

## Syllabus

### Course Meeting Times

Every Tuesday 13:30-16:30

### Course Description

Semi-conductor basics: concepts and semi-conductor components. Semiconductor diode; physical structure, terminal characteristics, analysis of diode circuits. Bipolar junction transistor (BJT); physical structure and operating modes, BJT as a switch; DC biasing, BJT as an amplifier, small-signal model, basic amplifier circuits. MOSFET; structure and operating modes, MOSFET as a switch, MOSFET amplifiers. Operational amplifiers; concepts and application examples.

### Text Books

Microelectronic circuits by Sedra Smith

Elektronik by Mehmet Sait Türköz

### Exams and Grading

Midterm exam1 (20%), midterm exam2 (20%), homework (5%), quiz (5%) and final exam (50%).

Exam dates:

Midterm1: November 1, 2016 @14:00,

Midterm2: December 13, 2016 @14:00.

### Attendance Policy

Minimum 5 weeks in order to enter the final exam.

LEC #	TOPICS
1	Introduction
2	Semiconductors
2	Basics of pn junction, small signal model, AC analysis of diode circuits
3	Diode models, DC analysis of diode circuits, Zener diode
4	Basics of BJT and its operating regions

LEC #	TOPICS
5	Early effect, BJT models and characteristics
6	DC biasing of BJT circuits
7	Amplifier circuits: small signal models for transistors and amplifiers
8	Amplifier circuits: small signal analysis of amplifiers
9	Operational amplifiers
10	Operational amplifiers
11	Basics of MOSFET and its operation regions
12	MOSFET and its applications