

## ECE 342 – JUNIOR LABORATORY II

**Type (check one):** Required:  X (for ECE majors only)  Elective:  X (for other majors)

**2005-2006 Catalog Data:** ECE 342. Junior Laboratory II (Formerly EE 342) Design projects paralleling ECE 322, ECE 331, and ECE 332. Some experiments may be assigned by the instructor, but some projects will be proposed by the students and submitted to the instructor for approval prior to the initiation of the work. An engineering notebook is kept by each student. Prerequisite: ECE 341. Co-requisite: ECE 332. Offered in the Spring semester. *One semester; one credit.*

**Prerequisites:** ECE 341

**Co-Requisites:** ECE 332

**Textbook:** *Electronic Circuit Analysis and Design*, Second Edition, Donald A. Neamen, McGraw-Hill, 2001.  
*Digital Systems*, Tocci, Widmer, and Moss, Prentice Hall, 2004.

**Other Required Materials:** Engineering lab notebook.

**Other References:** Manufacturer's literature. Instructor's notes.

**Instructor:** Robert L. Drake, Ph.D., P.E., Professor of Electrical and Computer Engineering

**Course Objectives:** Obtain lab experience with application of digital electronic circuits. Design of small analog – digital systems. Introduction to power electronic circuits.

**Prerequisites by Topics:** Amplification, Rectification, Basic Filtering, Oscillation, Signal Transmission.

**Topics:**

1. Digital electronic devices such as gates, encoders, decoders, flip-flops, registers, counters, adders, A/D and D/A converters.
2. Design of small analog-digital systems.
3. Basic power electronic circuits.

**Class Schedule:** One 3-hour session per week

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

**Professional Component:  
ECE 342 – JUNIOR LABORATORY II**

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 checked="" 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