

ECE 3312: Electronics II

Credit / Contact hours: 3 / 3

Course coordinator: James Dickens

Textbook(s) and/or other required material: Sedra and Smith, *Microelectronic Circuits*, 6th Edition, Oxford University Press, 2010

Catalog description: Analysis and design of wide-band small signal amplifiers, RF filters, RF Tuned amplifiers, power amplifiers, thermal management systems and RF oscillators. This course prepares students for engineering practice through analysis and design experiences involving electronic circuits using both analytic and computer based processes. This course includes engineering topics and engineering design.

Pre-requisite(s) or co-requisites: ECE 3311, ECE 3304 (new Circuits II) and ECE3303.

Designation: Required for EE majors

Course learning outcomes: Upon completion of this course, students should be able to do the following:

1. Analyze and design small signal transistor amplifiers
2. Analyze and design differential and integrated circuit amplifiers over extended frequency ranges
3. Analyze feedback networks in electronic circuits
4. Analyze and design analog filters and tuned amplifiers
5. Analyze and design basic oscillator circuits
6. Analyze and design power amplifier circuits
7. Analyze and design thermal management systems in electrical circuits

Student outcomes addressed: a, e, and k.

Topics covered

Review of transistor amplifier small signal analysis. – 4 hours

Differential and integrated circuit amplifiers over extended frequency ranges – 6 hours

Feedback – 2 hours

Filters and tuned amplifiers – 8 hours

Oscillators – 6 hours

Power amplifiers – 6 hours

Contemporary topics in electronics - 3 hours

Tests - 3 hours