Course Name: Electrical & Electronic Systems

Course Number: ELEE 2317

PREREQUISITE: MATH 1402 (Calculus II) and PHYS 2402 (Physics II for Scientists and Engineers).

Instructor: Dr. Nazmul Islam, Electrical Engineering,
Office: EENGR 3.280
Office phone: 665-7228
Nazmul.Islam@utrgv.edu

CLASS TIMES: M W: 3:05 pm - 3:55 pm; room New Interdisc Engin & Acad Bldg EIEAB 1.207

Office Hour: M T W Th 2:00pm – 3:00 pm


Other notes to be handed out, and/or be posted to Blackboard (myutrgv).

COURSE TOPICS:
This course presents an overview of electrical circuits, and basic electronics for non-majors. Topics include voltage, current, and power; circuit elements; DC circuits; AC steady-state circuits; transformers, motors. Brief introduction to electronics including transistors, logic gates, operational amplifiers; and some common sensors and transducers.

EVALUATION

Homework:
There will be multiple homeworks. Homework is intended to be a learning tool and is due on the day announced in the class. Due date for homework is firm. Late assignments will be accepted but 50% grade is deducted for your late assignments.
Quizzes
Short 10-15 minutes quizzes that test aspects of current work to make sure that student are keeping up with course work, homework. Topics can include anything covered from the beginning of the semester, but usually cover current topics, including homework, class work, and laboratory work. Quizzes may be given at the beginning of class, at the end of class, or as breaks between topics. There are no make-up quizzes.

Midterm Exam
Two midterm exams will cover the course content up to the topics covered in the class.

Final Exam
The final exam is comprehensive, and a two hour examination with problems selected from all topics covered, both from the text and from the labs, presented in the course.

GRADING CRITERIA:

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<tr>
<td>Homework/ Quizzes</td>
<td>&gt;= 90</td>
<td>80 - 89</td>
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Letter grade for this course will be assigned according to the following scale:

List of Topics  Subject to change as the semester progresses.

1. Basic Concepts (Chapter 1)
2. Basic Laws (Chapter 2) Sections 2.1-2.7
3. DC Circuits/Analysis:
   a. Analysis Methods (Chapter 3) Sections 3.1-3.8
   b. Circuit Theorems (Chapter 4) Sections 4.1-4.8
   c. Power and Energy (Chapter 1) Section 1-5
   d. Capacitors and Inductors (Chapter 6) Sections 6.1-6.5
   e. First-Order Circuits (Chapter 7) Sections 7.1-7.6
4. Eelc AC Analysis:
   a. Sinusoids and Phasors (Chapter 9) Sections 9.1-9.7
   b. Steady-State Analysis (Chapter 10) Sections 10.1-10.6
5. AC Power Analysis:
   a. (Chapter 11) Sections 11.1-11.6
6. Operational Amplifiers:
   a. (Chapter 5) Sections 5.1-5.7
STUDENT LEARNING OUTCOMES

At the end of the semester, it is expected that students should be able to:

(1) to correctly apply Kirchoff’s and Ohm’s laws, including the passive sign convention, to calculate AC and DC circuit variables.
(2) perform DC circuit analysis at the level expected for Fundamentals of Engineering (FE) exam.
(3) to write node and mesh equations for circuits of moderate complexity.
(4) perform basic AC circuit analysis and compute AC power for simple circuits.
(5) explain the purpose and application of transformers, and perform ideal transformer calculations,
(6) recognize basic electronic devices (diodes, transistors, and operational amplifiers) and their purpose.
(7) design simple operational amplifier circuits,
(8) design basic rectifier circuits.
(9) interconnect logic gates of various types to implement logic functions and simple binary arithmetic.
(10) Acquire the fundamental knowledge necessary for assembling and operating electric circuits in the Laboratory.

PROGRAM OUTCOMES COMMON TO ALL ENGINEERING PROGRAMS

Engineering topics: 3 credit hours. It will be demonstrated that the student
1. is able to use knowledge of mathematics, basic sciences and engineering to analyze (identify, formulate, and solve) problems in electrical engineering.
2. is able to design electrical devices, systems or processes that meet given specifications.
3. is able to communicate ideas effectively in graphical, oral and in written media.
4. is able to design and conduct experiments and interpret the results
5. is able to function in teams
Is able to use state of the art computational hardware and software for the analysis, and documentation

Course Rules:

To help you gain the most knowledge from this course, the following rules will be imposed for this course:
1. You are suggested to study every day and come to class with preparation.
2. It is your responsibility to keep all course-related materials which have been graded and returned. You are responsible for organizing and maintaining these materials.
3. There will be quizzes and two midterm exams for this course. No make up opportunities will be given for the quizzes. The absence to any of these quizzes will imply a zero grade.
4. All cell phones should be turned OFF during class and lab meetings. No "silent mode" operation.

UTRGV Policy Statements

STUDENTS WITH DISABILITIES: Required on all syllabi. Do not modify.
Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services
(SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services.

**Pregnancy, Pregnancy-related, and Parenting Accommodations**

Title IX of the Education Amendments of 1972 prohibits sex discrimination, which includes discrimination based on pregnancy, marital status, or parental status. Students seeking accommodations related to pregnancy, pregnancy-related condition, or parenting (reasonably immediate postpartum period) are encouraged to contact Student Accessibility Services for additional information and to request accommodations.

**Student Accessibility Services:**

**Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

**MANDATORY COURSE EVALUATION PERIOD:** *Required on all syllabi.* Do not modify. Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available on or about:

- **Module 1:** October 4 – 10
- **Module 2:** November 29 – December 5
- **Full Fall Semester:** November 15 – December 5

**ATTENDANCE:** Recommended on all syllabi; may be modified by the instructor as long as it is not inconsistent with UTRGV policy.

Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

**SCHOLASTIC INTEGRITY:** Recommended on all syllabi.

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

**SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:** *Required on all syllabi.* Do not modify.

In accordance with UT System regulations, your instructor is a “Responsible Employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.