

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Undergraduate Programs	UUPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department _____ College _____	
Current Course Prefix and Number		Current Course Title
<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: 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 Term/Year for Changes:		Terminate course? Effective Term/Year for Termination:
Faculty Contact/Email/Phone		
Approved by Department Chair <u>Hanqi Zhuang</u> College Curriculum Chair <u>Dan Mesroff</u> College Dean _____ UUPC Chair <u>Jerry Hakey</u> Undergraduate Studies Dean <u>Edward Pratt</u> UFS President _____ Provost _____		Date _____ _____ <u>9/14/20</u> <u>9-15-20</u> <u>9-15-20</u> _____ _____

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

**Dept. Computer & Electrical Engineering & Computer Science
Florida Atlantic University
Course Syllabus**

1. Course title/number, number of credit hours	
RI: Engineering Design I (EGN 4950C)	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisites: Check program flowcharts for different programs	
3. Course logistics	
Term: Summer 2020 This is a capstone design course with design and implementation components Class location and time: TBA	
4. Instructor contact information	
Instructor's name Office address Office Hours Contact telephone number Email address	Dr. Hanqi Zhuang, Professor Engineering East Bldg., Room 403A TBA 561-297-3413/561-756-5372© zhuang@fau.edu
5. TA contact information	
TA's name Office address Office Hours Contact telephone number Email address	Avijit Das <adas2017@fau.edu>
6. Course description	
Students develop and present proposals for capstone design projects to be completed in EGN 4952C. Work in interdisciplinary teams is required. This is a research-intensive (RI) course.	
<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/our.</i>	
7. Course objectives/student learning outcomes/program outcomes	
Course objectives	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, communication, and collaboration skills. Students will also be exposed to be held accountable for professional issues, standards, design constraints, and practices not covered in other classes.
Student learning outcomes & relationship to ABET 1-7 objectives	Covers objectives (2, 3, 4, 5, 7) in CE/EE. Cover equivalent objectives in CS.
8. Course evaluation method	
1. Individual Assignments 45% 2. Group Assignments 45%	See Canvas for detailed breakdown and assignment deadlines. A summary is given at the last page.

**Dept. Computer & Electrical Engineering & Computer Science
Florida Atlantic University
Course Syllabus**

3. Discretion 10%	Note: This is a project-based course, therefore there is no online test.
-------------------	---

9. Course grading scale

90 and above: "A-, A", 80-89: "B-, B, B+", 60-79: "C-, C, C+", 40-59: "D-, D, D+", 0-39: F.

10. 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 that prevented the student of participating in the exam. Makeup exam should be administered and proctored by department personnel unless there are other pre-approved arrangements

Late work is not acceptable.

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.

11. 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.*
 - *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.

**Dept. Computer & Electrical Engineering & Computer Science
Florida Atlantic University
Course Syllabus**

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.
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 computer and electrical 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.

12. 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 and laptops, are to be disabled in class sessions.

13. Attendance Policy

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.

14. Disability policy statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation 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.

**Dept. Computer & Electrical Engineering & Computer Science
Florida Atlantic University
Course Syllabus**

15. Counseling and Psychological Services (CAPS) 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, 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/
16. 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. For more information, see University Regulation 4.001
17. Required texts/reading
Notes posted on Canvas and linked resources
18. Supplementary/recommended readings
None
19. Course topical outline, including dates for exams/quizzes, papers, completion of reading
<ol style="list-style-type: none">1. Design process and its applications2. Creativity and problem solving3. Team building4. Proposal preparation5. Communication skills and practices (proposal and report writing, oral presentation)6. Functional requirements7. Project planning and management8. Engineering ethics9. Safety, hazard, environmental considerations10. Engineering patents, economics, and marketability11. Life-long learning12. Mini-project
Dates for all assignments are given in the Canvas. Please follow Canvas course schedule closely.

Possible Presentation Topics (Group Assignment):

1. Intellectual property and innovation
2. Professional ethics and responsibilities
3. Communication skills
4. Creativity and problem solving
5. Design processes
6. Standards and design constraints
7. Life-long learning
8. Patent application and patent search
9. Bluetooth

**Dept. Computer & Electrical Engineering & Computer Science
Florida Atlantic University
Course Syllabus**

10. Sensors (e.g., Accelerometers)
11. Amazon Web Service (AWS)
12. Intel AI stick
13. Nvidia AI board
14. Motor technology
15. Raspberry PI
16. Drones and robots
17. Self-driving cars and transportation of the future
18. Artificial intelligence and its impact to society
19. Biomedical enhancement
20. Alternative energy
21. Topic of your choice – subject to an approval by the instructor

Note for selecting a project topic from the list:

Each group must submit 3 subject choices, one of which must be from topics 1-8 and another from 9-15. The instructor will assign a topic for each group afterward.

Assignments and Event Schedule

Note:

- Important assignments are in red, and important events are in blue
- There will be 3-4 of individual group meetings with the instructor
- Many assignments will lead to the final project proposals

Due Day (All on Canvas Assignment page)	Event	Notes
on Canvas	ED1 Introduction/ Grouping	Virtual classroom
on Canvas	Engineering Challenge	Individual assignment
on Canvas	Review ED1 Proposal Samples	Individual assignment
on Canvas	Practicing Creative Thinking	Individual assignment
on Canvas	Review of Presentation 1 and 2	Individual assignment
on Canvas	Sensor Selections for Problems	Individual assignment
on Canvas	Voting Mini-Project Winners	Individual assignment
on Canvas	Peer Eval. of Mini-Project Members	Individual assignment
on Canvas	PCB Design (EE/CE) or App (CS)	Individual assignment
on Canvas	Patent Search	Individual assignment
on Canvas	Peer Eval. of Main Project Members	Individual assignment
on Canvas	Research Presentation	Mini-project group
on Canvas	Mini-Project Demo	Mini-project group
on Canvas	Main Project Grouping	Virtual classroom
on Canvas	Main Project Idea	Main project group
on Canvas	Functional Requirement	Main project group
on Canvas	Project Development Milestone	Main project group
on Canvas	Project Proposal Draft	Main project group
on Canvas	Project Proposal	Main project group