



College of Engineering and Computer Science
ELEE 2317: ELECTRICAL & ELECTRONIC SYSTEMS
Syllabus Spring 2018

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,
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CLASS TIMES: T R: 3:05 pm - 4:20 pm; room Student Academic Center ESTAC 2.129

Office Hour: T R 11:00 – 1:00pm
W 1:00 – 2:00pm (By Appointment Only)

Text *Fundamentals of Electric Circuits*, by Charles K. Alexander and Matthew N.O. Sadiku. McGraw-Hill. I will use 6th Edition.

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 upto 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:

Homework/ Quizzes	20
Midterm1	15
Midterm2	15
Final Exam	20
Laboratory	30

Letter grade for this course will be assigned according to the following scale:

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>F</i>
≥ 90	80 - 89	70 - 79	60 - 69	< 60

COURSE TOPICS:

(Subject to change)

Introduction to Electrical Engineering
 Fundamentals of Electrical Circuits
 Resistive Network Analysis
 AC Network Analysis.
 AC circuits, Inductors and Capacitors
 Transient Analysis.
 Frequency Response and System Concepts.
 AC Power
 Electronics devices
 Op-amp, diode (rectifier circuit) and transistors
 Basic Digital Electronics

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

Laboratories Preliminary list subject to revision

Week 1	Safety, Lab Rules, Breadboards
Week 2	Basic Electrical Measurements
Week 3	Kirchoff's Laws
Week 4	PSpice & Matlab
Week 5	Oscilloscope, sinusoidal waveforms
Week 6	AC line voltage, transformers
Week 7	DC Motors
Week 8	AC Motors
Week 9	Diode and Transistor Operation
Week 10	Rectifier Circuits
Week 11	Operational Amplifiers
Week 12	Thanksgiving Holiday – no lab
Week 13	Laboratory Final Exam

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.

STUDENTS WITH DISABILITIES

If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **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 accessibility@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 accessibility@utrgv.edu.

MANDATORY COURSE EVALUATION PERIOD:

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. Online evaluations will be available Nov. 18 – Dec. 9, 2015. Students who complete their evaluations will have priority access to their grades.

SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE: 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 in an environment free from sexual misconduct and discrimination.