Faculty of Engineering and Technology
Electrical and Computer Engineering Department
Summer semester 2023-2024

SYLLABUS

Course number and name: ENEE2360 - Analog Electronics

Instructors' names: Mr.Nasser Ismail and Mr.Mohammad AL-Jubeh

- **Office: Masri220**
- **Office hours: will be announced**

Textbook:

- **Electronic Devices and Circuit Theory**, R. Boylestad & L. Nashelsky, 11th Edition, 2013.

Reference:

- **Microelectronic Circuits, Sedra & Smith, Seventh edition, 2014**
- **Electronic Devices, Floyd, 9th Edition, 2012**

Specific course information

- **Description: Semiconductor materials and PN junction, diode circuit applications, structure, operation, and properties of the bipolar junction and field effect transistors, analysis and design of transistors bias circuits, small signal models of the transistors, basic amplifier configurations, amplifier frequency response, operational amplifiers and their applications, linear voltage regulators, Using computer software to analyze electronics circuits.**
- **Prerequisites ENEE2304 or ENEE2311**
- **Core course for computer and mechatronics engineering students**

Specific goals for the course
   By the end of the course, the students will be

   Familiar with basic physics and operation of diodes, BJTs, MOSFETs, and JFETs.

   Able to analyze diode circuits using linear model techniques.

   Able to design diode circuits using linear model techniques.

   Able to analyze BJT and FET transistor biasing circuits.

   Able to design BJT and FET transistor biasing circuits.

   Able to perform small-signal analysis of basic BJT and FET amplifier circuits.

   Able to perform small-signal design of basic BJT and FET amplifier circuits.

Able to analyze variety of popular op amp circuits, including signal converters ,instrumentation , signal conditioning circuits, and comparators

Able to design a variety of popular op amp circuits, including signal converters ,instrumentation , signal conditioning circuits, and comparators .

Able to analyze discrete and integrated voltage regulators.

Able to design discrete and integrated voltage regulators.

Able to use the circuit simulator PSPICE for analysis of electronic circuits.

(ABET) Relationship of course to Computer Engineering Program Student Outcomes:
- (a) Ability to apply mathematics, science and engineering principles.
- (c) Ability to design a system, component, or process to meet desired needs.

Brief list of topics to be covered
- **Introduction to Semiconductors and Semiconductor diodes:**
- **Diode Applications:**
- **Bipolar Junction Transistors (BJT):**
- **DC Biasing of BJTs:**
- **BJT AC Analysis:**
- **Field-effect transistors (FETs)**
- **FET Amplifiers.**
- **Operational Amplifiers and Applications**
- **Voltage Regulators**

Tentative Grading:
- **Midterm Exam**   **30%**
- **Project and Short Exams**   **25%**
- **Final Exam**   **45%**

Policies:

- **Class attendance is required by the university regulations.**
- **All students are expected to comply with university rules and regulations on academic Integrity and honesty.**