

ECE 341 – JUNIOR LABORATORY I

Type (check one): Required: X Elective:

2005-2006 Catalog Data: ECE 341. Junior Laboratory I. (Formerly EE 341) Experiments paralleling topics from ECE 222 and ECE 331. Most experiments relate to topics from electronics and stress designing with discrete electronic devices. Introduction to integrated circuits through circuit applications. Students are required to maintain a lab journal. Prerequisites: ECE 201, 221. Corequisite: ECE 331. Offered in the Fall semester. *One semester; one credit.*

Prerequisites: ECE 201, ECE 221

Co-Requisites: ECE 331

Textbook: *Electronic Circuit Analysis and Design*, Second Edition, Donald A. Neamen, McGraw-Hill, 2001.

Other Required Materials: Laboratory notebook

Other References: *PSpice and MATLAB for Electronics, An Integrated Approach*, J. O. Attia, CRC Press, 2002.

Instructor: Dr. Robert L. Drake

Course Objectives: Obtain experience in lab measurements and practice. Design, analyze, implement electronic circuits to meet specifications.

Prerequisites by Topics: Basic circuit theory and applications.

Topics: Experiments and design projects are assigned to the students. Projects include design of amplifiers, power supplies, and oscillators as indicated below.

Typical Experiments and Design Projects

1. Familiarization
2. Operational Amplifiers I
3. Operational Amplifiers II
4. Diode Characteristics and Applications
5. BJT Characteristics and Amplifier Design
6. Operational Representation of Amplifier
7. JFET Voltage Amplifier
8. Complementary Symmetry Power Amplifier
9. Phase Shift Oscillator

Class Schedule: One three-hour session per week

Prepared by: Robert L. Drake, Ph.D., P.E. **Date:** August 2005

**Professional Component:
ECE 341 – JUNIOR LABORATORY I**

Category (check one)	<input type="checkbox"/> Math/Basic Science <input checked="" type="checkbox"/> Engineering <input type="checkbox"/> General Education <input type="checkbox"/> Other
Design (check one)	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Some <input type="checkbox"/> None
Realistic Constraints (check all that apply)	<input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Sustainability <input type="checkbox"/> Manufacturability <input type="checkbox"/> Ethical <input type="checkbox"/> Health & Safety <input type="checkbox"/> Social <input type="checkbox"/> Political

Relationship to Program Outcomes:

Check all that apply:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) a recognition of the need for and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice