the teaching assistants to provide supplemental instruction. Late submittal of laboratory reports will result in a substantial reduction in points. Nominally, 20 percent of the total accumulated laboratory exercises/reports score including the end-of-course laboratory exam will be used in determining the overall grade for the course.

Tests: A series of eight to ten tests or so (two tests every three weeks on average) are anticipated for Spring 2017 BME/ISE 3512. In general, a course test score average will be calculated by eliminating the lowest test score. A missed test will count as zero points. (If a student does not take the final test, it will count as zero points and the next lowest score will be eliminated.) The average test score will be weighted 80% and will be added to the laboratory score (weighted 20%) in determining the overall grade for the course.

Exceptions: The instructor recognizes that from time to time, students may not be available for scheduled tests. These absences, both planned and unplanned, occur for a number of reasons. In order to be fair to all students and to lessen the possibility of compromising test integrity, no make-up tests will be available. Instead, all missed tests will receive zero points. As described above, one missed test of zero points (except for the final test) will be eliminated in computing the overall test average. As such, there is no penalty for a single missed test.

In general, this missed test policy will apply to all instances of missed tests, except in very rare and special cases. If in the judgment of the instructor special circumstances apply, modifications to the above policy may be made on a case by case basis. A temporary grade of "I" will not normally be given based solely on a missed test. Note: Absences due to work related activities including military duty, extra-curricular activities including sports participation and other university sponsored events, personal and routine family related circumstances are not usually considered special circumstances.