



Jordan University of Science and Technology
Faculty of Engineering
Biomedical Engineering Department

BME316 Medical Electronics Lab - JNQF Level: 7

Summer Semester 2023-2024

Course Catalog

1 Credit Hours. 1 Credit Hours. The electronics lab focuses on experiments that cover the following topics: diode circuits and applications, biasing circuits of BJT and FET, small signal BJT and FET amplifiers, frequency response of amplifiers, differential amplifiers, operational amplifiers and applications, TTL logic circuits, CMOS logic circuits, multivibrators, A/D and D/A converters.

Teaching Method: On Campus

Text Book

Title	BME 316 Laboratory Manual
Author(s)	Department of Biomedical Engineering
Edition	2nd Edition
Short Name	BME 316 Lab Manual
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #1	Microelectronics: Circuit Analysis and Design	Donald A. Neamen	4th Edition	
Ref #2	Electronic circuits, discrete and integrated	Donald L. Schilling and Charles Belove	5th Edition	
Ref #3	ELECTRONIC DEVICES AND CIRCUIT THEORY	ROBERT BOYLESTAD and LOUIS NASHELSKY	7th Edition	

Class Schedule & Room

Section 1:

Lecture Time: Mon, Wed : 13:00 - 16:00

Room: LAB

Prerequisites

Line Number	Course Name	Prerequisite Type
283110	BME311 Electric Circuits Lab	Prerequisite / Study
283140	BME314 Medical Electronics li	Pre./Con.
283130	BME313 Medical Electronics 1	Prerequisite / Study

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	An Introduction To Basic Laboratory Equipment	From BME 316 Lab Manual
Week 2	Diodes Characteristics and Applications	From BME 316 Lab Manual
Week 3	Common Emitter Amplifier and Characteristics	From BME 316 Lab Manual
Week 4	JFET Characteristics and Applications	From BME 316 Lab Manual
Week 5	Operational amplifier characteristics and applications	From BME 316 Lab Manual
Week 6	Active filters and Oscillator	From BME 316 Lab Manual
Week 7	Midterm Exam	
Week 8	Transistor as switching elements	From BME 316 Lab Manual
Week 9	TTL and CMOS Logic gates and interfacing	
Week 10	Multi vibrator using 555 Timers	From BME 316 Lab Manual
Week 11	Schmitt Trigger characteristics and wave form generations	From BME 316 Lab Manual

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand the applications of half and full wave rectifiers. [1SLO6, 1SLO7] [1L7C3]	11%	
Understand the parameters and design procedure of common-emitter amplifiers. [1SLO6, 1SLO7] [1L7C1]	11%	
Understand JFET characteristics and parameters of voltage-controlled gain amplifier. [1SLO6, 1SLO7] [1L7C1]	11%	
Design inverting, non-inverting, and summing op-amp amplifiers. [1SLO6, 1SLO7] [1L7C2]	11%	

Understand the Wien bridge oscillator and active filters. [1SLO6, 1SLO7] [1L7C4]	11%	
Understand the behavior of the transistor as a switch and parameters controlling the inverters. [1SLO6, 1SLO7] [1L7C1]	11%	
Understand the characteristics of TTL and CMOS logic gates and truth tables, and interfacing between TTL and CMOS logic gates [1SLO6, 1SLO7] [1L7C1]	12%	
See behavior of multivibrators in bistable, astable and monostable modes using 555 timer ICs. [1SLO6, 1SLO7] [1L7C3]	11%	
Understand Schmitt-triggers using op-amps and their use as waveform generators. [1SLO6, 1SLO7] [1L7C1]	11%	

Relationship to Program Student Outcomes (Out of 100%)																			
A	B	C	D	E	F	G	H	I	J	K	L	M	SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7
																		50	50

Relationship to NQF Outcomes (Out of 100%)			
L7C1	L7C2	L7C3	L7C4
56	11	22	11

Evaluation	
Assessment Tool	Weight
Midterm Theory Exam	25%
Performance, Reports, Quizzes, and Homework	25%
Final Exam	50%

Policy	
Pre-labs	Students are required to hand in a Prelab report before the start of each lab session to measure their preparation for that session
Quizzes	Quizzes will be given at the beginning of selected lab sessions to measure the understanding of the basic principles.
Post-labs	Students are required to hand in a Post-lab report one week after the performance of each lab session to measure their understanding of the analysis of experimental results

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