

Engineering Innovation (EGN4643/6642)

Course Syllabus

Instructor

Melissa White,
Lecturer, UF Engineering Innovation Institute

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Office location: Weil Hall Room 315
Office hours: By appointment
Teaching Assistant: None
Web site: UF course Canvas web site

Course Communication

The instructor will send out all communication through Canvas. All students will be held responsible for any information disseminated through the course website or spoken in class. General course questions, questions about grades, or personal issues must be sent within Canvas. You are welcome to set up an appointment to talk with the instructor either in person or on the phone. If you have an issue or need help, don't wait to ask about it. Problems are generally easier to solve sooner rather than later.

Class Periods and Location

Thursday from 11 AM to 3:15 PM, NEB102

Course Description

Engineering Innovation introduces undergraduate and graduate students to the concepts of innovative thinking and innovation practices. The course uses class lectures, the Spotlight on Innovation series, and guest speakers to teach professional and life skills in innovative thought and action. Students study the vital role engineers play in problem-solving and in the innovation process, and take action by applying lessons learned in engineering careers that range from starting entrepreneurial ventures, to completing research and development activities, to executing engineering-related projects, and to working for multinational companies.

Credit Hours

3 Credit Hours. Note that graduate students will not receive graduate credit for taking the undergraduate version of the course (EGN4643).

Course Pre-Requisites/Co-Requisites

EGN4643 – Sophomore/Junior / Senior Standing
EGN6642 – Graduate student status

Course Objectives

Students examine the innovator’s mindset and explore the culture of innovation. In a real-work, hands-on way, students learn how to be innovative and understand why innovation is integral to commercial success in the 21st Century’s digital revolution. Innovation strategies and tactics are evaluated from the perspective of ideation; that is, transforming innovative problem-solving ideas into viable solutions that are produced, sold, consumed, and or implemented in society.

Students develop an understanding of the importance of innovation – and how innovation is applied. A best practices approach is used to demonstrate how innovators conceive and implement impactful solutions for a variety of problems. Students learn how technology can serve as both a pathway and a roadblock in organizations committed to operating with an innovator’s mandate. Students are taught practical and applicable skills that can be applied in enterprises ranging from startup ventures to Fortune 100 companies.

Material and Supply Fees

None

Required Textbooks and Software

Inside the Box: A Proven System of Creativity for Breakthrough Results. Boyd, Drew and Goldenberg, Jacob.: ISBN-978-1-4516-5925-2. Simon & Schuster Paperbacks (2013).

Course Schedule

The course will be delivered weekly through three periods typically consisting of lecture overviews of the weekly topics by the instructor, presentations from guest speakers that discuss facets of their innovation journeys, in-class activities, workshop sessions, and student presentations that illustrate their grasp of the course materials.

Engineering Innovation is firmly presented in an experiential learning “real-world” format. Students pursue problem solving ideas and develop an innovation process book (“Innovation Playbook”) that advances a proposed problem-solving solution with innovation concepts learned during the course. Upon completion of Engineering Innovation, students will have acquired the hands-on, multi-faceted “tools” and marketable skills they can use to pursue engineering careers ranging from entrepreneur in a startup venture, to intrapreneur working in a corporate enterprise, to senior executive leading a multinational organization. Engineering Innovation is delivered along the following outline:

- I. Introduction to Innovation – What is innovation; Why is innovation important; Innovation Types; Innovation Methods & Methodologies; Design Thinking
- II. Inspiration– Problem Identification and Discovery; Needs Statement Development; Ethnographic/Market Research; Social Innovation; Biomimicry’ Internet of Things

- III. Ideation– Ideation & Creativity; Idea vs. Opportunity; Pattern Recognition; Creativity Tools; Overcoming Mental Blocks; Developing an Innovator’s Mindset; Brainstorming
- IV. Innovation Strategies and Tactics - Ideas + Execution = Innovation; Innovation outcomes; How to get from the big idea to a prototype with target specifications; Intellectual Property’s Role in Innovation; Commercialization and commercialization strategies; Competitors vs Strategic Partners; Feasibility
- V. Conceive and Create an Innovation Playbook – Developing an execution strategy; Turning innovations into economic and societal impact

Attendance Policy, Class Expectations, and Make-Up Policy

For on-campus students, attendance is mandatory at all sessions and more than one unexcused absence can result in loss of one final course full letter grade per each unexcused absence over one at the discretion of the instructor and subject to the UF attendance policies. Attendance may be taken by the instructor during any class period. Excused absences are consistent with university policies in the undergraduate or graduate catalogue and require appropriate documentation. The instructor should be notified before the class period being missed.

On-campus students are expected to arrive to class on time and to remain in class through completion. Students are expected to come to class prepared, including completion of all assigned readings and/or viewings, to actively participate in class discussions and activities.

If a student is absent from a class, it is the student’s responsibility to find out from their classmates, the class website, or the instructor what material was covered, what additional assignments were made, and to obtain any handouts he/she may have missed.

Excessive student use of electronic devices during class sessions for non-class purposes is prohibited and can result in expulsion from a class session, with that session then counting as an unexcused absence.

Except in rare circumstances at the sole discretion of the instructor subject to the policies of the undergraduate (<https://catalog.ufl.edu/ugrad/current>) or graduate (<http://gradcatalog.ufl.edu/>) catalogue as appropriate, 1) assignments must be submitted via Canvas by the stated deadline, 2) late submissions will not be accepted, 3) no credit will be given for late or partial assignment submissions, and 4) no-make-up assignments will be accepted.

Every person in the course is expected to meet with the instructor regarding their class project. It is recommended to meet as one team, but if schedules conflict separate meetings will be acceptable. Failing to meet with the instructor or another member of the Engineering Innovation Institute will result in a loss of 50 points from the student’s final grade.

Evaluation of Grades

The course will be organized around lectures, readings, class discussion, activates, and a team project. All students including EDGE students are required to work in teams. All students will organize into teams for the purpose of developing an innovation playbook and present their innovation to the class.

This course is offered at the graduate level as EGN6642 and at the undergraduate level as EGN4643, and will be delivered in the same class period. Graduate and undergraduate students will learn together as the teaching methodology and structure of the undergraduate and graduate courses are similar. However, graduate students are required to submit two additional assignments per below. Grades will be assigned as follows:

Maximum Points for Assignments

Assignment	Assignment Type	Undergrad students	Graduate students
<i>Playbook and Homework Assignments</i>			
Innovator’s Biography	Individual for all students	50	50
Need Statement	Individual for all students	10	10
Get Out and Discover	Individual for all students	100	100
Kill or Pursue	Playbook Teams	100	100
Prototype Plan	Playbook Teams	50	50
Solution Workshop	Playbook Teams	75	75
Playbook Presentation	Playbook Teams	100	100
Innovation Playbook	Playbook Teams	300	300
<i>In-Class Activities</i>			
Innovation Obituary	Playbook Teams	25	25
Inside the Box	Playbook Teams	50	50
Workshop Write-Ups/Check-In (10 pts each)	Playbook Teams	40	40
<i>Graduate Student Assignments</i>			
Social Innovation Case Study	Individual for all graduate students	Not required	100
Intellectual Property Assignment	Partner for all graduate students	Not required	100
Total Points Possible		900	1100

If, in the sole discretion of the instructor, a student is not contributing acceptably to his/her team, the instructor reserves the right to lower an individual student’s grade for any and all team assignments to a degree that the instructor in his/her sole discretion feels appropriate to reflect the lack of contribution of the student to team assignment(s).

Grading Policy

For all students, final course grades will be determined by dividing the number of points that the student has earned by the Total Points Possible for all assignments as given above (student total weighted class score) and applying the following Grading Scale:

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

If you have questions about your grade on an assignment, please make an appointment to talk with me within a week after the assignment has been returned.

More information on the UF grading policy may be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx> and
<http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>.

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, if any, 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>

Commitment to a safe and inclusive learning environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination.

It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@ufl.edu

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

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 support, 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>.