# MSE488BCS - MSEM Senior Design II (2 units)

**CSUN – Spring 2023; Ticket # 16277; On-campus Lab JD-1126: 9:00 am – 11:45 pm.**

**Instructor**

***Ghassan "Gus" H. Elias***: BS/MS; Industrial/Manufacturing Systems Engineering.
- **Expertise:** Engineering Consulting, Decision-Making/Risk Analysis and Facility Planning. Quality Assurance & Control, Industrial Safety & Material Control - global certification programs for installing & commissioning electronic & pneumatic devices in General (Non-Hazardous) Locations, Hazardous 'Classified' Areas & Potentially Explosive Atmospheres.
- Email address: **Gus.Elias@csun.edu**
- MSEM Department Office: JD-4510; (818) 677-2167
- Faculty Office: JD-3308
- Office hours: contact by **Email & Via CANVAS to set an appointment.**

***Textbook*** None. Additional material will be conveyed via Canvas

***Instructor Website*** CSUN webpage: **http://www.csun.edu/~ghe59995/**

***Catalog Description*** In the senior design course that covers the whole senior year (two semesters), students are expected to put into use their knowledge on engineering problem solving and solve complex, open-ended problems that are relevant to the industry. Students work in teams to attack engineering design projects that are under multiple constraints as they are in real life. These restraints can be economic, environmental, social, political, ethical, and health-related, and strongly related to manufacturability, sustainability, and other relevant factors.

**MSE488BCS (Spring):** Continuation of MSE488A. Includes a community service opportunity with activities relating to concepts and theories presented. MSE488A and 488BCS must be completed during the same academic year. 6 hours of lab per week. Not available for graduate degree program credit. ***Prerequisite: MSE488A.***

**Note: MSE488A and MSE488BCS must be completed during the same academic year.**

***Course Learning Objectives***

This course is designed to facilitate the ability to:

- Developing a project using the previously learned skills, with economic, environmental, social, political, ethical, & health-related constraints.
- Developing a project plan to be followed & utilizing appropriate equipment and software in performing the project work.
- Being resourceful in gathering information necessary to complete the design project & functioning effectively on a design team.
- Communicating with their peers as teammates as well as their superiors as their advisors. Writing effective project reports and progress reports that communicate the work performed. Delivering oral presentations of work performed
- Demonstrating ability to utilize program-related knowledge in an open-ended professional design experience.
- Developing a prototype within economic constraints and projecting the actual manufacturing timeline of the product taking into consideration economies of scale.

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***Student Learning Outcomes***

In this course, students are expected to attain or improve their ability to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics --- (ABET 1).
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, welfare, as well as global, cultural, social, environmental, & economic factors -- (ABET 2).
- Communicate effectively with a range of audiences --- (ABET 3).
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts --- (ABET 4).
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives --- (ABET 5).
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions --- (ABET 6).
- Acquire and apply new knowledge as needed, using appropriate learning strategies --- (ABET 7).

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# Covid-19 Safety Protocols

CSUN is permitted by LACDPH to hold on-campus classes on the condition that everyone adheres to the following protocols (if required):

 Complete a health self-screening survey through the CSUN app before coming to campus and follow corresponding instructions.

 Monitor your health. Take your temperature once a day. If you have a fever of 100.4 or other symptoms of COVID, or are just feeling ill, call your doctor or the Klotz Student Health Center at 818-677-3666.

 Please do not come to campus if you feel sick.

 When on campus, please adhere to the following instructions (if required):

o Maintain at least six (6) feet distance from others
o Wear a face covering.
o Wash hands frequently with soap and water for at least 20 seconds.
o Avoid touching eyes, nose, and face.
o Follow university signage on walkway paths and distancing markers for lines.

For more information, visit the CSUN as One webpage at www.csun.edu/csunasone

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**All students and faculty must adhere to the above protocols without any exceptions!!!**

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# STANDARD OPERATING PROCEDURES:

**1.** Class members are expected to maintain personal and professional standards consistent with the Code of Ethics of the national Society of Professional Engineers, the Preamble and Fundamental Canons of which are as follows:

***Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of honesty and integrity. Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct. Engineers, in the fulfillment of their professional duties, shall:***

- ***Hold paramount the safety, health and welfare of the public.***
- ***Perform services only in areas of their competence.***
- ***Issue public statements only in an objective and truthful manner.***
- ***Act for each employer or client as faithful agents or trustees.***
- ***Avoid deceptive acts.***
- ***Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.***

2. Students must submit **ORIGINAL WORK** only.
3. Students are expected to participate in **ALL discussion threads on CANVAS**.
4. Class members are **responsible** for the course material, reading assignments, presentations and discussions.
5. ***Tardy/Late submissions are unacceptable*** ….. **NO EXCEPTIONS!**
6. Class members **MUST** always be **considerate & respectful** to their colleagues and to the instructor.

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***** This course syllabus is your contract with the CECS, MSEM and the instructor. Students must read the syllabus thoroughly and adhere fully to ALL of the stated terms and listed guidelines. No Exceptions! *****

**NOTE #1:** Activate **and** use your CSUN email address for ALL academic correspondences. Do not use your personal email address to communicate with the instructor. Messages from non-CSUN email addresses will **NOT** be acknowledged. Instructor will only utilize SOLAR's email database to communicate with class.

**NOTE #2:** **The last day to drop classes is 10-Feb-2023. Students must initiate this process; not faculty. Failure to formally drop a course will result in a "WU" grade which is equivalent to an "F" grade; affecting your cumulative GPA detrimentally.**

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# Proposed Schedule/Plan (may change if necessary!)

This is a tentative schedule/plan. Modifications may be made throughout the semester to meet the requirements and the needs of the class given all of the circumstances.

**Week 1:** Introduction & course outline --- the roadmap to making the end-product.
**Physical product samples and/or components are requested on a weekly basis.**

**Week 2:** **Update Report #1** (6- 8 pages: a layover briefing from the Fall to the Spring semester).

**Week 3:** Identify the real actions taken in order to materialize the production --- in class discussion.

**Week 4:** Teams to start preparing a detailed action plan proposal. This consists of plans on how to complete the project on time while relying on a progressive and versatile Gantt chart.

**Week 5:** **Progress Report #1.** Provide a detailed layout of the manufacturing process. Submit a report identifying the challenges faced and the action plans. An 8-10 page report with an updated Gantt chart and cost schedule.

**Week 6:** In-class evaluation of the actual product or assemblies.

**Week 7:** Show the manufactured components so far and partial or complete prototypes --- BOM update.

**Week 8:** Manufacturing process continues --- Identify the manufacturing enhancements made.

**Week 9:** Spring Break (**March 20-25**) ….. No class/lab instruction ….. Enjoy ☺ ☺

**Week 10:** Evaluation of the production and fabrication processes.

**Week 11:** **Progress Report #2.** An 8-10 page report with an updated Gantt chart and cost schedule.

**Week 12:** Up-to-date activities, manufacturing evaluation and production review.

**Week 13:** Final touches on the prototypes. Identify possible innovative methods.

**Week 14:** Review the business plan and the showcase presentation /// Course wrap-up.

**Week 15:** Showcase presentations /// **MSEM faculty to be invited** --- GOOD LUCK y'all ☺ ☺ ☺

**Items due:**
1) PPT file and in-class presentation = **28%**
2) Self & Peer Evaluation Form (SPEF) = **2%**
3) Complete business plan (comprehensive report) = **35%**

**Week 16:** No class meeting as the presentations occurred in Week #15. Prepare for your final exams!

## COURSE EVALUATION / GRADE SCALE

(Refer to the last page of the syllabus for more information on grades)

**(15 pts) - Throughout the Semester -- Mandatory Contribution to the Weekly Discussions on CANVAS.**

**Important Note: The weekly discussions are locked in a 1-week period -- If you miss it, you lose it.**

***PLEASE DO NOT ASK FOR AN EXTENSION!!!!!!***

**(20 pts) - Project Status & Update Reports – required periodically.**

**(65 pts) - Group Term Project: Written Report, PPT Presentation & SPEF**

**PPT file and in-class presentation*: 28 points**
**Self & Peer Evaluation Form (SPEF): 2 points**
**Complete business plan (comprehensive report): 35 points**

***This will occur during the last lab session on Thursday, 04-May-2023.**

*****Submittal of the Self & Peer Evaluation Form (SPEF = 2%) is MANDATORY.*****
**You can download the form via the MSE488 webpage. It will also be posted on CANVAS.**

**Important Note: By not submitting the SPEF, the student will forfeit the +/- sign for the course grade.**

## Letter-Grade Scale (Curving of grades will NOT be utilized!):

| | | |
|---|---|---|
| **A ≥ 92** | **88 ≤ A- < 92** | **85 ≤ B+ < 88** |
| **80 ≤ B < 85** | **78 ≤ B- < 80** | **75 ≤ C+ < 78** |
| **70 ≤ C < 75** | **60 ≤ D < 70** | **F < 60** |

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## GROUP TERM PROJECT GUIDELINES:

- The same groups established in Fall 2022 will carry on in Spring 2023.

- Topics for the group term project will be assigned by the instructor.

- The term project is worth **65%** of the course overall grade.

- All class members must participate in the research task & presentation.

- The **mandatory** "Self & Peer Evaluation Form" (posted on CANVAS and the course website) is due on **03-May-2023 by 11:59 pm (PST)**. Submitting the form is 100% mandatory by all class members. The form should be "**typed**" and **not** hand-written or scanned. Students will individually and confidentially submit the form in **PDF** via a special link made available in the course module on CANVAS.

- The complete Project PPT file and written report are due (one upload per group!) on **03-May-2023 by 11:59 pm (PST)**. Each group leader/facilitator shall upload the PPT file via s special link to be made available in the course module on CANVAS. **The PPT** must contain **38-40** slides and should be done professionally. The presentation must be informative, creative, rich, insightful and reader-friendly. The final report should be comprehensive covering **all** aspects of the assigned project. Follow the "Oral Presentations Rubric" that is posted on the course webpage and on CANVAS. **Submissions that do not conform to the above format will not be accepted. The showcase presentation will take place on Thursday, 04-May-2023.**

It is a fundamental principle of academic integrity that the authorship of the intellectual content of works submitted as part of a class assignment must be fairly represented. Contributions of language and thought must be appropriately credited.

**Academic Dishonesty:**

Academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form at California State University Northridge. All students involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension and/or expulsion from the University.

Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person. The instructor reserves the right to submit your papers to turnitin.com for identifying papers containing unoriginal material.

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## For Your Information: Grade Evaluation Criterion

*** 'A' grade range (A to A-) is reserved for work that is exceptional. This means that it (1) is professional and reflects the writer's/s' careful consideration of audience and purpose; (2) shows perfect to near-perfect understanding of the necessary concepts and analytical tasks; (3) where appropriate, it shows the capacity to think creatively or to see implications beyond the immediate scope of the question; (4) contains all necessary information (invention); (5) is arranged in a logical manner (6), is memorable; (7) delivery is visually appealing; and (8) is free of mechanical errors and is formatted as specified. Work must be flawless to attain an A/A-. Work with minor flaws that is nonetheless excellent in other ways will earn an A-.**

*** A grade in the B range means that the work is acceptable at the graduate level (B- range) to very good (B/B+). This work satisfies all (B+) or most (B/B-) of the requirements of the question & research tasks, shows the capability to think beyond the task by relating it to other areas of knowledge in or outside of the course; is neatly presented and shows above-average use of academic English. If the work is decently written, is formatted basically correctly, and covers most of the required content, but has several minor flaws or one major flaw, the grade is B-.**

*** A grade in the C range means that the work, while covering much of the required ground, does not show graduate-level analytic and expressive ability. That is, major and minor items may be missing or incorrect; and while the language may communicate most points adequately, it does not qualify as above-average academic work.**

*** A grade in the D range shows that the work does not, overall, achieve an acceptable level of coverage of the requirements AND/OR the language is insufficient to make the writer's points understandable to the reader. The content may be either incorrect to an unacceptable degree, or very incomplete.**

*** A grade of F indicates that so little of the required content is covered that grading the paper is an exercise in futility. It may mean that very major points have clearly not been grasped or have been misunderstood by the student. An F may also indicate that the ideas are expressed in such a way that they are not at all understandable to the reader. A grade of F is also awarded when assigned work is not handed in, or not handed in by the set deadline.**

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