EGR 210——Network Analysis I Laboratory
1 Credit hour
Spring 2009

I. COURSE DESCRIPTION

Laboratory experiments are designed to demonstrate principles discussed in EGR 210 Lecture, including measurement of resistance, voltage, current and step responses of first- and second-order networks.
Co-requisite: EGR 210 Lecture
Course fee: $35

II. COURSE GOALS

The course is designed to help the student to reinforce the knowledge of network analysis principles learned in the lecture with laboratory and computer simulation experience.

Students will learn to perform laboratory experiments using modern electronic instruments.

III. STUDENT LEARNING OUTCOMES FOR THIS COURSE

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

A. Construct ammeters, voltmeters, and ohmmeters.

B. Determine Thevenin and Norton equivalent circuits for "black box" sources.

C. Apply the concepts of bridge circuits.

D. Demonstrate maximum power transfer.

E. Use the oscilloscope and function generator.

F. Apply SPICE, a PC-based software, to simulate electronic circuits and linear network.

G. Experimentally verify sinusoidal steady-state response of *RC*, *RL* and *RLC* networks.

IV. TEXTBOOKS AND OTHER LEARNING RESOURCES

Required Materials
Textbook: Russell L. Meade. Laboratory Projects to accompany Foundations of Electronics, 5th Edition, Thomson Delmar Learning, 2007.

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. Students taking a late exam because of an unauthorized absence are charged a late exam fee.
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, video, multimedia, or computer software. 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.
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 ePortfolio requirements. Students should consult the ePortfolio handbooks for requirements regarding general education and the students' majors.
   a. The penalty for not submitting electronically or for incorrectly submitting an ePortfolio artifact is a zero for that assignment.
   b. By submitting an assignment, the student gives permission for the assignment to be assessed electronically.

B. Course Policies and Procedures

1. Assessment Criterion

Lab assignments	70%
Lab test	30%
Total	100%

2. Maximum two students are recommended to form one group as partners to do each experiment together. They are strongly encouraged to swap their roles in conducting the experiments from one lab session to another.
3. The experiment reports are due at the beginning of the laboratory session in the following week of each experiment.
4. The students are responsible for the completion of all the experiments.
5. Arrangement for any make-up of absences due to illness or administratively excused absences is the responsibility of the student. Unexcused absences will be made up only at the discretion of the instructor.
6. Each student is responsible for the University materials that he/she uses during the laboratory period and will be assessed an appropriate fee for any items that are lost, damaged or broken.
7. ePortfolio Requirements
   The final grade will be reduced by 5% for ePortfolio artifacts that are not submitted by the end of the semester (not 5% per artifact, but 5% total).

VI. COURSE CALENDAR

Lab	**PROJECTS/CASES**	**TOPICS**
0		Introduction; Lab Orientation
1.	Part 1: 1,2,3	Use and Care of Meters
2.	Part 2: 4, 5, 6	Ohm's Law
3.	Part 3: 9,10,11 Part 4: 15,16,17	Series Circuits Parallel Circuits
4.	Part 5: 21,22,23	Series-Parallel Circuits
5.	Part 6: 27,28,29	Network Analysis Techniques
6.	Part 7: 30,31,32	Basic Network Theorems
7.	Part 8: 33,34,35,36	The Osci1loscope (Function Generator)
8	Part 8: 37,38,39	The Osci11oscope
9.		Introduction to Pspice
10.		Step Response of *RL* and *RC* Circuits
11.		Step Response of *RLC* Circuits
	Final lab test	

Course Inventory for ORU's Student Learning Outcomes

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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				√
1B Sensitivity to the Holy Spirit				√
1C Evangelistic capability				√
1D Ethical behavior			√	
2 **Outcome #2 – Intellectually Alert** Proficiencies/Capacities				
2A Critical thinking		√		
2B Information literacy		√		
2C Global & historical perspectives			√	
2D Aesthetic appreciation			√	
2E Intellectual creativity		√		
3 **Outcome #3 – Physically Disciplined** Proficiencies/Capacities				
3A Healthy lifestyle				√
3B Physically disciplined lifestyle				√
4 **Outcome #4 – Socially Adept** Proficiencies/Capacities				
4A Communication skills			√	
4B Interpersonal skills			√	
4C Appreciation of cultural & linguistic differences				√
4D Responsible citizenship			√	
4E Leadership capacity			√	

(Revised 10/9/08)