

Course Syllabus

Course Information

Course Number: BMEN 3320

Section: 001

Course Title: Electrical and Electronic Circuits in Biomedical Engineering

Day/Time: Tuesday & Thursday: 8:30 am – 9:45 am

Location: ECSS 2.203

Professor Contact Information

Dr. Tariq Ali (Email: tariq.ali@utdallas.edu , Phone: 972-883-6841)

Office: BSB 13.330 (see eLearning for office hours)

Course Pre-requisites, Co-requisites, and/or Other Restrictions

It is recommended that students take BMEN 3120 with this course. Prerequisites: MATH 2420 and (PHYS 2126 and PHYS 2326). Prerequisite or Corequisite: CS 1324.

Course Description

Introduction to analysis methods and network theorems used to describe operation of electric circuits. Electrical quantities, linear circuit elements, circuit principles, signal waveforms, transient and steady state circuit behavior, diode and transistor circuits, operational amplifiers, digital logic devices. Time domain and Laplace transform methods for analysis of electric circuits. Modeling, analysis and simulation of circuits.

Program Educational Objectives

Biomedical Engineering Bachelor's graduates are expected to attain the following Program Educational Objectives within a few years after graduation:

- Careers that lead to leadership roles in biomedical engineering or related fields.
 - or
 - Gain admission to graduate, professional, or health related programs.
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Student Learning Objectives/Outcomes

Student outcomes followed by ABET classification include:

1. Apply Ohm's law, Kirchoff's Laws, node-voltage, mesh-current, and Thevenin transformation techniques to reduce resistive circuits. – (a) An ability to apply knowledge of mathematics, science, and engineering.

2. Apply knowledge of natural, step and steady state responses for RL, RC and RLC circuits. – (a) An ability to apply knowledge of mathematics, science, and engineering.
3. Design and utilize electrical circuits for measuring voltage, current, gain or frequency response, as well as to analyze and interpret measurement results. – (e) An ability to identify, formulate, and solve engineering problems.
4. Use modern tools to identify available solutions to biomedical circuit design problems. – (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
5. Research and report a modern problem associated with biomedical electronics. – (j) A knowledge of contemporary issues.

Required Textbooks and Materials

- Textbook: Electric Circuits, 10th Edition, James W. Nilsson, Susan Riedel
- All other materials will be available in eLearning

Grading Policy

Homeworks:	10%
Projects:	10%
Three Midterm Exams:	50%
Final Exam (comprehensive):	30%

Letter grades will be assigned as:	A \geq 97%,	A \geq 93%,	A- \geq 90%,	B+ \geq		
87%,	B \geq 83%,	B- \geq 80%,	C+ \geq 77%,	C \geq 73%,	C- \geq 70%,	D+ \geq
67%,	D \geq 63%,	D- \geq 60%,	F \leq 60%			

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.