# ECEN 404: Electrical Design Laboratory – Capstone (Senior) Design, Spring 2019

**Lecture Times and Location:** Monday/Wednesday 10:20-11:10 (ETB 1020)

11:30-12:20 (ETB 1020)

12:40-13:20 (ETB 1020)

13:50-14:10 (ETB 1020)

**Lab Time and Location:** Tuesday 16:00-19:00 (EDC)

Wednesday 8:00-10:50, 16:00-19:00 (EDC)

Thursday 8:00-10:50 (EDC)

# Textbooks (for reference; not required):

1. Wiley Series in System Engineering and Management by Alexander Kossiakoff, Samuel Seymour
2. Systems Design and Engineering: Facilitating Multidisciplinary Development Projects by Bonnema G. Maarten, Veenvliet T.
3. Embedded System Design by Peter Marwedel
4. Systems engineering Design Principles and models by Dahai Lu

# Course Goals and Objectives:

At the end of the course, the student should be able to demonstrate skills in the categories below.

* 1. Design Methodology
     1. Apply scientific methods and engineering principles learned in other courses to design, analyze and demonstrate a non-trivial engineering system or process to meet a desired need.
     2. Describe the activities that occur during each stage of a design process.
     3. Analyze project needs in order to produce quantitative design requirements.
     4. Develop technical skills including PCB design and soldering.
  2. Societal Impact
     1. Recognize the ever-present role of design in human activity
     2. Analyze and address risks associated with concept.
  3. Project management
     1. Demonstrate the ability to work in a team environment.
     2. Assess risk in a project and assign appropriate contingency.
     3. Develop project development and validation plan, and execute to it.
     4. Communicate and justify design choices through written and oral assignments. Oral presentations will be ~500 unique words per presentation (in slides)/10-15 minutes per team per presentation and evaluation/feedback will be taking place bi-weekly/weekly by a team of 3 professors, 8 TA’s and 30-40 peers.

# Instructional Staff & Office Hours:

Course Instructors: Prof. Stavros Kalafatis ([skalafatis-tamu@tamu.edu](mailto:skalafatis-tamu@tamu.edu)) WEB 205E

Monday, Wednesday 3:00 PM – 4:00 PM and/or by email-arranged appointment

Prof. John Lusher II ([john.lusher@tamu.edu](mailto:john.lusher@tamu.edu)) WEB 244B

Monday 8:00 AM – 11:00 AM and/or by email-arranged appointment

Prof. Kevin Nowka ([kjnowka@tamu.edu](mailto:kjnowka@tamu.edu)) WEB 237E

Monday 2:00 PM – 3:00 PM and/or by email-arranged appointment

Andrew Miller ([andrew.miller@tamu.edu](mailto:andrew.miller@tamu.edu))

Teaching Assistants: Pranav Dhulipala ([pranav.d1993@tamu.edu](mailto:pranav.d1993@tamu.edu))

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Mazin Mustafa ([mazinm2014@tamu.edu](mailto:mazinm2014@tamu.edu))

**GRADING:**

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| --- | --- | --- |
| Bi-weekly presentation updates | 25% (5% per update) | Rubric: Technical merit (Progress, skills, engineering reasoning, execution), presentation skills (slide clarity, oral presentation), validation (completeness, plan) |
| Final Presentation + poster completion and Video submission | 10% (Poster, video and exhibit will remove 5% of overall final grade if any are not present OR inadequate) | Rubric: Technical merit (Technical skills demonstrated, engineering reasoning, execution), presentation skills (slide clarity, oral presentation), validation (completeness, plan) |
| Demo | 40% | Rubric: Technical merit (Operation, complexity) validation completeness (plan and execution completeness) |
| Final report | 25% | Rubric: Written communication (usage of English, clarity), Technical merit (data completeness, complexity of project),  Validation and execution plan completeness |
| Github repository and sponsor feedback | Pass/Fail | Repository will be checked periodically during labs and at the end of the semester.  Sponsor feedback will follow the online feedback form (see ecampus -> contents -> sponsor feedback email) |

**Notes:**

* Individual contribution will be weighed in determining the final course grade.
* **Submit all written and oral assignments *in pdf format* on eCampus ahead of the deadline or presentation time. Sponsors (both industry as well as faculty and instructor sponsors) should receive copies of all presentations and reports at least 3 days before due date in order to allow time to incorporate feedback**
* Timely (i.e. for entire lab and lecture unless dismissed) attendance is mandatory for **all** lectures and labs. University rules related to excused and unexcused absences are located on-line at <http://student-rules.tamu.edu/rule07>
* **All ecampus Announcements MUST be read with 24 hrs as they will address any adjustments to the syllabus**
* Oral presentations will be ~500 unique words (in slides) per student (10-15 mins per team) per presentation and evaluation/feedback will be taking place bi-weekly/weekly by a team of 3 professors, 8 TA’s and 30-40 peers. The feedback will be oral in the lab and during the presentations (which is a total of 6 times for the entire course)

# Americans with Disabilities Act (ADA) Policy Statement:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Room 126 of the Koldus Building or call 845-1637.

# Academic Integrity Statement:

“*An Aggie does not lie, cheat, or steal or tolerate those who do*.”

The Honor Council Rules and Procedures are located at: [http://www.tamu.edu/aggiehonor.](http://www.tamu.edu/aggiehonor)

All instances of academic misconduct (e.g., plagiarism, copying, etc) will be severely penalized, with the offending group referred to the Aggie Honor Office.

# Online Advising

Current students should also visit the advising course on eLearning to find out about scholarship, internship and research opportunities. Login through: [*http://elearning.tamu.edu/*](http://elearning.tamu.edu/) and navigate to:

*Advising for Electrical Engineering Majors* or

*Advising for Computer Engineering Majors (EE – Track)*

# Class Schedule: (dates are approximate and subject to change)

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| --- | --- | --- | --- |
| Wk | Starting Date | **Lecture** | **Lab** |
| 1 | 01/14 | Prepare for first bi-weekly update, class overview | Lab Re-Introduction |
| 2 | 01/21 | Bi-Weekly Status Updates (a) | Mini Demo progress (1hr) |
| 3 | 01/28 | Bi-Weekly Status Updates (b) | Mini Demo progress (1hr) |
| 4 | 02/04 | Bi-Weekly Status Updates (a) | Mini Demo progress (1hr) |
| 5 | 02/11 | Bi-Weekly Status Updates (b) | Mini Demo progress (1hr) |
| 61 | 02/18 | Bi-Weekly Status Updates (a) | Mini Demo progress (1hr) |
| 7 | 02/25 | Bi-Weekly Status Updates (b) | Mini Demo progress (1hr) |
| 8 | 03/04 | Bi-Weekly Status Updates (a) | Mini Demo progress (1hr) |
| 9 | 03/18 | Bi-Weekly Status Updates (b) | Mini Demo progress (1hr) |
| 10 | 03/25 | Bi-Weekly Status Updates (a) | Mini Demo progress (1hr) |
| 11 | 04/01 | Bi-Weekly Status Updates (b) | **PCB Submission Deadline** |
| 12 | 04/08 | **Final Design Presentation (10%) (a)** | **Final Design Presentations** |
| 13 | 04/15 | **Final Design Presentation (10%) (b)** | **Final Design Presentations** |
| 14 | 04/22 | **Final Demo System Integration (40%)** | **Demo System Integration** |
| **Video 4/22** |  |
| 14 | 04/26 | **Exhibit, Invitational** | Invitational Demo Day; teams will be informed where to present (exhibit – all day - or invitational – 1 to 3:30pm) |
| 15 | 05/01 | **Final Report due on ecampus by 5pm (25%)** |  |
| 16 | 05/07 | Grades due – graduating seniors |  |
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## 1ECE Capstone Design Blitz (Feb 22-24)