

# ECE 310 - Fundamentals of Electronics ECE 319 – Background Study in Electronics

## Syllabus

**INSTRUCTOR:** Ken Noren  
Office: GJL 215  
Phone: 885-7623  
EMAIL: [knoren@uidaho.edu](mailto:knoren@uidaho.edu)  
SKYPE: kenneth.noren.ui  
URL: <http://www.mrc.uidaho.edu/~knoren>

**PREREQS:** Knowledge of basic electric circuit analysis techniques.

**TEXTBOOK:** *Fundamentals of Microelectronics*, Razavi, Wiley, 2008.

**REFERENCE:** *Microelectronic Circuits*, Sedra and Smith, Oxford University Press, 5th edition, 2004.

**GOALS:** To introduce the student to basic electronic devices and their characteristics. These devices include diodes, bipolar junction transistors (BJT's), field-effect transistors (FET's), and operational amplifiers (Op-Amps). Develop the skills required to analyze (DC and small-signal analysis) and design basic electronic circuits containing diodes, BJT's, FET's, and op-amps.

**GRADING:** **ECE 319**

No exam option: FINAL - 100%

Exam option: EXAMS (4) - 75%  
FINAL - 25%

ECE 319 is graded Pass/Fail

**ECE 310**

Exam option : EXAMS (4) - 75%  
FINAL - 25%

ECE 310 is graded A/B/C/D/F and you must take four exams and a final.

**POLICIES:** Each exam is closed book-closed notes, but one page (8 1/2 x 11) of notes is allowed. Anything may be written on these notes. The time allowed on each exams (not the final) is 90 minutes.

**INFO:** This course was recorded during the Spring of 2009.

Generally, only the final exam is required for ECE 319. However, ECE 319 students may elect to take an exam option above if prior permission has been obtained from the instructor. Please email me to request this option. For the final exam, you are allowed five pages of notes. If you take the exams, it is a good idea to save any note sheets you have and use them for the final exam.

ECE 319 is graded pass/fail. However, if a letter grade is desired, you can elect to enroll in the engineering outreach section of ECE 310. This section ECE 319, except that a letter grade (A, B, C, D, or F) is given at the end of the semester. Often, this can be used as transfer credit for electronics at other universities.

**OUTLINE:**

- Chapter 1 - Introduction to Microelectronics
- Chapter 8 - Operational Amplifiers as a Black Box
- Chapter 2 - Basic Physics of Semiconductors
- Chapter 3 - Diode Models and Circuits
- Chapter 4 - Physics of Bipolar Devices
- Chapter 5 - Bipolar Amplifiers
- Chapter 6 - Physics of MOS Transistors