Course number: 04023140
Course name: Electronics II
Prerequisites by course: Electronics I (04022240)
Prerequisites by topic: Students are required to have solid background in both the physical operation and DC circuits of basic electronics components namely; Diodes, BJTs, and MOSFETs. Students are also required to have solid background in basic circuits analysis techniques.
Credit hours: 3 credit hours
Contact hours: 3 contact hours
Textbook: [Microelectronic circuits], [Sedra and Smith], [2016]
References:

Donald A. Neamen, Microelectronics; Circuit Analysis and Design, 4th Edition, McGraw-Hill,2010.
D. Schilling and Belove; Electronic Circuits, 3d Edition, McGraw-Hill,1989
Bogart; Electronic Devices and Circuits, 1st Edition, Merrill, 1992

Course website:
Schedule and duration: 15 Weeks, 30 Lectures, 90 minutes each (including exams)
Minimum student material: Textbook, lecture handouts, and scientific calculator
Minimum college facilities: Classroom with whiteboard and projection display facility. Library
Course objectives:

1. Understand ac small signal performance of transistor based amplifiers
2. Understand power amplifiers fundamentals and applications
3. Understand theory and applications of feedback amplifiers
4. Understand theory and applications of operational amplifiers

Course outcomes and relation to ABET student outcomes: (matrix)

After completing the course successfully students are expected to be able to

Course Outcomes	Student Outcomes						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
To be able to analyze basic single stage and multistage amplifier circuits	*						
Define Frequency Response of amplifiers	*						
Define negative feedback and its effect on the performance of amplifiers	*						
Differentiate between the difference mode and the common mode operations	*						
Recognize the Operation of ideal and practical op amp		*					*
Recognize linear and non-linear applications of op amps		*					*

Course topics:

Small-Signal Low-Frequency Analysis and Design
Multi-Stage Amplifiers
Differential Amplifiers

Power amplifiers and applications
Frequency Response
Feedback Amplifiers
Operational Amplifiers: Theory
Operational Amplifiers: Applications

Computer usage: Simulation part of this course is covered within tutorial
Attendance: Attendance is mandatory. Students are required to attend all lectures, attendance rules and regulations will be strictly applied.
Assessments: Quizzes and exams
Grading policy:

Midterm exam	30%
Quizzes and student work	20%
Final (comprehensive)	50%

Instructors: Dr. Osama Oglah Fares
Class time and location: Monday and Wednesday, 11:00 – 12:30, Programming Lab

Student Outcomes (SOs)

1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3	An ability to communicate effectively with a range of audiences
4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Important note: Student outcomes are outcomes (1) through (7), plus any additional outcomes that may be articulated by the program.