ECE2799 COURSE DESCRIPTION

ELECTRICAL AND COMPUTER ENGINEERING DESIGN

Catalog Data:
ECE 2799. ELECTRICAL AND COMPUTER ENGINEERING DESIGN. (1/3U) Cat. I
The goal of this course is to apply the engineering design process within Electrical and Computer Engineering to create products that will address the needs of a particular group or market. Fundamental steps of the design process are followed including market research, needs assessment and problem formulation in order to determine design features and product viability. Basic scientific, mathematical and engineering principles are applied in order to reduce the ideas to practice. Students work in teams within time, budgetary and resource constraints, and are encouraged to be innovative in their designs. Progress is reported regularly in both written and oral form. The course culminates with the construction and demonstration of working prototypes which are evaluated by a panel of independent judges. ECE 2799 is strongly recommended for all students as preparation for the MQP, and is most beneficial when taken in the late sophomore or early junior year.

Recommended Background:
Any three of the following courses: ECE 2019, ECE 2311, ECE 2049, ECE 2029

Course Outcomes:
- Demonstrate understanding of the steps involved in the engineering design process.
  Students are shown steps to the Engineering Design Process including, Needs Assessment, Problem Formulation, Abstraction & Synthesis, Analysis & Evaluation, and Design Implementation.

- Apply the engineering design process to a real design problem.
  Students are required to design and construct a working prototype of a product meeting required specifications.

- Contribute successfully to a team effort.
  Students work in teams of three during the project. Teams write reports, give oral presentations, and design and build a prototype of their proposed product.

- Demonstrate understanding of engineering ethics, reliability, safety and regulation concerns.
  Students are tested individually on their understanding of these areas based on readings and class lecture material.

- Demonstrate a working knowledge of financial, scheduling, and administrative elements of the design process.
  Students are required to work within budgetary and time constraints. Students create and adhere to project schedules, as well as estimating possible Return-of-Investment (ROI) if their product were to be manufactured.

- Effectively use written communication to report project status and results.
  Student teams write weekly project reports summarizing the progress of their designs.

- Effectively use oral communication to report project status and results.
  Students teams give regular oral presentations of their progress during scheduled design reviews.