Syllabus
Advanced Engineering Leadership Development
EGS 4680

Section (Class No.): 06CF (14202)
Class Periods: Tuesdays (T), Period 7-8 (1:55 p.m. – 3:40 p.m.)
Thursdays (R), Periods 7 (1:55 p.m. – 2:45 p.m.)
Location: CSE E112

Academic Term: Fall 2019

1. **Instructor:** Bill McElroy, P.E., Assistant Director, Engineering Leadership Institute, University of Florida Herbert Wertheim College of Engineering
   a. E-mail address: mcelrowj@eng.ufl.edu
   b. Office Telephone: 352-294-7383
   c. Office location: Weil Hall Room 313B
   d. Office hours: By appointment. Generally flexible on Wednesdays and Fridays.
   e. Web site: UF course Canvas web site
   f. No teaching assistant

   Claudio Spiguel, PhD., Professor, Engineering Leadership Institute, may assist in the instruction of this course.
   a. E-mail address: claudio.spiguel@eng.ufl.edu
   b. Office Telephone: 352-294-0454
   c. Office location: Nuclear Science Building, Room 220.

2. **Course Description:** This course is designed to further develop the leadership framework and capabilities of engineering students. It involves a case study-based instructional approach that reviews and applies strategic leadership concepts and knowledge critical to the success of engineering-based companies that now operate in a highly-uncertain and volatile business environment. 3 credit hours.

3. **Credit Hours:** 3

4. **Course Pre-Requisites/Co-Requisites:** EGS 4038, or instructor approval.

5. **Course Objectives:** Like most modern-day businesses, engineering or technology-based companies must also survive and grow in an uncertain and rapidly-changing business environment. Engineering leaders must help their organizations become "learning machines", integrating strategic intent in the way they think, behave and influence their organization and the staff. Engineering leaders who learn, practice and effectively apply strategic leadership skills can catalyze the organization's learning process and help create and sustain competitive advantage.

   Advanced Engineering Leadership Development (AELD) extends the comprehensive leadership learning and development process for engineering students into the subject of strategic leadership and topics relevant to ***leader-engineer*** roles that students may hold in engineering or technology-based companies. The course content and structure are intended to provide students with a real-world, hands-on, learning experience to help prepare and/or develop Gator Engineers to accept roles, and/or advance, as a leader-engineer in the work force.

The main goals for the course are summarized below. Students completing the course will be able to:

- identify and evaluate actions comprising the learning process of strategic leadership that organizations apply to build high-performance systems and maintain long-term viability
- apply concepts, knowledge and approaches relevant to many strategic leadership roles and responsibilities in organizations
- create more effective written documents and presentations

Course completion is one of the prerequisites for obtaining the Engineering Leadership Certificate (undergraduate and graduate versions available), offered through the Herbert Wertheim College of Engineering and issued by the University of Florida.

6. **Material and Supply Fees:** All students will be required to purchase a course packet of pre-selected case studies (which may vary each semester) from a publisher such as Harvard Business Publishers. (Example: "Tesla Motors", Eric Van Den Steen, HBR 9-714-413, Rev. Dec. 17, 2015.) The instructor will provide more information about obtaining the required course packets during the first class session.

7. **Professional Component (ABET):** Not applicable as the course is not specific to a major under ABET purview.

8. **Relation to Program Outcomes (ABET):** Not applicable as the course is not specific to a major under ABET purview.

9. **Required Textbooks and Software:** The required course text is outlined below:

    a. Title: Everyone a Leader: A Guide to Leading High-Performance Organizations for Engineers and Scientists (all Sections)
    b. Author: Colcleugh, David
    c. Publication date and edition: 2013
    d. ISBN number: 978-1-487-521-837

    Students will have additional assigned weekly readings and materials that will be outlined by the instructor during the first class session. Reading materials will either be articles that are available electronically for free to UF students through the University e-library system, or through postings provided on the Canvas course website.

    Students should have a laptop and/or cell phone with them in class in order to access the Canvas course, as directed by the instructor.

10. **Recommended Materials**: Students will also have recommended additional weekly readings and materials that will support class discussions. These will be outlined by the instructor during the first class session. Reading materials will either be articles that are available electronically for free to UF students through the University e-library system, or through postings provided on the Canvas course website.

11. Course Schedule: The 3 credit-hour course will be delivered weekly in one 2-hour segment (Tuesdays) and one 1-hour segment (Thursdays). The instructor will discuss the expected content flow for the course segments during the first class session.

Generally, each Thursday, students will complete a weekly "readiness assurance quiz" (RAQ) about the assigned reading material content (text and other assigned readings) for that week. The RAQs will consist of up to 10 questions (multiple-choice, matching and/or fill-in-the blank formats) completed electronically through the Canvas course system. Distance learning students will complete the RAQs electronically through the Canvas course system by the end of the Tuesday class days. Up to 13 RAQs may be given throughout the semester.

Class sessions will involve student-led discussions about the assigned case studies and reading materials related to the weekly topics. Class sessions will be facilitated by the instructor discussions and supported by guest presenters (if possible), videos, student presentations (at designated times), and other class activities (at designated times).

The main case studies for the course have been selected to enhance student understanding of topics relevant to the general framework of the AELD course. Each week, students will work in assigned teams reviewing the case studies and submitting Canvas assignments to answer some specific questions related to understanding and applying course concepts relevant to the case. To the extent possible, the selected cases involve engineering or technology-based organizations and correspond to the target discussion topics for the week the case is assigned.

Teams will also work to complete targeted activities and assignments related to a hypothetical case study that evolves as the course progresses throughout the semester. The intent of the on-going case activities and assignments is more application of the concepts, knowledge and approaches covered in class sessions and activities that are relevant to the leader-engineer in strategic leadership aspects of engineering and technical organizations.

The outline of expected weekly topics and activities are summarized below. The actual availability and due dates for assignments, activities, and quizzes are set in the Canvas course management system (see Syllabus page):

Weeks (class meeting dates are T,R)	**Expected Discussion Topics**	**EAL [1] Text Readings**	**Key Activities [2,3,4]**
1 (Aug 20, 22)	course overview and explanation of course requirements; leadership and engineering leadership in context; leader-engineer roles; the concept and learning process of strategic leadership	none	team formation acquire course materials weekly readings
2 (Aug 27, 29)	**key business fundamentals relevant to engineering leadership:** the concept of strategy; review of key business concepts and terms; use of financial statements and calculating key metrics	1	RAQ weekly readings Assignment 1

3 (Sep 3, 5)	**key business fundamentals relevant to engineering leadership:** the concept of competitive advantage and industry analyses; vision, mission, and values statements; pricing approaches; price-demand relationships. Overview of decision-making process and Monte Carlo analyses.	2	RAQ weekly readings Assignment 2
4 (Sep 10, 12)	**key business fundamentals relevant to engineering leadership:** business plans and business cases; the concept of design thinking and the design thinking process; the process of creating uncontested new market space; the concept of value curves; the concept of Blue Ocean Strategy	3	RAQ weekly readings Assignments 1A, 3
5 (Sep 17, 19)	leadership and creativity; innovation as a strategy; the concept of value propositions; demand-pull vs. supply-push approaches in marketing technology advances	4	RAQ weekly readings Assignment 4
6 (Sep 24, 26)	the concept of balanced scorecards (BSC); performance metrics and monitoring	5	RAQ weekly readings Assignments 1B, 6 [5]
7 (Oct 1, 3)	strategic leadership and decision-making (including overview of Analytical Hierarchy Process)	6	RAQ weekly readings Assignment 7
8 (Oct 8, 10)	strategic leadership and decision-making (including overview of decision tree analysis)	7	RAQ weekly readings Assignments 1C (initial team presentation), 8
9 (Oct 15, 17)	structuring and building organizations; organizing around value-added processes	8	RAQ weekly readings Assignments 1D, 9
10 (Oct 22, 24)	strategic leadership and the concepts of uncertainty, risks and risk management	9	RAQ weekly readings
11 (Oct 29, 31)	the concept of globally-responsible leadership; strategic leadership in a global business world	10	RAQ weekly readings Assignments 1E, 10

12 (Nov 5, 7)	the concept of tipping point leadership; strategic leadership and change; strategic leadership and information technology	11	RAQ weekly readings Assignment 11
13 (Nov 12, 14)	crisis management and crisis leadership	12	RAQ weekly readings Assignments 1F, 12
14 (Nov 19, 21)	final team presentations	13	RAQ weekly readings Assignments 1G (final team presentations), 13
15 (Nov 26)	final team presentations (if needed); course summary	none	Assignments 1G (final team presentations)
16 (Dec 3)	course close-out	none	none

12. Policies and Class Expectations:

General

The learning environment for the AELD course is intended to be professional, courteous and respectful.

The instructor is fully invested in this course instructional effort. Students taking the AELD course are expected to provide a commensurate level of investment and commitment to its completion.

The instructor is more than willing to provide students with the corresponding subject matter expertise, professional experience, judgment and insight to accomplish course objectives and maximize student learning outcomes. The instructor is also open to suggestions and constructive criticisms to continually improve the course.

Unless stated otherwise, assignments are to be submitted via Canvas as a pdf file by the stated deadline. No late submittals will be accepted subject to UF Attendance Policies.

In-class students are expected to arrive to class on time to complete RAQs and to remain in class through completion of the class session. Students are expected to come to class prepared (including completion of all assigned readings) to actively participate in class discussions and activities. Excused absences must be consistent with university policies in the undergraduate catalog and require appropriate documentation. Unexcused absences will result in a score of 0 for that week's RAQ.

Other Specific Policies and Expectations:

Teams: Virtually all of the assignments and presentations will be team-based. Students will be allowed to self-assign to a team formed in Canvas by the instructor (normally consisting of 2-4 students per team depending on class enrollment), within the prescribed period (to be announced). At that time, the instructor will randomly assign the other students (who did not self-assign) into teams. Distance-learning students should also work in teams of 2 each (depending on the number of enrollments) for assignments.

Note that Canvas recognizes only the teams created by the instructor for grading purposes, so students must be assigned to one of the designated teams. Students may also form a student or project group in Canvas if they choose; however, this is incidental to and not a substitute for being assigned to one of the designated teams.

Assignments:

- Canvas assignments will be issued related to both the main case studies and the on-going case study. The assignments will provide instructions for their preparation, including the release and due dates. Microsoft Word (MS) templates will be available through the Canvas course site for student reuse in completing all assignments. Rubrics will be available that the instructor will use to evaluate the submittals.

  Students should expect a minimum 10% grade penalty for failure to follow all instructions on the templates and the specific assignments. Refer to the Expectations for Quality of Work section below for more information.

  Students listed as participating members on the team assignments will receive the same assignment grade. The instructor will assume that unlisted students were not a participating team member and they will receive a grade of 0 for that assignment.

  No late assignments will be accepted, subject to UF attendance policies. Excused absences must be consistent with university policies in the Undergraduate Catalog and require appropriate documentation.

- Expectations for Quality of Work**:** Effective written communications are an important part of being an engineer, an engineering leader and a professional. While students are not expected to be able to write like English majors or accomplished authors, all students are expected to take sufficient care to produce assignment submittals that reflect a collegiate or working professional level of effort in terms of compositional structure and correct grammar usage. To this end, the instructor's expectations for all assignment submittals are outlined below:

  - ✓ Students will take ownership of producing high-quality assignment "deliverables" that they would submit to their employer.

  - ✓ Submittals will reflect good, common practice in developing paragraphs and sentences (such as one topic per paragraph, use of complete sentences and not fragments, one thought per sentence that supports the paragraph topic, consistent fonts and structure, etc.). Good, common practice for this course does **not** include responses that involve long blocks of text containing multiple topics.

  - ✓ Students will use standard resources available through MS Word (or other acceptable sources) to search for and correct grammatical issues prior to

assignment submittal. Submittals that contain noticeable misspelled words, incomplete sentences and similar careless issues will be considered a non-professional submittal and subject to a minimum 10% grade penalty. (This may be in addition to the grade penalty assigned for not following assignment instructions.) The quality of team-based submittals is a shared responsibility among the team members.

- ✓ Team-based submittals mean that the document reflects a team compilation of contributions, endorsed by all participating team members. In finalizing the submittal, remember that there is no "I in team" and submittals should reflect this concept by removing words (such as "I" or "me") that reflect only individual perspectives, unless they question asks for individual team member responses.
- ✓ Source and reference listings may be required for some assignment submittals (as specified in the Canvas assignment). Assignments that fail to include references, as may be requested, will be considered incomplete and subject to a minimum 10% grade penalty. (This may be in addition to grade penalties assigned instructional or quality-based reasons.)

Presentations: Two of the on-going assignments will be team presentations. The assignments will specify the objectives, format and instructions for the presentations. In-class students will make the presentations during designated class sessions (that will be clarified by the instructor). The presentations are expected to integrate the guidelines and approaches for effective persuasive presentations covered in EGS 4038/6039 Engineering Leadership.

13. Evaluation of Grades: Final grades will be determined based on the course component weighting factors indicated below:

AELD Course Components	Grade Weighting Percentages
RAQs (up to 13):	10
On-going Case Study Assignments (up to 10)	35
Main Case Study Assignments (up to 14)	30
Presentations (up to 2)	10 (first) 15 (last)
Totals:	100

14. Grading Policy:

Final course grades will be determined by summing the weighted points associated with each of the grade components. Weighted points for each component will be calculated as the ratio of the points earned to the maximum points possible, multiplied by the grade weighting percentage for the component (rounded to the nearest hundredths decimal point). The cumulative weighted percentage points will be summed, multiplied by 100, rounded to the nearest tenths of a digit, and compared against the following grade scale:

A = 90.0 or above	C = 72.0 – 74.9
A- = 87.0 – 89.9	C- = 69.0 – 71.9
B+ = 84.0 – 86.9	D+ = 66.0 – 68.9
B = 81.0 – 83.9	D = 63.0 – 65.9
B- = 78.0 – 80.9	D- = 60.0 – 62.9
C+ = 75.0 – 77.9	E = 59.9 or below

NOTE: Given the variability in the grading weighting criteria between undergraduate and graduate students, course grades indicated by the Canvas class website are unweighted and **do not** reflect the actual course grade. Students are encouraged to keep up with their class grade individually based on the class grading approach previously outlined.

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

15. 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.

16. 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/.

Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

17. 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.

18. 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@eng.ufl.edu

19. 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: https://registrar.ufl.edu/ferpa.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 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

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.