

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Undergraduate Programs	UUPC Approval <u>10/12/20</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department: Ocean & Mechanical Engineering College: Engineering & Computer Science	
Current Course Prefix and Number EML 4521C		Current Course Title: Engineering Design
<i>Syllabus must be attached for ANY changes to current course details. See Checklist. Please consult and list departments that may be affected by the changes; attach documentation.</i>		
Change title to: RI: Engineering Design Change prefix From: _____ To: _____ Change course number From: _____ To: _____ Change credits* From: _____ To: _____ Change grading From: _____ To: _____ Change WAC/Gordon Rule status** Add _____ Remove _____ Change General Education Requirements*** Add _____ Remove _____ <small>*Review Provost Memorandum</small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.</small> <small>***General Education criteria must be indicated in syllabus and approval attached to this form. See GE Guidelines.</small>		Change description to: Change prerequisites/minimum grades to: Change corequisites to: Change registration controls to: Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).
Effective Date (TERM & YEAR) FALL 2021		Terminate course List final active term
Faculty Contact/Email/Phone: Dr. P. Edgar An/pan@fau.edu/561-297-2792		
Approved by Digitally signed by Manhar Dhanak DN: cn=Manhar Dhanak, o=Florida Atlantic University, ou=Ocean and Mechanical Engineering, email=dhanak@fau.edu, c=US Date: 2020.10.05 13:25:55 -05'00' Department Chair _____ College Curriculum Chair _____ College Dean _____ UUPC Chair _____ Undergraduate Studies Dean <u>Edward Pratt</u> UFS President _____ Provost _____		Date <u>10/21/2020</u> <u>10-12-20</u> <u>10/12/20</u> <u>10/12/20</u> _____ _____

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

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1. Course title/number, number of credit hours	
RI: EML 4521C Engineering Design	3 credit hours
2. Instructional Method	
<p>This class consists of lectures which will be conducted online live using WebEx or Zoom, and recorded so students can watch the lectures at a later time and date. Unless otherwise noted, there will be no option for students to attend the lectures in person. Students will be accommodated as much as possible with their needs during the pandemic.</p> <p><u>You will need to have a computer (or laptop), a reliable WIFI access, and a webcam and micro-phone connected to your computer for this course.</u></p> <p>In the event you might not have a computer, there is a Laptop Loaner Program at FAU for first-generation, low-income students. https://www.fau.edu/newsdesk/articles/fau-announces-laptop-loaner-program.php</p> <p>In the event you might not have reliable internet access remotely, you may use the internet connection on campus. You may use the classroom (BK 102) during the live course times for watching lectures and taking quizzes and exams. Note that there are only reduced seating capacities in the classroom, and only those who do not have reliable internet access should use the classroom. Social distancing must be strictly followed in the classroom at all times. You will need to make reservation for your seating every week on Canvas. The instructions for the reservation are provided at the following link: https://fau.edu/oit/instructional/support/files/seatReservationTool_student.pdf</p>	
3. COVID 19 Statement	
<p>All students in face-to-face classes are required to wear masks during class, and students must sanitize their own workstations upon entering the classroom. Taking these measures supports the safety and protection of the FAU community. Students who do not adhere to these rules will be asked to leave the classroom and/or be removed from the course. Students experiencing flu-like symptoms (fever, cough, shortness of breath), or students who have come in contact with an infected person should immediately contact FAU Student Health Services (561-297-3512).</p>	
4. Course pre-requisites, co-requisites, and where the course fits in the program of study	
<p>Corequisites:</p> <ol style="list-style-type: none">1. EGN 3365 – Engineering Materials I or equivalent2. EML 3523C – Experimental Methodology3. EL 4127 – Applied Thermal/Fluid Engineering4. EML 4500 – Machine Design 1 <p>If students have not completed the required prerequisites for the course and do not inform their course instructor and advisor, they will be dropped from the course. If this occurs after the first week of the semester, they will be fee liable to the University.</p>	

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5. Course logistics	
<p><i>Term:</i> Fall 2020</p> <p><i>Class location and time:</i> T/TR 11:00AM – 12:20 PM Online until further notice Additional Hour-To be Arranged</p>	
6. Instructor contact information	
<p><i>Instructor's name</i></p> <p><i>Office address</i></p> <p><i>Office Hours</i></p> <p><i>Contact telephone number</i></p> <p><i>Email address</i></p>	<p>Dr. Amir Abtahi Bldg 36, Room 109 T/TR Tentative WebEx Office Hours-4-6 PM Wednesdays and by request</p> <p>abtahi@fau.edu</p>
7. TA contact information	
<p><i>TA's name</i></p> <p><i>Office address</i></p> <p><i>Office Hours</i></p> <p><i>Contact telephone number</i></p> <p><i>Email address</i></p>	<p>TBA</p>
8. Course description	
<p>The design process, including decision theory, creativity concepts, human factors, optimization techniques, reliability, statistics and professional ethics. Engineering economy. Material selection and testing. Fatigue and fracture design.</p> <p style="background-color: #ffffcc;">This is a research-intensive (RI) course.</p> <p style="background-color: #ffffcc;"><i>This course contains multiple assignments designed to help students conduct research and inquiry at an intensive level. If this class is selected to participate in the university-wide assessment program, students will be asked to complete a consent form and submit electronically some of their research assignments for review. Visit the Office of Undergraduate Research and Inquiry (OURI) for additional opportunities and information at http://www.fau.edu/ouri.</i></p>	
9. Course objectives/student learning outcomes/program outcomes	
<p><i>Course objectives</i></p>	<p>This course is designed to have the students work in a team environment to design an engineering system. It will foster creative thinking, diversified background exposure, teamwork, and communication and collaboration skills.</p>
<p><i>Student learning outcomes & relationship to ABET 1-7 objectives</i></p>	<p>Student Learning Outcomes: (letters in parentheses indicate correlation of the outcome with the appropriate program assessment outcomes 1-7)</p> <ol style="list-style-type: none"> The students will be able to formulate and analyze problems, and synthesize and develop solutions based on fundamental principles. (1,2)

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2. The students will design basic mechanical components or processes to meet desired specifications using appropriate engineering tools and techniques. (1,2)
3. The students will demonstrate an understanding of professional, societal and ethical responsibility. (4)
4. The students will function effectively in teams and communicate their ideas to their peers. (3,5)
5. The students will recognize the need to engage in life-long professional development and learning. (7)

10. Course evaluation method

Course Evaluation Method:

Homework – 15%

Presentations – 20%

Project Proposal reports – 40%

Final Examination – 25%

Note: The minimum grade required to pass the course is C.

11. Course grading scale

Grading Scale:

A 92.5-100

C+ 77.5-80

D- 60-62.5

A- 90-92.5

C 72.5-77.5

F <60

B+ 87.5-90

C- 70-72.5

B 82.5-87.5

D+ 67.5-70

B- 80-82.5

D 62.5-67.5

12. Policy on makeup tests, late work, and incompletes

Makeup tests are given only if there is solid evidence of a medical or otherwise serious emergency before the tests that prevented the student of participating in the exam. Makeup exams should be administered and proctored by department personnel unless there are other pre-approved arrangements.

***Late work* without verifiable justification will NOT be graded.**

Incomplete grades are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.

13. Special course requirements

- *Projects are expected to achieve all six of the following OURI Student Learning*

Outcomes (SLOs):

- *SLO 1: Knowledge. Students are expected to demonstrate content knowledge, and knowledge of core principles and skills.*

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- *SLO 2: Formulate Questions. Students are required to formulate research questions, scholarly or creative problems in a manner appropriate to the planning discipline.*
- *SLO 3: Plan of Action. Students are expected to develop and implement a plan of action to address research and inquiry questions or scholarly problems.*
- *SLO 4: Critical Thinking. Students are expected to apply critical thinking skills to evaluate information, their own work, and the work of others.*
- *SLO 5: Ethical Conduct. Students are expected to identify significant ethical issues in research and inquiry and/or address them in practice.*
- *SLO 6: Communication. Students will convey all aspects of their research and inquiry (processes and/or products) in appropriate formats, venues, and delivery modes.*

OURI Student Learning Outcomes (SLO)	Description of Assignment Requirements and Assessments
SLO 1: Knowledge	Students will demonstrate a fundamental basis of discipline-specific knowledge required for effective professional practice in the fields of computer and electrical engineering. Students will also demonstrate working knowledge of tools and practical skills needed to analyze engineering design problems related to multiple realistic constraints, such as environmental issues, engineering economics, design codes, ethics, and/or other contemporary design issues.
SLO 2: Formulate Questions	Students will develop and refine a problem statement in which they specifically address their research questions. Students are expected to articulate the scope of the problem to be able to address the research question with an engineering solution. When appropriate, students should be able to create additional (albeit related) questions for smaller subsections of the overall design project.
SLO 3: Plan of Action	Students will create a plan of action that will include the problem statement (or research question), scope of work, literature review and background context, methodology or approach to the solution, analysis plan, conclusion and design documents. Students will develop a hypothesis if needed, identify research methods and alternative designs, and select appropriate statistical techniques, if warranted.
SLO 4: Critical Thinking	Students will demonstrate critical thinking skills by taking into consideration multiple perspectives and examining implications and consequences of design decisions or engineering alternatives. Students will also demonstrate an ability to use evidence and reasoning to objectively justify decisions and an ability to apply codes and design standards to make reasonable engineering judgments. Students are asked to peer review student work and provide feedback during the juried presentations.

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SLO 5: Ethical Conduct	Students will familiarize themselves with the Code of Ethics of their engineering discipline. All work is held to the standards established by the governing professional societies of ocean and mechanical engineering disciplines.
SLO 6: Communication	Students will present and defend their work in written and oral formats (interim and final). All deliverables are expected to be of professional quality. Students are expected to demonstrate knowledge of technical report writing, graphical visualization, and persuasive presentation skills.

14. Classroom etiquette policy

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones, are to be turned off in class sessions.

15. Attendance Policy Statement

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

16. Disability Policy Statement

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/

17. Counseling and Psychological Services Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling,

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support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

18. Code of Academic Integrity Policy Statement

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

Cell phones are not allowed during exams. If cell phones are detected during any exam periods, this will result in a **grade of "zero" on that exam and a note in the student's academic file.**

19. Required texts/reading/Lab kits

Reading materials including excerpts from ASME and ASTM standards, NEC code, and OSHA standards, etc. will be uploaded to Canvas as required.

20. Supplementary/recommended readings

21. Course topical outline, including dates for exams/quizzes, papers, completion of reading

Course Topics:

1. Design process
2. Creativity, and problem solving
3. Review of ASME, ASTM Standards as well as the NEC code
4. Team building
5. Proposal preparation
6. Communication skills (report, proposal writing, oral presentation)
7. Project planning and management
8. Engineering ethics
9. Safety, hazard, environmental consideration, OSHA Standards
10. Engineering economics and marketability

Test Dates & Project Deadline:

1. Initial Project Submission: Sept. 29
2. Initial Project Defense by teams: October 1 through October 8
3. Final Presentation, Nov. 17
4. Project Defense and Oral Presentations by team members: Nov. 19 and 24