

Course Title: NETWORK THEORY I

Course Prefix: ELEG

Course No.: 2023

Section No.: 01

Department of | Electrical and Computer Engineering | College of | Engineering

Instructor Name: | *Section 01-Dr. Justin Foreman*  
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Office Hours: | T,R 10:30 – 12:00 PM or by appointment, walk-in

Virtual Office Hours: |

Course Location: | *NENR, 117*

Class Meeting Days & Times: | Tuesdays, Thursdays: 8:00am-10:20am

Catalog Description: | **ELEG 2023. Network Theory I.** (3-0) Credit 3 semester hours. Study of basic circuit laws and theorems. Study of circuit analysis techniques, use of controlled sources, and transient and sinusoidal circuit analysis.

Prerequisites: | Prerequisites: PHYS 2511, PHYS 2521, PHYS 2523, MATH 2024, GNEG 1011, and GNEG 2021;

Co-requisites: | MATH 2043 differential Equations

Required Text: | C.K. Alexander and M.N.O. Sadiku, "Fundamental of Electric Circuits," 5<sup>th</sup> Edition, McGraw Hill

Recommended Text/Readings: | Textbook, handouts and electric circuit books in the library.

Access to Learning Resources: | PVAMU Library:  
phone: (936) 261-1500;  
web: <http://www.tamu.edu/pvamu/library/>  
University Bookstore:  
phone: (936) 261-1990;  
web: <https://www.bkstr.com/Home/10001-10734-1?demoKey=d>

#### Course Goals or Overview:

This course is the beginning course in electric circuit analysis. The basic circuit laws, theorems and rules will be taught in this course. DC analysis of circuits will be performed. In addition, the transient analysis of RL, RC, and RLC will be learnt. Lecture topics will include: basic circuit concepts, basic circuit laws, methods of analysis, circuit theorems, operational amplifiers, capacitors and inductors, first order RL or RC circuits, and second-order RLC circuits. In addition, the use of MATLAB for circuit analysis will be covered.

#### Course Outcomes/Objectives

At the end of this course, the student will

1 | Be able to understand and apply Ohm's law and Kirchhoff's laws in resistive networks.

- 2 Be able to understand and apply mesh and nodal analysis methods in networks.
- 3 Be able to understand and apply Thevenin and Norton theorems in network simplification via source transformation techniques.
- 4 Be able to characterize the behavior of resistors, capacitors, and inductors.
- 5 Be able to solve electrical engineering circuit problems
- 6 Be able to understand and apply RL, RC and RLC transient network analysis.
- 7 Be able to use PSPICE or MATLAB to solve electric circuit problems.

**ASSIGNMENTS:** Problems on the topics discussed in class will be assigned. Assignments should be completed and handed in on time. Late homework will not be accepted. All homework should be handed in at the start of the class period of the day they are due.

**COMPUTER APPL. PROBLEMS:** There will computer applications problems that will involve the use of the MATLAB for solving circuit problems.

**PROJECTS:** You will be asked to work on projects that will deepen your understanding of circuit laws, theorem and rules. The projects will be done in groups. Each group will be given a Portable Analog Circuit Design kit. The design kits should be given back to the instructor before the end of semester. Failure to submit the project reports and the design kits to the instructor of this class before assigned return date will result in incomplete ("I") grade in the class.

Exam dates will be announced a week before the exam is to be taken. There will be no makeup exam for unexcused absences.

**EVALUATION PROCEDURE:** The final grade of each student will be determined by the following weights (assignments numbers and weights subject to change):

Items	Value (percentages)
Computer Application Problems	10%
Homework	5%
Projects	10%
Attendance	10%
Tests (2 tests)	40%
Final Exam	25%
<b>Total:</b>	<b>100%</b>

Percentages may vary at instructor's discretion, in which case, students will be informed.

## SCHEDULE OF LECTURE, READING ASSIGNMENTS AND TESTS

LECTURE	SECTIONS OF TEXTBOOK	TEST/EXAM
Basic Concepts	1.1 to 1.6	
Basic Laws	2.1 to 2-4	
Basic Laws	2.5 to 2.8	
		Exam 1
Methods of Analysis	3.1 to 3.7	
Circuit Theorems	4.1 to 4.8	
Operational Amplifiers	5.1 to 5.8	
		Exam 2
Capacitors and Inductors	6.1 to 6.5	
First-order Circuits	7.1 to 7.6	
		Exam 3(optional)
Second-order Circuits	8.1 to 8.2	
Course Review		
Final Examination		
Commencement		

## University Rules and Procedures

### **Disability statement (See Student Handbook):**

Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

### **Academic misconduct (See Student Handbook):**

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

### **Forms of academic dishonesty:**

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

**Nonacademic misconduct (See Student Handbook)**

The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

**Sexual misconduct (See Student Handbook):**

Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

**Attendance Policy:**

Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

**Student Academic Appeals Process**

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

**College of Engineering Textbook Policy**

Students MUST acquire the required textbook that is listed on the course syllabus for this course. The textbook must be acquired by the 10<sup>th</sup> class day. Students are not allowed to share textbooks with students who are currently registered in the same class. Failure to acquire (or show proof of purchase) the required textbook by the 10<sup>th</sup> class day will result in the student being administratively dropped from the course. The University will assess financial obligations for the course to the student as with any other dropped class according to the fee schedule as well as your financial aid may be affected.

If you are not financially able to purchase a required textbook for an engineering course prior to the 10<sup>th</sup> class day, you may apply to the College of Engineering Textbook Fund for a textbook voucher. The voucher can only be used at the Campus Bookstore. This voucher is a loan and must be paid back to the College of Engineering prior to the start of pre-registration for the coming semester. If the loan is not repaid, a hold will be placed on your account. Additional information and application materials can be obtained from the Assistant Dean's Office (SR Collins Rm 349) and obtained online at the College of Engineering website under student resources.

This policy is only for students who have declared a major (Engineering, Computer Science, and/or Technology) in the Roy G. Perry College of Engineering.