Engineering Design & Society

EGN 2020C Credits: 2
Class Periods: T, R 5-6 (Section 41EF)
T, R 2-3 (Section 4B20)
Location: NSC 0225
Academic Term: Summer B 2019

Instructor:
Lilianny Virgüez
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Office Hours: Wednesdays, 9:30-12:15, NSC 204

Peer Mentors:
Please contact through the Canvas website

    Peer mentors office hours and locations will be posted on Canvas

Course Description
(Credits: 2) An introductory engineering course emphasizing the human-centered design process to address a societal challenge. Exploration of solid modeling, introductory programming, sensors, data acquisition, and 3D printing as maker tools for engineering prototyping. Teams will utilize multidisciplinary approaches, project management, written and oral communication skills in creating a societal-based design.

Course Pre-Requisites / Co-Requisites
None

Course Goals

(i)   Understand and practice the human-centered engineering design process for a societal based project.
(ii)   Learn techniques to solve open-ended engineering challenges.
(iii)   Promote a culture of making by introducing solid modeling, programming, sensors, data acquisition, 3D printing, and other maker tools.
(iv)   Build teamwork and cooperative learning skills through participation in multidisciplinary teams and active engineering project management.
(v)   Build professional skills in background research & written, pictorial, and oral communication methods.
(vi)   Raise awareness of ethics and contemporary issues in engineering design related to a global society.
(vii)   Introduce engineering students to the various engineering majors and their roles within society.
(viii) Inform students of opportunities for experiential learning related to their majors throughout the college of engineering and UF community.

Materials and Supply Fees
None

Required Textbooks and Software

Arduino Starter Kit - English Official Kit With 170 Page Book: Each student should purchase their own Arduino Starter Kit. The kit is not sold in the UF Bookstore; you need to obtain online from either Arduino.cc or Amazon here:

From Arduino.cc: https://store.arduino.cc/usa/arduino-starter-kit

OR

From Amazon (fast shipping if you have Amazon Prime): https://www.amazon.com/Arduino-Starter-Kit-English-Official/dp/B009UKZV0A/ref=sr_1_3?s=electronics&ie=UTF8&qid=1525786729&sr=1-3&keywords=arduino+starter+kit&dpID=414essH-EwL&preST=_SX300_QL70_&dpSrc=srch

You only need one kit, so order from one place or the other, just remember you need it in hand by the end of the first week of class!

This kit is awesome by the way, if you ever wanted to get into Arduino or tinkering/inventing, it is very easy to use and once you get started, you can build and create all kinds of small electronic items

Relation to Program Outcomes (ABET):

Outcome	Coverage*
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Low
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	High
(3) an ability to communicate effectively with a range of audiences	Low
(4) an ability to 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	Medium
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	High
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	Low
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Low

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not part of the course.

Course Schedule

Class/laboratory schedule (6-weeks summer format):
Two credit hours will consist of:
a) Two weekly in-person attendance required two period block of laboratory (~1 credit)
b) Weekly online lecture videos averaging 3 hours per week (~1 credit)

Group Societal Based Design Project: Each semester group design project will involve a societal and environmental theme requiring multidisciplinary knowledge in a hands-on functional prototype build.

Course Schedule (Sessions)

Week	Dates	Session 1	Session 2
1	07/01- 07/05	Introduction, engineering majors and the design process	No class Students will complete Onshape tutorial
2	07/08- 07/12	Solid Modeling, 3D Visualizations	Additive manufacturing, 3D printing, engineering sensors & microcontrolling
3	07/15- 07/19	Programming in Microcontroller enviroment	Team Communication, Project management *Request for projects
4	07/22- 07/26	Design constrainsts, ethics in design Active project build with faculty and peer mentors	Engineering Design Reports Active project build with faculty and peer mentors
5	07/29- 08/02	Global enviroment &contemporrary issues Active project build with faculty and peer mentors	Verbal communication, elevator pitches Active project build with faculty and peer mentors
6	08/05- 08/09	Final presentations, peer assessments	Personal branding and professionalism Experential learning opportunities in COE

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance for laboratory meetings is expected. Failure in regular attendance may result in deductions to Peer Evaluation & Participation portion of grade. Contact your instructor if you have an excused absence to work out a plan to make up the work. Excused absences must be consistent with university policies in the undergraduate catalog (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) and require appropriate documentation.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Quizzes & Surveys	20	20%
Homework & Assignments	40	40%
Presentations	15	15%
Final Design Report	25	25%
		100%

Grading Policy

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations
Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu/evals. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

University Honesty Policy
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints*: http://www.distance.ufl.edu/student-complaint-process.