NJIT Department of Biomedical Engineering

BME 496 Senior Capstone Design II

Instructors: Dr. Joel Schesser (joel.schesser@njit.edu), Fenster 610, x3193

Class Hours: Thursday 2:30pm - 5:20pm, (Team) Fenster 698
Friday 8:30am - 9:50am, (Lecture) Fenster 698

Office Hours: By appointment

Welcome back to Capstone Design!

Capstone Design II continues the design process. You will complete the design you started in Capstone I by developing design specifications and a test plan; building and testing the product; and demonstrating how well it meets the customer needs. Successful completion of the program requires satisfying the course requirements and your customer.

TEXT
None. Supplemental handouts will be provided as needed.

COURSE DESCRIPTION:
Prerequisites: BME 495.
This portion of the project includes library research, time and cost planning, oral and written reports, as well as construction, troubleshooting and demonstration of a working prototype.

LEARNING OUTCOMES:
By the end of the course you will be able to do the following:

1. Project Implementation: Complete the development and testing of a biomedical engineering technology-based project. Develop engineering documentation for the selected project. Demonstrate the project.
2. Use effective research and critical thinking skills while developing an understanding of ethical issues in research and design.
3. Perform multi-disciplinary teamwork, including written and verbal communication skills, while monitoring project progress using planning and milestone management.

TOPICS:
Design specifications development and traceability
Industrial design, ergonomics, performance, aesthetics
Test plans
Regulatory issues
Design reviews
Reliability and performance testing
FDA

COURSE OUTLINE*:

Wk#, Date (Thursday)	Team (Thursday)	Lecture (Friday)	Deliverables This Week
1:9/03	1. Review of Course 2. Capstone Lab 3. Meeting Schedule 4. Requirements 5. NEBEC 6. Presentations/Demos 7.Status Mtgs, Work	1. Review of Course 2. Capstone Lab 3. Meeting Schedule 4. Requirements 5. NEBEC 6. Presentations/Demos 7.Status Mtgs, Work	
2: 9/10	Status Mtgs, Work	-Performing Design Reviews - Makeup of Product Design ---- Requirements Documents - Generating Test Plans - Traceability to Requirements - Review of Laser Mouse Test Plan - Testing: Reliability, Performance	- Update project plan (T) (Friday) -Updated High Level Requirements (T) (Friday)
3: 9/17	Status Mtgs, Work	- Prepare for Design Review -Business Conduct	-- Preliminary High Level Requirements (T) (Friday)
4: 9/24	Status Mtgs, Work	- Generating Test Plans - Traceability to Requirements - Review of Laser Mouse Test Plan - Testing: Reliability, Performance	
5: 10/01	- Design Review	-Regulatory (FCC, ISO, UL, Shake and Bake) -FDA	- Review of Selected Requirements 2 Reviewed Copies (At the Review) - Preliminary Test Plans (T) (Friday)
6: 10/8	Status Mtgs, Work	-Ethics in Biomedical Product Design - Industrial Standards	- Updated Test Plans (T) (Friday))
7: 10/15	Status Mtgs, Work	-Intellectual Property and Invention Disclosure Forms - Midterm Presentations	
8: 10/22	-Test Plan Reviews	- Midterm Presentations	- Review of Selected Test Plans 2 Reviewed Copies (At the Review)
9: 10/29	Status Mtgs, Work	- Midterm Presentations	- PPT Presentation (T) (all emailed by Presentation 10/27 9PM
10:11/5	Status Mtgs, Work	-- Demonstrations	

11: 11/12	Demonstrations -	-- Demonstrations - --Industrial Design - How to develop a final report	Demo Agenda at the time of the Demo **- Invention Disclosure Forms (T)** **- Ethics Assignment (I)** **-FDA Homework (T)** **Standards H/W(I)**
12: 11/19	Status Mtgs, Work Status Meetings	-How to develop a final report	
13: 11/26	No Class	11-25 Wednesday – Fri Class - Demonstrations	- Demo Agenda at the time of the Demo
14: 12/03	Status Mtgs, Work Status Meetings	- How to develop a final report Schedule for Final Presentations and Review	Draft of Final Presentation
15: 12/10	**Final Presentations**	**Wrap Up**	12/9 8:pm Final Presentation, Final report, video and poster paper are due. 12/08 at the presentation Advisor Assessment

***The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course outline and schedule verbally and via the website schedule.**

Assignments and guidelines for deliverables will be made available via email and the website throughout the term. You are responsible for monitoring your email for timely messages.

GRADING:

- 20% - Face-to-face status meetings, emailed weekly progress reports, regular meetings with the customer, customer's feedback on meetings, demos, and presentations (Team&Individual grade)
- 15% - Midterm Presentation (Individual and Team grade)
- 20% - Final Report (WITH advisor signature) (Team grade)
- 15% - Final presentation (Individual and Team grade)
- 30% - Demonstrations, Quizzes/HW, Performance Review, Attendance, Team Assessments from Instructors and Customer 20% (Individual) 10% (Team)

Attendance is mandatory. Failure to attend class regularly will result in a failing grade.

Additional Information on Grading

- Quizzes are unannounced and may cover any information covered in class.
- Final Reports are due at the start of the final presentations.
- Teams are expected to invite customers to all presentations and demonstrations.
- Teams must get customer approval for all demonstrations **before** they are presented to instructors.
- CUSTOMER FEEDBACK FORMS ARE REQUIRED AND PART OF YOUR GRADE.

Honor Code Violations/Disruptive Behavior:

NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. In the cases the Honor Code violations are detected, the punishments range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record. Avoid situations where honorable behavior could be misinterpreted.

No eating or drinking is allowed at the lectures, recitations, workshops, and laboratories.
Cellular phones must be turned off during the class hours.

Absensces for Religious Observances:

For students requiring absences for Religious Observances please complete and follow the instructions at. NJIT Policy on Student Absences for Religious Observances accommodation form: