COURSE SYLLABUS
UTEP – Aerospace and Mechanical Engineering

1. **Course number and name**: MECH 2342 Electro-Mechanical Systems
2. **Credits and contact hours:** 3 SCH – 3 hours of lecture
3. **Instructor's or course coordinator's name:** Dr. Ivan Renteria (iarenteria@utep.edu), Assistant Professor of Instruction, AME.
   Office hrs.: Friday 9 am -12 pm (Eng. Build. A-246) or MS Team
4. **Text book, title, author, and year**: **other supplemental materials:**
   Electrical Engineering: Principle and Applications, A. R. Hambley, 7th edition, Pearson, 2017.
   reference books:
   Grob's basic electronics, Mitchel E. Schultz, 13th edition, Mc Graw Hill, 2020.
   Electronic Principles, Albert Malvino, 9th edition, Mc Graw Hill, 2020.
5. **Specific course information**
   a. **brief description of the content of the course:**
      Electro-Mechanical System require basic knowledge of electrical circuits and circuit analysis, electronics, electrical machines, and control. This knowledge applies to students in various fields, including Electrical, Mechanical, Industrial, Civil, Chemical, Computer, and Aerospace engineering education, among others.
   b. **prerequisites or co-requisites:** MATH 1312 (Calculus-II) or MATH 2313 or MATH 2326 (not concurrently).
   c. **indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program:** Required course.
6. **Specific goals for the course**
   a. **specific outcomes of instruction:**
   - Students will understand the basic electrical engineering principles and abstraction on which the design of electromechanical systems is based.
   - Students will understand the basic electrical circuit laws and theorems such as Ohm's law, series and parallel circuits, and Kirchhoff's laws.
   - Students will understand the principles of magnetism and electromagnetism.
   - Students will understand the principles of steady-state sinusoidal analysis.
   - Students will understand the basic characteristics of capacitors and inductors.
   - Students will be introduced to the principle of operation of diodes and transistors.
   - Students will understand the operating principle of electrical machines such as generators, motors, relays, and transformers.
   - Students will understand the principles of sensing, actuation, and controls.

   b. **explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course:**

   1. ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
   6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

   c. **brief list of topics to be covered**
   - Introduction (voltage, current, resistance, power, energy, circuits).
   - Ohm's law, series circuits, parallel circuits, series-parallel circuits.

- Voltage dividers, current dividers, node-voltage analysis, and mesh-current analysis.
- Capacitance, inductance, transient and steady-state signal analysis.
- Diodes, transistors, and logic circuits.
- Magnetism, magnetic circuits, and transformers.
- DC and AC machines (motors and generators).
- Hands-on projects (sensor, signal capturing and analysis, actuator and control).

7. Course grading distribution

Homework	15%
Quizzes	5%
Labs	10%
Midterm	30%
Final Exam	40%

8. Grading scheme:

Grades will be distributed based on the following scale:

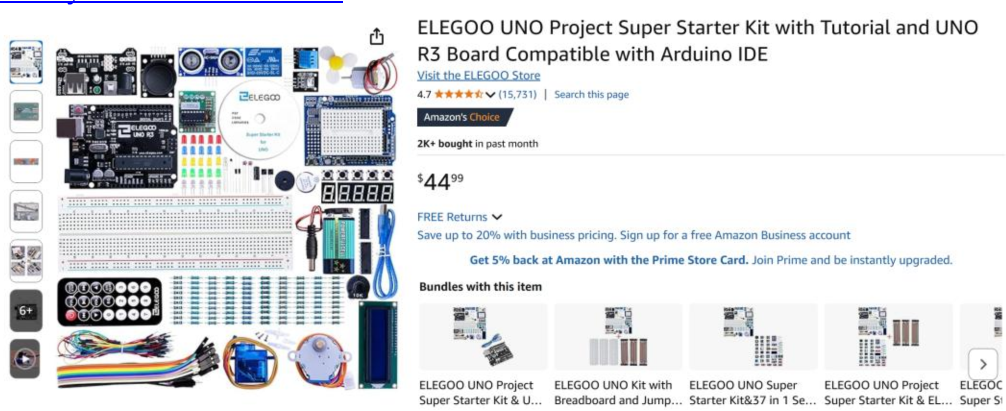
% of Points Possible	Grade Assigned
≥90	A
≥ 80	B
≥ 70	C
≥ 60	D
< 60	F

The instructor reserves the right to lower the grading scale at the end of the semester. It is expected that each assignment (homeworks, examinations and projects) be professional. The instructor reserves the right to penalize unprofessional responses to any assignment up to including awarding a zero (0) for the assignment.

9. Tools in class

- Scientific calculator
- Laptop
- Arduino Kit:

Each student has to manage/arrange one set of Arduino Kit
https://www.amazon.com/ELEGOO-Project-Starter-Tutorial-Arduino/dp/B01D8KOZF4/ref=sr_1_3?ie=UTF8&qid=1547597906&sr=8-3&keywords=arduino+uno



10. Excused absences and/or course drop policy:

According to UTEP Curriculum and Classroom Policies, “When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of “W” before the course drop deadline and with a grade of “F” after the course drop deadline.” See academic regulations in the UTEP Undergraduate Catalog for a list of excuse absences.

11. Academic Honesty

During exams and quizzes, you are not allowed to use any form of Wi-Fi enabled electronic device, including cell phones or other electronic communication devices or methods (calculators, wrist watches, earbuds, etc.).

No electronic version of the book, loose paper print-outs of the book or extra sheets of paper of any kind are allowed unless explicitly mentioned in writing by the instructor. As a part of the zero-tolerance policy, if any proctor sees or hears any electronic device during the exam or if you share your work with someone else, you will be reported to the proper authorities and you may receive a zero on the exam and an F in the class.

If you have a disability that requires the use of an electronic device during exams you must have a letter of accommodation from the Center for Accommodations and Support Services (CASS). This accommodation must be coordinated in advance with the instructor.

During exams, you will not be allowed to leave the examination room until you complete the exam. This includes restroom breaks. Students with disabilities must have a letter of accommodation and coordinate this in advance with the instructor. Instructors and/or proctors may record and/or use their personal cell phones to document activity during the exam. If you are suspected of scholastic dishonesty you may not be directly confronted about your conduct by the instructor or proctor. You will, however, be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) and your exam will not be admissible. Your grade in the class may not be available until OSCCR makes a final ruling, this may adversely impact your ability to enroll in other classes or graduation. If you arrive more than 15 minutes late to an exam, you will not be allowed to enter the examination room.

There will be no makeup exams administered. If you have a university approved excuse, your instructor will have a process for determining how to handle the missing grade outlined in the syllabus. However, no makeup exams will be given. If you miss more than one exam, the instructor may choose to administratively drop you from the class. This may adversely impact a visa and financial aid. Scholastic dishonesty on homework, lab assignments and all other class assignments will be held to the same standards and requirements of academic honesty as quizzes and exams.

12. Harassment Policy

The department has a zero-tolerance policy for harassment. Engagement in any behavior considered harassment will be reported to the proper authorities. In addition to generally understood forms of harassment, the department also treats the following behavior as harassment:

Repeated emails and/or calls regarding subjects about a grade or an administrative decision made. Once a decision has been made or a question answered, a student who continues to ask the same question will be given a warning by the recipient of the email/call.
Grades are NOT negotiable, ever. If you believe a grading mistake has been made, you must follow the process described in the UTEP catalog. Any request for a grade elevation that is NOT based on a mistake is considered harassment and will be reported immediately.

Remaining in an office after the occupant requests you leave is considered harassment and potentially threatening. You will be reported immediately without warning and depending on the severity, may be reported to law enforcement.