Course Syllabus

ELCT 404 – Capstone Design Project I

Course Coordinator: Undergraduate Program Committee

Catalog Description: Capstone design project: Final design and implementation

Credit Hours 3 (42 contact hours)

Prerequisite(s) by course D or better in ELCT 403

Prerequisite by topics Project planning and preliminary design

Required Textbook Pocket Book of Technical Writing for Scientists and Engineers

Microsoft OneNote Online Application
http://www.nirmaltv.com/2010/06/09/access-onenote-online-with-onenote-web-app/

Other Materials Class notes posted on Blackboard

Learning Outcomes:
Students who successfully complete the course will be able to:

1. Implement the steps of design iteration including consideration of user or evaluator feedback, observed performance of prototype subsystems, refinement of requirements, and refactoring of a design to arrive at a final detailed design.

2. Implement final design details in complete hardware and software solutions.

3. Design appropriate tests to measure and evaluate the performance of refined subsystems to show that they meet performance and interface requirements.

4. Develop a plan to successfully and incrementally integrate, test, and qualify subsystems to end up with a complete system.

5. Quantify and evaluate functionality and effectiveness of the finished system relative to the user or customer requirements.

6. Identify innovative features of the system or its subsystems, relate these to the state of the art, and complete an invention disclosure that defines these innovative features for possible protection of intellectual property.

7. Develop a plan for bringing the prototype system to market, including identification of a target market, definition of additional technical improvements that are needed to meet the market requirements, identification of IP agreements or licenses that would be needed, and estimate of manpower and time required to bring to market.

8. Constructively contribute to the accomplishments of a multidisciplinary team, including critical evaluation of self and team-member performance.

9. Develop a technical manual for the final product


Course Topics:

- User requirements
- Design iteration
- Design for reliability
- Intellectual property disclosure
- System integration plan
- System characterization
- Business case development
- Evaluation of teammates
Course Contribution to Program Outcomes:
ELCT 404 contributes to an achievement of:

- Outcome 1 -- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- Outcome 2 -- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Outcome 3 -- an ability to communicate effectively with a range of audiences
- Outcome 4 -- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal context.
- Outcome 5 -- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Outcome 6 -- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusion.
- Outcome 7 -- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

General Course Policies

Academic Integrity
This is a team-oriented class so you are expected to build on the work of others. Nonetheless, individual contributions should not be obfuscated and external sources of ideas should be recognized and credited. Every team member is expected to contribute in some substantial way to every team assignment. But every individual assignment should predominantly be the work of that individual; contributions of others should be recognized appropriately, perhaps in an Acknowledgements section. All students are expected to follow the University of South Carolina Honor Code and should expect that every instance of a suspected violation will be reported. Students found responsible for violations of the Code will be subject to academic penalties under the Code in addition to whatever disciplinary sanctions are applied.

Accommodating Disabilities
Reasonable accommodations are available for any student with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the Office of Student Disability Services: 777-6142, TDD 777-6744, email sasds@mailbox.sc.edu, or stop by LeConte College Room 112A. All accommodations must be approved through the Office of Student Disability Services.

Diversity
In developing the semester schedule, we have attempted to avoid conflicts with major religious holidays. If, however, we have inadvertently scheduled an event that creates a conflict with your religious observances, please let the instructor know as soon as possible so that other arrangements can be made.

Amending the Syllabus/Rules
Amendments and changes to the syllabus, including evaluation and grading mechanisms, are possible. The instructor will initiate any such changes, considering input from the class.