

Syllabus for
EGR 225— Circuits and Electronics Lecture
3 Credit Hours
Spring 2017

I. COURSE DESCRIPTION

This course is an introduction to the analysis of electric and electronic circuits. Topics include resistive circuit analysis, transients of capacitive and inductive circuits, steady-state sinusoidal analysis, electronic devices and applications such as diodes, field-effect transistors, bipolar junction transistors, operational amplifiers and ac machines.

Prerequisite: PHY 112 and PHY 112 Lab

Co-requisites: EGR 225 Lab and MAT 211

Restrictions: This course is for Engineering majors with a mechanical concentration only. No credit will be assigned to Engineering majors with a computer and/or electrical concentration.

II. COURSE GOALS

The purpose of this course is to enable non-major students to understand the fundamental methods of analyzing electric circuits consisting of passive components such as resistors, capacitors, and inductors, semiconductor devices and electronic circuits including diodes, MOSFETs, BJTs and op-amps, as well as stepper motors.

III. STUDENT LEARNING OUTCOMES FOR THIS COURSE

As a result of successfully completing this course, the student will be able to do the following:

- A. Ability to analyze and design resistive circuits.
- B. Understanding of transient analysis sufficient to analyze simple RC and RL networks.
- C. Ability to analyze passive circuits with resistors, capacitors, and inductors with steady state sinusoidal sources.
- D. Ability to analyze and design basic electronic circuits using diodes, bipolar junction transistors, and field effect transistors..
- E. Knowledge of op-amp characteristics sufficient to utilize op amps in linear circuits.

IV. TEXTBOOKS AND OTHER LEARNING RESOURCES

A. Required Materials

1. Textbooks

Allan R. Hambley, Electrical Engineering: Principles and Applications.
6th ed. Pearson Education, Inc. Upper Saddle River, New Jersey 07458, 2014.
MasteringEngineering Course ID: EGR225SPRING17

2. Other
None

B. Optional Materials

1. Textbooks

- 2. None
- Other
- None

V. POLICIES AND PROCEDURES

A. University Policies and Procedures

1. Attendance at each class or laboratory is mandatory at Oral Roberts University. Excessive absences can reduce a student's grade or deny credit for the course.
2. A fee of \$15.00 is assessed for all late exams. The university's late exam policy applies to all exams taken without notifying the professor prior to the regularly scheduled exam time and to all exams taken late without an administrative excuse.
3. Students and faculty at Oral Roberts University must adhere to all laws addressing the ethical use of others' materials, whether it is in the form of print, electronic, video, multimedia, or computer software. Plagiarism and other forms of cheating involve both lying and stealing and are violations of ORU's Honor Code: "I will not cheat or plagiarize; I will do my own academic work and will not inappropriately collaborate with other students on assignments." Plagiarism is usually defined as copying someone else's ideas, words, or sentence structure and submitting them as one's own. Other forms of academic dishonesty include (but are not limited to) the following:
 - a. Submitting another's work as one's own or colluding with someone else and submitting that work as though it were his or hers;
 - b. Failing to meet group assignment or project requirements while claiming to have done so;
 - c. Failing to cite sources used in a paper;
 - d. Creating results for experiments, observations, interviews, or projects that were not done;
 - e. Receiving or giving unauthorized help on assignments.
By submitting an assignment in any form, the student gives permission for the assignment to be checked for plagiarism, either by submitting the work for electronic verification or by other means. Penalties for any of the above infractions may result in disciplinary action including failing the assignment or failing the course or expulsion from the University, as determined by department and University guidelines.
4. Final exams cannot be given before their scheduled times. Students need to check the final exam schedule before planning return flights or other events at the end of the semester.
5. Students are to be in compliance with university, school, and departmental policies regarding Whole Person Assessment (WPA) requirements. Students should consult the WPA handbooks for requirements regarding general education and the students' majors.
 - a. The penalty for not submitting electronically or for incorrectly submitting an artifact is a zero for that assignment.
 - b. By submitting an assignment, the student gives permission for the assignment to be assessed electronically.

B. Department Policies and Procedures

Any student whose unexcused absences total 33% or more of the total number of class sessions receives an F for the course grade.

C. Course Policies and Procedures

1. Evaluation Procedures

Homework	15%
Mini-project	15%
Exam 1	20%
Exam 2	20%
<u>Final exam</u>	<u>30%</u>
Total	100%

2. Whole Person Assessment Requirements

The final grade is reduced by 5% for WPA artifacts that are not submitted by the end of the semester (not 5% per artifact but 5% total).

3. Other Policies and/or Procedures

a. Attendance Policy:

- Please hand in the official letter or any other document for your excused absence immediately when you resume the class.
- The first 3 unexcused absences from lecture will not be counted. After that, each unexcused absence will result in 1% deduction from the final grade.
- Late but less than 5 minutes for lecture will not be counted.
- Late above 5 minutes but less than 30 minutes will be treated as late and two times late will be combined as one absence.
- Late for 30 minutes and above will be treated as absence.
- 2% credit point will be assigned for full attendance.

b. Late homework Policy:

- Homework is due at the beginning of the lecture on the due date.
- Late submission will result in reduced grade, 10% deduction for each school day.
- Submission after homework assignment is returned to the class will not be graded.
- This rule also applies to mini-project.

c. Extended and late exam policy:

- Extended exam is possible only for those students with an official letter from the director of Student Resources.
- Unexcused late exam will be penalized by prorating the grade based on the exam result of the class and how late it is.
- Late exam can only be offered once and no second chance will be given. Please schedule the late exam immediately when you resume the class.
- No late exam is possible for final exam.

VI. COURSE CALENDAR

Topic	Section	Sessions
Chapter 1—Introduction	1, 2, 3, 4, 5, 6,7	5
Chapter 2—Resistive Circuits	1, 2, 3, 4, 5, 6,7	7
Exam I and Review		2
Chapter 3—Inductance and Capacitance	1, 2, 3, 4, 5, 6	1.5
Chapter 4—Transients	1, 2, 3, 4	3.5
Chapter 5—Steady-State Sinusoidal Analysis	1, 2, 3, 4, 5, 7	3.5
Chapter 8—Computers and Microcontrollers	1, 2, 3, 5, 6	2.5
Exam II and Review		2
Chapter 10—Diodes	1, 3, 4, 5, 6	2
Chapter 11—Amplifiers	1, 2, 6	1
Chapter 12—Field-effective Transistors	1, 2, 3, 4, 5, 6	3
Chapter 13—Bipolar Junction Transistors	1, 2, 3, 4, 5, 6, 7, 8, 9	3
Chapter 14—Operational Amplifiers	1, 2, 3, 4, 8	3
Chapter 17—AC Machines	1, 4, 5	1
FINAL EXAM		

Course Inventory for ORU's Student Learning Outcomes
EGR 225—Circuits and Electronics Lecture
Spring 2017

This course contributes to the ORU student learning outcomes as indicated below:

Significant Contribution – Addresses the outcome directly and includes targeted assessment.

Moderate Contribution – Addresses the outcome directly or indirectly and includes some assessment.

Minimal Contribution – Addresses the outcome indirectly and includes little or no assessment.

No Contribution – Does not address the outcome.

The Student Learning Glossary at <http://ir.oru.edu/doc/glossary.pdf> defines each outcome and each of the proficiencies/capacities.

OUTCOMES & Proficiencies/Capacities		Significant Contribution	Moderate Contribution	Minimal Contribution	No Contribution
1	Outcome #1 – Spiritually Alive Proficiencies/Capacities				
1A	Biblical knowledge				X
1B	Sensitivity to the Holy Spirit				X
1C	Evangelistic capability				X
1D	Ethical behavior			X	
2	Outcome #2 – Intellectually Alert Proficiencies/Capacities				
2A	Critical thinking		X		
2B	Information literacy			X	
2C	Global & historical perspectives			X	
2D	Aesthetic appreciation			X	
2E	Intellectual creativity			X	
3	Outcome #3 – Physically Disciplined Proficiencies/Capacities				
3A	Healthy lifestyle				X
3B	Physically disciplined lifestyle				X
4	Outcome #4 – Socially Adept Proficiencies/Capacities				
4A	Communication skills		X		
4B	Interpersonal skills			X	
4C	Appreciation of cultural & linguistic differences				X
4D	Responsible citizenship			X	
4E	Leadership capacity			X	