

## ABET COURSE SYLLABUS

### UTEP - Department of Industrial, Manufacturing & Systems Engineering

1. **Course number and name:** IE 2733 Electro-Mechanical Systems
2. **Credits and contact hours:** 3 SCH – 3 hours of lecture
3. **Instructor's or course coordinator's name:** Dr. Ivan Arturo Renteria Marquez
4. **Text book, title, author, and year:** Grob's basic electronics, Mitchel E. Schultz, 12<sup>th</sup> edition, Mc Graw Hill, 2016.
  - a. **other supplemental materials:**  
**reference books:**  
Electrical machines, drivers and power systems, Theodore Wild, 6<sup>th</sup> edition.

#### 5. Specific course information

- a. **brief description of the content of the course (catalog description):**  
**Fall 2018 UTEP catalog description:**  
Principles of electrical circuits, generators, and motors. Introduction to electronics and micro-processors for data acquisition.
- b. **prerequisites or co-requisites:** MATH 1312 with a grade of "C" or better.
- 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:**  
The student should:
  - 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 circuits laws and theorems such as Ohm's law, series and parallel circuits, voltage dividers, Kirchhoff's laws and network theorems.
  - Students will understand the principle of operation of generators and motors. These include DC and AC motors.
- 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.

#### 7. Brief list of topics to be covered

Electricity, Negative and Positive Polarity, Electrons and Protons in the Atom, Structure of the Atom, the Closed Circuit, the Direction of Current, Ohm's Law, Current, Voltage, Resistance, Practical Units, the Linear Proportion Between Voltage and Current, Series circuits, Polarity of IR Voltage Drops, Total Power in a Series Circuit, Analysis of Series

Circuits with Random Unknowns, Parallel circuits, Series-parallel circuits, Voltage dividers and current dividers, Kirchhoff's Laws, Network theorems, Electromagnetism, Motor Action, Generation of an Induced Voltage, Alternating Voltage and Current, Capacitive Reactance and Capacitive Circuits.

### **8. Office Location & Hours**

E-226E T & R 3:00 PM-4:30 PM

### **9. Email address:**

iarenteria@utep.edu

### **10. Topics**

Chapter 1. Electricity (Grob's basic electronics)  
Chapter 3. Ohm's Law (Grob's basic electronics)  
Chapter 4. Series circuits (Grob's basic electronics)  
Chapter 5. Parallel circuits (Grob's basic electronics)  
Chapter 6. Series-parallel circuits (Grob's basic electronics)  
Chapter 7. Voltage dividers and current dividers (Grob's basic electronics)  
Chapter 9. Kirchhoff's Laws (Grob's basic electronics)  
Chapter 10. Network theorems (Grob's basic electronics)  
Chapter 15. Alternating voltage and current (Grob's basic electronics)  
Chapter 17. Capacitive reactance (Grob's basic electronics)  
Chapter 18. Capacitive circuits (Grob's basic electronics)

### **11. Course grading distribution**

|                              |     |
|------------------------------|-----|
| Homework/Assignments/Quizzes | 20% |
| Midterm                      | 40% |
| Final Exam                   | 40% |

Quizzes policy: Just students with a valid medical excuse note will be able to present a make up quiz.

### **12. Grading scheme:**

Grades will be distributed based on the following scale:

| % of Points Possible | Grade Assigned |
|----------------------|----------------|
| $\geq 90$            | A              |
| $\geq 80$            | B              |
| $\geq 70$            | C              |
| $\geq 60$            | 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.

### **13. 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.

### **14. 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.