

Summarized Course Description

Course number: ECE 241	Course name: Electronics (1)
لغة تدريس المقرر: English	Pre-requisites: ECE 211
Credit hours: 4 (3-2-0)	Course level: Level - 6

Course Description

وصف المقرر :

Opamp Linear Applications. PN junction and zener diodes. Diode Models. Diode basic circuit analysis and diode applications (e.g. rectifier and limiters). MOSFET and BJT (Mode of operation, Terminal characteristics, DC biasing, small signal analysis). Amplifier configurations and characteristics. CMOS digital circuits.

Course objectives

أهداف المقرر :

1. Introduce the op-amps and its basic applications.
2. Present different types of diodes and its main applications.
3. Introduce different types of transistors, their modes of operations, and DC biasing techniques.
4. Apply knowledge of mathematical models to design single transistor amplifiers.
5. Be familiar with different digital families and get the required knowledge to design CMOS logic gates.

Course Outcomes

مخرجات التعليم:

Upon completing the course, the student should be able to:

1. Analyze and design different circuits using ideal op-amps.
2. Identify and characterize different semiconductor devices (P-N Junction, BJT, MOSFET, and JFET).
3. Understand different diode and transistor applications (clipping, clamping, amplifier, digital gates ...).
4. Analyze and design different electronic circuits contain semiconductor devices using devices' models.
5. Identify the design parameters and different characteristics of small signal amplifiers.
6. Understand different digital families and get the required knowledge to select the proper family for a certain application.
7. Use the techniques, skills, and modern engineering tools such as PSPICE to analysis and design electronic circuits.
8. Conduct electronics experiments including analysis and interpretation of measured results.

Textbook and references

الكتاب المقرر والمراجع المساندة:

Text Book: Sedra and Smith, "Microelectronic Circuit," 7th Edition (or later), 2014, Oxford University Press, ISBN 9780199339136.

References:

Richard Jaeger, and Travis Blalock, Microelectronic Circuit Design, 5th Ed., McGraw Hill Education, 2016. SBN: 0073529605.

Mark N. Horenstein, Microelectronic Circuit and Devices (2nd Edition) (Part A & B), Pearson, 1994, ISBN 10: 0137013353 ISBN 13: 9780137013357