Course Title: NETWORK THOERY I
Course Prefix: ELEG **Course No.: 2023** **Section No.: 01**

Department of	**Electrical and Computer Engineering**	**College of**	**Engineering**

Instructor Name:	***Section 01-Dr. John Fuller***
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Office Hours: **Fuller M 9:00-11:00 am T 9:30 am – 11:00 am, W 9:00 – 11:00 am, R 9:30 – 11:00 a.m. or by appointment**
Virtual Office Hours:

Course Location: ***Section 01: Electrical Engineering BLDG Room 119***

Class Meeting Days & Times: **Section 01: Tuesdays and Thursdays 11: 00 a.m. – 12:20 p.m.**

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 PHYS 2511, PHYS 2521, PHYS 2523, MATH 2024, GNEG 1121, and GNEG 2021; Prerequisite or co-requisite: MATH 2043.

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," 5th 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 taught. Lecture topics will include: basic circuit concepts, basic circuit laws, methods of analysis, circuit theorems, operational amplifiers, capacitors and inductors, first order RL and 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.

ABET STUDENT LEARNING OUTCOMES (a, e, k)

On completion of course the student should have demonstrated
(i.) the ability to apply the knowledge of mathematics, science and engineering (outcome a)

(ii) the ability to identify, formulate and solve engineering problems (outcome e)

(iii) the ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (outcome k)

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 be assigned computer applications problems that will involve the use of the MATLAB software 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. Topics will be on real world problems that will involve the understanding of engineering design and applications.

EXAMS AND TESTS: There will be three tests and a final examination; all of which will count towards the final grade.

	Points
Exam 1	100
Exam 2 Oct 13 Midterm	100
Exam 3	100
Quizzes, projects, computer usage	100
Final Exam (NOV 30 – DEC 6)	150

Exam dates will be announced a week before the exam is to be taken. There will be no makeup exam and tests 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%
Quizzes	10%
Tests (3 tests)	40%
Final Exam	25%
Total:	**100%**

Percentages may vary depending on topic discussion time and assignments

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	
		Midterm Exam
Capacitors and Inductors	6.1 to 6.5	
First-order Circuits	7.1 to 7.6	
		Exam 3
Second-order Circuits	8.1 to 8.8	
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 10th 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 10th 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 10th 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.

ELEG 2023 Network Theory I Fall 2016

Textbook: Fundamentals of Electric Circuits by Matthew Sadiku

AUG 22 Instruction Begins
AUG 22 Late Registration and Drop/Add Begins

Basic Concepts

Introduction

AUG 26 Late Registration, Add Courses, Change Major/Certification or any Matriculation Change Ends for Undergraduate Students

Systems of Units
Charge and Current
Voltage

AUG 31 General Student Assembly-All Students Attend

Power and Energy
Circuit Elements

Basic Laws

Ohms Law

SEP 7 12th Class Day (Census Date)
SEP 5 Labor Day Holiday (University Closed)
SEP 7 Last Day to Withdraw from Course(s) without Academic Record
SEP 7 Late Deadline to Apply for Fall 2016 graduation

Nodes, Branches and Loops
Kirchoff's Law
Series Resistors and Voltage

Basic Laws

Parallel Resistors
Wye – Delta Transformations

First Exam

Methods of Analysis

Nodal Analysis
Mesh Analysis
Circuit Analysis with Multisym, Pspice and MatLab

SEP 8 Withdrawal from Course(s) with Academic Record ("W") Begins

Circuit Theorems

Linearity Properties

Superposition
Source Transformation
Thevenin's Theorem
Norton's Theorem
Maximum Power Transfer

Midterm Exam Oct 13

Operational Amplifiers

Operational amplifiers
Ideal Op Amps
Non-inverting Amplifier
Summing amplifier
Difference Amplifier
Cascaded Op Amp Circuits

OCT 31 Withdrawal from Course(s) with Academic Record ("W") ends
NOV 11 GRADUATIONAPPLICATION DEADLINE FRO SPRING 2017 GRADUATION
NOV 24 – NOV 26 THANKSGIVING HOLIDAY
NOV 28 Instruction Resumes

Capacitors and Inductors

Capacitors
Series and Parallel Capacitors
Inductors
Series and parallel Inductors

First-order Circuits

The source free RC Circuit
The source free RL Circuit
Step Response
Transient Analysis

Third Exam

Second-order Circuits

Initial and Final Values
Source free series RLC
Source free parallel RLC
Step Response
General Second Order Circuit

NOV 28 – NOV 29 Course Review Day [Classes must convene and instructors will prepare students for Final Exams]
NOV 29 Last Class Day
NOV 29 Last Day to Withdraw from the University (from All Courses)
NOV 30 – DEC 6 Final Examination Period
DEC 6 Final Grades Due for Graduating Candidates