

EGS 4034
ENGINEERING PROFESSIONALISM AND ETHICS
(1 credit)

1. Course description:

This course is designed to introduce engineering students to the concepts, theory and practice of engineering ethics. It will allow students to explore the relationship between ethics and engineering and apply classical moral theory and decision making to engineering issues encountered in academic and professional careers.

Our society places a great deal of responsibility on its professionals and requires that they conduct themselves in a manner fitting to the place of prominence accorded to them by the community. Studying and understanding professional ethics is as much a part of your development as an engineer as is the study of higher order mathematics. You must be able to broaden your mind and be open to society's ever changing character. It is important that you learn to share ideas and concepts regardless of the fact that you may not always agree; therefore, we will be working in teams on majority of the assignments in this course.

2. Pre-requisites/co-requisites:

None.

3. Course Objectives

The objectives of this course are to provide students of engineering with:

- An understanding of their duties and responsibilities as professionals through gaining knowledge of the philosophies of ethics, professional practice, and world culture.
- Basic knowledge to make informed ethical decisions when confronted with problems in the working environment.
- Team skills through working in teams on assignments and in-class assignments.
- Subjective analytical skills through investigation and evaluation of ethical problems in engineering settings using accepted tests for moral problem solving.
- An understanding of how societal morals varies with culture and how this influences ethical thought and action.
- Improve skills in both written and oral communication with regard to ethical and professional issues in engineering.
- Know some of the classic cases as well as contemporary issues in engineering ethics.

4. Contribution of course to meeting the professional component (ABET):

This course will prepare students with fundamental knowledge to successfully handle ethical/moral situations that might be encountered in engineering profession.

5. Relationship of course to program outcomes (ABET):

- d) Students will have the ability to function on multidisciplinary teams.
- f) Students will have an understanding of professional and ethical responsibility.
- g) Students will have the ability to communicate effectively.

- h) Students will have the broad education necessary to understand the impact of engineering solutions in a global/societal context.
- i) Students will have recognition of the need for and an ability to engage in lifelong learning.
- j) Students will have knowledge of contemporary issues.

6. Instructor

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 UF College of Engineering
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Office Hours: TBD
Course Website: www.lss.at.ufl.edu

7. Teaching Assistant

NA.

8. Meeting Times

Wednesday, Period 1 (7:25-8:15am).

9. Class schedule

One 50-minute lecture per week on Wednesdays.

L#	Topic	Assignments
L1 (Aug 27)	<ul style="list-style-type: none"> • Introduction to ethics • Definition of ethics in general • Comparison of ethics and engineering ethics • Ethics at personal level 	
L2 (Sept 3)	<ul style="list-style-type: none"> • The importance of ethics in science and engineering • The role of codes of ethics • Professional responsibilities of engineers 	
L3 (Sept 10)	<ul style="list-style-type: none"> • Ethical issues for students – Honor Code - Guest Speaker (floating day) • Plagiarism 	Quiz 1
L4 (Sept 17)	<ul style="list-style-type: none"> • Moral dilemmas, analysis, and hierarchy of moral values. • Factors affecting moral responsibility, and degrees of responsibility • Distinguishing between external and internal morality 	Hw 1 due
L5 (Sept 24)	<ul style="list-style-type: none"> • Philosophy, engineering, and ethics • Philosophical ethics (part 1): Descriptive and prescriptive claims, Relativism theory 	Quiz 2

L6 (Oct 1)	<ul style="list-style-type: none"> Philosophical ethics (part 2): Utilitarian theory, Kantian theory 	Hw 2 due
L7 (Oct 8)	<ul style="list-style-type: none"> The importance of intention Truth in action and words 	Quiz 3
L8 (Oct 15)	<ul style="list-style-type: none"> Leadership in engineering and society Engineers in organizations 	
L9 (Oct 22)	<ul style="list-style-type: none"> Personal and social responsibilities Whistle blowing Rights and responsibilities in workplace relationships. Harm from deception, withholding truth and spreading truth 	Quiz 4
L10 (Oct 29)	<ul style="list-style-type: none"> Challenger case 	Hw 3 due
L11 (Nov 5)	<ul style="list-style-type: none"> Reliability, risk and safety Risk management Ethical successes and failures 	Quiz 5
L12 (Nov 12)	<ul style="list-style-type: none"> Internet ethics Responsible conduct of research 	
L13 (Nov 19)	<ul style="list-style-type: none"> Privacy issues Intellectual property and society 	Quiz 6
L14 (Dec 3)	<ul style="list-style-type: none"> Environmental ethics Sustainable engineering 	Hw 4 due
L15 (Dec 10)	<ul style="list-style-type: none"> Globalization and international concern Cultural considerations 	

10. Meeting Location

WEIL 270

11. Material and Supply Fees

NA.

12. Textbooks and Software Required

Seebauer, E.G. and Barry, R.L. *Fundamental of Ethics for Scientists and Engineers* (New York: Oxford University Press, 2001). You can read online version of the book through:

<http://www.books24x7.com/marc.asp?isbn=0195134885>

However, you will need to use UF network to be able to access the book. Here are the instructions on what to do for off campus access: <https://connect.ufl.edu/it/wiki/Pages/glvpn.aspx>

Reference Books (not required):

- Ermann, M.D., Williams M.B., Gutierrez, C. *Computer Ethics and Society*: 2nd edition (New York: Oxford University Press, 1997).
- Johnson, D.G. *Computer Ethics*: 4th edition (New Jersey, Prentice Hall, 2009).
- Harris Jr., C.E. , Pritchard, M.S., Rabins, M.J., *Engineering Ethics Concept and Cases*: 4th edition (California: Wadsworth Cengage Learning, 2009).

Software

The students are expected to have computer and Internet access. Standard software, i.e. MS Office suite, a pdf reader are required..

13. Recommended reading

Readings and multimedia sources will be posted weekly on Sakai.

14. Course outline

See the course schedule.

15. Course delivery, attendance and expectations:

- The class is structured around active learning methods and discussions. However, there will be lectures prepared and given by the instructor or guest speakers depending on the nature of the subject.
- Any type of course material will be available on Sakai.
- Students are expected to participate in discussions and in-class exercises.
- Attendance is mandatory.
- Students are expected to follow the common courtesy rules in using cell phones and laptop computers.

16. Grading and assignments:

Approximate Grading Components:

Attendance	20%
Assignments	40%
Quizzes	40%

Quizzes 40%

There will be 6 quizzes distributed throughout the semester, however the lowest quiz grade will be dropped, leaving 5 quizzes each counting for 8% of the course grade. The quizzes will be as scheduled and will be available on Sakai.

Assignments 40%

The assignments will generally be posted after the class with respective assignment due dates. The assignments are to be submitted using the assignment tool on Sakai system. **No hardcopy** and/or **e-mail**

submissions will be accepted unless there are technical difficulties associated with using Sakai system. The assignments need to be turned in as **pdf** files. There are multiple free tools to convert various file formats to pdf and an example of such programs will be demonstrated in class (Cute pdf: <http://www.cutepdf.com/Products/CutePDF/Writer.asp>).

Please give attention to the quality of your work and follow the assignment formatting as outlined for each assignment. Elaborate or fancy presentations are not needed but work should be neat and professional. The quality of work needs to be as if you are submitting it to your boss. Type your written work. Use graphic software for sketches. Most of the assignments distributed will be discussion/critique based and following is the grading scheme. Please pay good attention to these criteria:

Grade	Expectation
%100	<ul style="list-style-type: none"> • Clear understanding of the assignment and the deliverables. • Adequate analysis and elaborate discussion about the deliverables. • No significant grammatical or organization problems with the written text.
%90	<ul style="list-style-type: none"> • Clear understanding of the assignment and the deliverables. • Adequate analysis and a somewhat complete discussion about the deliverables. • Noticeable grammatical or organization problems with the written text.
%80	<ul style="list-style-type: none"> • Understanding of the assignment and the deliverables. • Adequate analysis and a somewhat complete discussion about the deliverables. • Substantial issues with the document organization and grammar.
%70	<ul style="list-style-type: none"> • Understanding of the assignment and the deliverables. • Inadequate/incorrect analysis about the deliverables. • Substantial issues with the document organization and grammar
<%70	<ul style="list-style-type: none"> • The assignment will be returned to be reviewed by the student and will be resubmitted as long as the original submission is within the deadline.

Turn it in: The assignments submitted will be run through *turn it in*, an online tool that compares the content of submitted homework to online resources. Note that, it is ok to use copyrighted material in your HW submissions, but it should be within the allowable limits of copyright rules and common courtesy to the original copyright holders work. As a benchmark, if the likelihood percent of the HW exceeds 35%, the students will be asked to revise and resubmit their assignment. Note that late submission criteria will be effective, in case of returned HWs!

Attendance:

- There is no penalty for one lecture absence. You do not need to provide any documentation if you miss only one day of the class. However, note that, you will not be given credit for in-class assignments that we might have on the day of absence.
- If more than one absence occurs, you are required to bring documentation for your absence to be considered excused.

Class preparation

Everyone should be prepared for the class by reading the class assignments.

Working in teams

You should take away from this learning experience that you will need to succeed as practicing engineers. For most of us, we have been pushed and prodded into striving for individual success with very little emphasis on group success. In the real world you will be judged more on team success than on individual success. In order to work well in teams, you should know your strength and weaknesses. You can learn how to

work better at groups by taking personality profile test such as the one found at:
<http://www.humanmetrics.com/cgi-win/JTypes1.htm>

17. Grading Scale

Course letter grades will be based upon the following grading scale. At the option of the instructor, the grading scale may be curved.

95 - 100 A
93 - 94.99 A-
90 - 92.99 B+
87 - 89.99 B
85 - 86.99 B-
83 - 84.99 C+
77 - 82.99 C
75 - 76.99 C-
70 - 74.99 D+
67 - 69.99 D
65 - 66.99 D-
0 - 64.99 E

18. Make-up Exam Policy

No make-up exams or quizzes will be given. However, in unusual circumstances, unavoidable absences resulting in missed work may be excused by the instructor. Note that the students are required to consult with the instructor beforehand and a written supportive document might be required (e.g., doctor's certificate).

19. Honesty Policy

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

20. Accommodation for Students with Disabilities

Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

21. UF Counseling Services

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.

- SHCC Mental Health, Student Health Care Center, 392-1171, personal counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE). Student Health Care Center, 392-1161, sexual assault counseling.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.

22. Software Use

All faculty, staff and student 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.