



WISCONSIN

UNIVERSITY OF WISCONSIN-MADISON

University of Wisconsin - Madison
College of Engineering [EGR]
Last Offered: 2015 Spring [1154]
Direct Link to this Syllabus :

<http://aefis.engr.wisc.edu/index.cfm/page/CourseAdmin.ViewABET?coursecatalogid=488&pdf=True>

1. **E C E 453, Embedded Microprocessor System Design**
2. **Credits : 4 Contact Hours : 5.5**
3. **Textbook and Materials : ECE 453 Course Notes**

a. **Other Supplemental Materials : None**

- **Specific Course Information :**

- a. **Brief description of the content of the course (Course Catalog Description) :** Hardware and software design for modern microprocessor-based embedded systems; study of the design process; emphasis on major team design project.
- b. **Pre-requisites or Co-requisites :** ECE 315 & 353
- c. **This is a Selected Elective course.**

- **Specific Goals for the Course :**

a. **Course Outcomes :**

1. Students will design digital logic in an FPGA
2. Students will develop a hardware schematic to solve an engineering problem
3. Students will fabricate a prototype design on a PCB based on their hardware schematics
4. Students will deploy an embedded operating system to aide in human interaction with the prototype

- **ABET Student Learning Outcomes :**

- (a) Ability to apply mathematics, science and engineering principles.
- (b) Ability to design and conduct experiments, analyze and interpret data.
- (c) Ability to design a system, component, or process to meet desired needs.
- (d) Ability to function on multidisciplinary teams.
- (e) Ability to identify, formulate and solve engineering problems.
- (g) Ability to communicate effectively.
- (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- (i) Recognition of the need for and an ability to engage in life-long learning.
- (j) Knowledge of contemporary issues.
- (k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

- **Brief List of Topics to be Covered :**

1. Utilization of FPGAs in Embedded Systems
2. Designing Hardware Platforms Using Discrete Integrated Circuits

3. PCB Fabrication and Design
4. Embedded Operating System Principles