Online Ethics Center
FOR ENGINEERING AND SCIENCE

Designing the 21st Century Engineer Syllabus

Author(s)

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Description

This course syllabus offers a chance to learn about a pioneering new approach to values-driven leadership development called “Giving Voice To Values” (GVV). This approach has made a dramatic impact on business education and business practice around the world and is now being applied to engineering.

Body

Course Information

Course Number:	AHSE 2199A-01
Instructors:	Mary Gentile and Rob Martello
Credits and Grading:	2 AHSE credits, Experimental Grading (EG)
Meeting Time:	Tuesday, 5:30 to 7:00 PM
Course Motto:	“Ex valoribus, vocem” (“From values, voice”)

Course Catalog Description

Do you want to contribute to a paradigm shift in the education of engineering professionals? Do you want to make a positive impact on engineering education at Olin and beyond?

This course offers a chance to learn about a pioneering new approach to values-driven leadership development called “Giving Voice To Values” (GVV). This approach has made a dramatic impact on business education and business practice around the world, having been used in hundreds of schools and organizations, including engineering-driven business, on all seven continents. GVV has yet to be adapted for use in the engineering profession… until now.

Our class will begin by exploring the GVV framework and its applicability to engineers. We will work in teams to research the most critical leadership and values conflicts faced by engineering professionals in their careers and to understand faculty aspirations and reservations around addressing these conflicts. We will conclude with a design project that will give you the chance to develop workshops or co-author educational materials for use in Olin courses and beyond.

Learning Objectives

Everything we do this semester boils down to a list of learning objectives that undergird our class activities, assignments, and assessments. The list is almost too much fun… come see for yourself:

1. **Critical thinking: ethical, contextual, and systems analysis.** Our readings, discussions, and assignments will ask you to make sense of complexity, identify effective and ineffective arguments, make connections across disciplinary and other perspectives, advance a goal/viewpoint, and (perhaps best of all) practice innovative thinking, or the art of finding ways to accomplish what most say is impossible. These activities depend upon a combination of persuasive arguments, supportive evidence, and insightful creativity.
2. **Communication skill development.** In this course, you will craft a variety of communication deliverables (which you will propose and design according to your own goals and interests). You will also participate in class discussions and outreach activities ranging from interviews with industry professionals to skype

calls with fictional characters. These activities will help us develop communication practices such as critical reading techniques, organization and structure, mechanics and style, and integration of creativity/engagement with rigor/effectiveness.

3. **Self-Directed Learning.** All of our assignments and class activities require that you take initiative, make plans, manage your time, set goals, reflect, respond to adversity, and rock on. Throughout this semester you will receive a growing degree of responsibility and autonomy, as well as scaffolding that will allow you to take on greater challenges and fail in a constructive and educational way. Remember that this is an experimental class, run for the first time. We need your help to make this work, and we invite you to join our teaching team and take ownership of this educational endeavor!
4. **Intrinsic Motivation**. This course insists that you place yourself – your own goals and passions – into our discussions and analysis through a combination of reflection and action. What are your reasons for taking this class, for pointing your career in this direction? What is your story? What are your personal values and ethics? What can you do to make each activity more meaningful and fun?
5. **Collaboration and Teamwork**. This class is a fully collaborative endeavor – by continually working together, listening to, and learning from each other, we will form a cohesive and productive classroom community. We're counting on you to be a constructive member of the team, and ideally you will carry this collaborative spirit into a lifetime of spiraling inspiration.[1]
6. **Real World Impact.** The main project and lion's share of our time in this course is devoted to real world changes. You are going to actually create something that will impact engineering education for future professionals… and in that way, you will also impact engineering practice

Your "grade" and feedback in this class will relate to your efforts and growth in these areas.

Assessment, Feedback, and "Experimental Grading"

This course uses the “Experimental Grading” option as described in Olin’s Student Handbook. This means you will not receive a letter grade at any point in the semester. As you complete assignments and participate in class activities, your instructors will offer you narrative feedback, using the assessment categories described in the “Learning Objectives” section above. At the end of the semester you will receive a grade of “EG” if you complete all class expectations in a satisfactory manner, and this “EG” designation will carry the full weight of a letter grade (i.e., the course will fulfill the AHS Concentration or serve as a prerequisite, will appear on your transcript, etc.) but will not impact your GPA.

In order to receive EG credit for this course, we expect that you achieve the following milestones:

- Attend all classes, or make up missed material if you receive prior approval to miss a class (see “Course Policies” below).
- Finish all reading assignments and participate in class discussions on a regular basis.
- Complete all written/oral/graphical deliverables on time (or late, if we granted an extension in advance).
- Take ownership of the class: inject your own voice and interests into our activities, become a dynamic participant, help us make the class productive and educational for everyone.

If you exceed our stated objectives, we will reflect your accomplishments in a narrative feedback document at the end of the semester that you can share with others (for example, as a part of a portfolio or as fodder for a recommendation letter). You will only receive positive feedback if you earn it through consistent efforts and insightful creativity.

If you have any questions about grading or class expectations, please ask us at any time.

Projects and Assignments Overview

As you will see in the semester calendar below, our course is organized into three unequal segments. The main goals, expectations, and assignments in each

section are as follows:

Phase One is a two week introduction to *Giving Voice to Values* that explores this work's content and business context.

- **Assignment one**: a written homework that will get you thinking about potential applications of this ethical framework. Very brief.

Phase Two is a three week investigation of our engineering ethics "problem statement:" what are possible ways of teaching engineering ethics to students, teachers, and industry professionals; and what opportunities and obstacles do you foresee?

- **Assignment two**: a written homework that explores ethical challenges faced by engineers (brief)
- **Assignment three**: the phase two project report, a two-four page document that you will research and write alone or in groups
- **Assignment four**: present your project report to the class.

Phase Three is a project that occupies the remainder of our semester, in which you identify an educational opportunity related to the challenge of teaching engineering ethics, and then carry it out. The specific research question as well as the deliverable that you produce is up to you, and you can work in groups. Possible projects include researching engineering ethics materials and writing about your findings (perhaps in a publishable paper); designing and producing classroom materials that can be used by instructors; preparing (and delivering?) educational workshops that help educators incorporate engineering ethics in their classrooms; and many others.

- **Assignment five**: write a final project proposal that explains your project goals and methods (submitted in draft form and then revised)
- **Assignment six**: produce at least one final project deliverable that showcases your accomplishments (can be a published paper, educational workshop, classroom materials…)
- **Assignment seven**: present your final project work to the class at the end of the semester

Finally, the **Set Your Own Goals Assignment** spans the whole semester. At the start of the semester you will lay out some goals for yourself. You then revisit those goals at the midpoint, and at the end you self-assess your progress. We

want you to take ownership of the course and make it work for you!

Required Texts

You only need to purchase one text this semester: *Giving Voice to Values*, by Mary Gentile (Yale University Press (2012), ISBN 978-0300181562). You can get it in print or electronic form, you can share with a friend if you know you will have enough time to read it, and the library has at least one copy on reserve.

We will also read smaller selections from articles, online materials, handouts, and book excerpts that are either listed in the calendar section of the syllabus below, or soon to be announced on a week by week basis. You will also be asked to identify relevant readings pertinent to our objectives.

Course Policies

Attendance is required and will be considered in determining your grade.

- We realize that this class meets on a somewhat irregular schedule, and if we move a class session you might have to miss that meeting. If this is the case, please email us in advance and let us know. We will work with you to find some other way that you can contribute that week – perhaps a short written reflection that we can share with the class, or some other creative option.
- If you are too sick to come to class… don't come to class! Focus on getting healthy. Please contact us by email as soon as you can – before class if possible or at the first opportunity after class if necessary. We will help you make up the missed material.
- If you have a different reason for missing class, contact us as early as you can.
- Perfect attendance will be rewarded at the end of the year with a tiny piece of chocolate, which might (but is not guaranteed to) emit a faint aroma of peppermint. You can substitute a medium-sized piece of gum for the chocolate if you obtain written permission from the Dean of Student Life.
- Students cannot send an imaginary friend to class in their stead, even if the imaginary friend has strong opinions on the subject at hand.

Class participation is a vital learning objective of this course and will play a substantial role in your assessment, and in the success of our collective efforts. If participating in discussions is stressful in any way, please contact us and we'll talk.[2]

Laptop use in class: Laptops are awesome, improper laptop use distracts everyone, so what do we do? Easy! Only use your laptop for taking notes or for sanctioned activities (e.g., interactive web research during a class). Please keep your screen folded down at a twelve degree angle until you are ready to type something, at which point you should raise the screen, type, and lower it. Absolutely no email, Twitter, Facebook, etc. In extreme cases you can use up to a seventeen degree angle, but check with us first.

Honor code issues: the honor code helps us focus on intriguing intellectual concepts and saves us the need to worry about dishonesty, plagiarism, cheating, or hipsterism. Please follow the spirit of the honor code and ask us to clarify anything that is unclear. Primary honor code issues include:

- *Plagiarism*: always take extreme care to acknowledge the source of **all** quotes, content, and theories. Even if you reword the original material, or if it merely informs your own argument, you must cite it as an influence. **When in doubt, cite.**
- *Collaboration*: see the individual assignment descriptions for guidelines on the degree of allowable collaboration. If you receive help where help is allowed, you must acknowledge it in a brief note at the end of the assignment. When in doubt, ask us for clarification.
- *Learning about cool Internet memes without sharing them with your instructors* : this is too horrible to even contemplate.

Time expectations: A diligent and reasonably efficient student, supplied with plenty of Vanilla Coke, should spend about six hours per week doing everything associated with this course (including time spent attending class). If you spend significantly more or less than six hours a week on this course please contact us and we'll do something heroic to achieve the proper alignment.

Feedback: feedback is an essential component of this course. We will solicit feedback throughout the semester, but we also urge you to contact us at any point with suggestions or concerns whether in public or in private, in English or Pig Latin, whatever works for you.

Dinner!

You might have noticed that our class meets over the dinner hour on Tuesdays, and we meet in the second floor of the Campus Center. We encourage you to bring your dinner with you at the start of class if that will improve your concentration and enjoyment! (Just don't be late – we have much to do, and never enough time!)

Semester Schedule

Note: all assignments (reading and writing) are DUE on the date listed.

WEEK 1	**Tuesday** **Jan. 19**
	Introduction and Welcome **(This session may be rescheduled to Monday)** *NOTE: if most students are available we prefer to meet on Monday January 18th instead* **READINGS DUE TODAY:** • Look over this syllabus and bring questions if any • Optional: you are welcome to get a head start in reading *Giving Voice to Values* **HOMEWORK DUE TODAY:** • None, but think about what you would like to get out of the class **IN CLASS TODAY:** • Overview of the course • Set your own goals! • Let the fun begin. Oh yes.

PHASE ONE: Context and Case Study

WEEK 2	**Tuesday** **Jan. 26**

Case Study: *Giving Voice to Values* and the Business Context

READINGS DUE TODAY:

- *Giving Voice to Values* chapters: introduction, 1, 2, 3.
- Mary C. Gentile (2012): "Values-Driven Leadership Development: Where We Have Been and Where We Could Go," *Organization Management Journal* (9:3) pages 188-196.
- Investigate the website: www.GivingVoiceToValuesTheBook.com (in particular, make sure that you review the "Media Room" tab and the "Resources for Educators" tab – they are long, so just take a look at them)

HOMEWORK DUE TODAY:

- **Set Your Own Goals Proposal** (part one) due
- Identify at least two questions for Mary related to the content and the application of *Giving Voice to Values*

IN CLASS TODAY:

- Mary will give an informal talk today
- Review major take-home messages from *Giving Voice to Values*
- Discuss the implementation of *Giving Voice to Values*: What problem(s) was it intended to address? How was it "rolled out?" What impacts did it have? What would you do differently?

WEEK 3	**Tuesday** **Feb. 2**

Engineering and Other Implications

READINGS DUE TODAY:

- *Giving Voice to Values* chapters 4, 5, 6
- Read "Giving Voice to Values: An undergraduate nursing curriculum project"
- Super short overview of "aspirational" ethics: https://www.asme.org/engineering-topics/articles/engineering-ethics/engineers-must-embrace-aspirational-ethics
- Six(ish) page National Academy of Engineering treatment of ethics (do you agree

PHASE TWO: Engineering Education: Challenges and Opportunities

WEEK 4	Tuesday Feb. 9

Engineering Ethics: Scoping the Project

READINGS DUE TODAY:

- *Giving Voice to Values* chapters 7, 8, 9 (i.e., finish the book)
- Read the National Academy of Engineering "Grand Challenges" website's grand challenges page (http://www.engineeringchallenges.org/challenges.aspx) After reading the description of all challenges, choose one and read about it in more depth. What ethical challenges and opportunities does it raise?

HOMEWORK DUE TODAY:

- **Phase Two Homework**: write up one or two examples of values-conflicts in engineering practice, drawn from your own experiences – ideally from an engineering internship, job, or class, but perhaps in a club or other activity. We will follow prompts from the "tale of 2 stories" for this assignment (to be provided). (About a paragraph per example.)
- Also, think about the application of ethics in an engineering education setting and answer the following prompts (1-3 sentences each):
    - What ethics/values/leadership skills or content do you think are the most valuable for engineers?
    - What challenges need to be overcome in delivering these skills or content?
    - What questions do you have, and what resources might you use to answer your questions?

IN CLASS TODAY:

- Review the Phase Two Project: how can we collectively understand the "problem statement" of applying ethics in an engineering education setting? Each group must pick one of the many ethical challenges faced by engineers and propose an educational strategy that can help to address it.
- Team formation and project task assignments

WEEK 5	**Tuesday** **Feb. 16**
	Project Scoping Check-in **(Mary is out this week L)** **READINGS DUE TODAY:** • Complete whichever readings your group identified last week **HOMEWORK DUE TODAY:** • Make progress on your research • Prepare a brief written progress report (half a page to a page): email it to Mary and be ready to share it verbally in class **IN CLASS TODAY:** • We will all check in and discuss progress made

WEEK 6	**Tuesday** **Feb. 23**
	No Class Today Work on your project two proposals and presentations, and email Rob and Mary if you would like to receive any guidance.

WEEK 7	**Tuesday** **Mar. 1**

Phase Two Report-Outs

READINGS DUE TODAY:

- Whatever was needed for project completion

HOMEWORK DUE TODAY:

- Submit your **Phase Two Project Report** (two-four pages); and **Present** it in class

IN CLASS TODAY:

- Report outs
- What lessons can we take from the dissemination and adoption of *Giving Voice*

PHASE THREE: Research and Implementation

WEEK 8	Tuesday Mar. 8
	Final Project Brainstorming and Planning **(Mary is out this week L)** **READINGS DUE TODAY:** • Individually-selected readings in support of your draft proposal writing **HOMEWORK DUE TODAY:** • Based on the results in phase two, bring at least two **Final Project Draft Proposals** to class: which aspect of Engineering Education would you like to research? What will you do? What will you produce? What impacts do you wish to have? **IN CLASS TODAY:** • We will share our draft proposals and collectively plan the final project parameters for the class • Team formation and preliminary goal setting

WEEK 9	Tuesday Mar. 15
	Spring Break

WEEK 10	Tuesday Mar. 22

Final Project Proposals and Launch

READINGS DUE TODAY:

- Individually-selected readings in support of your final proposal writing

HOMEWORK DUE TODAY:

- Each person or team will bring a **Final Project Proposal** to class and email it to Mary
- **Set Your Own Goals Revisions and Check-In** (phase two) due by the end of the day (we can discuss them in class)

IN CLASS TODAY:

- Final proposal presentations, feedback, and editing
- Work on Set Your Own Goals in class
- Divide responsibilities and finalize milestones for the next two weeks

WEEK 11	Tuesday Mar. 29

No Class

We will not meet this week. Use this time to work on your projects.

WEEK 12	Tuesday Apr. 5

Project Session

We will meet throughout the final weeks of the semester and work together on the projects. Details to follow.

WEEK 13	Tuesday Apr. 12
	Project Session **(This session may be rescheduled)** We will meet throughout the final weeks of the semester and work together on the projects. Details to follow.

WEEK 14	Tuesday Apr. 19
	OLIN MONDAY! NO CLASS!

WEEK 15	Tuesday Apr. 19
	Last Day of Class! **(Mary is out this week L)** We will have a final check-in if it is helpful, but the priority is finishing your project work.

WEEK 15	Tuesday May. 3
	FINAL EXAM SESSION **(Meeting time TBA but it will be on this day)** **HOMEWORK DUE TODAY:** • **Final Project Presentations** • All **Final Project Deliverables** • **Set Your Own Goals Assessment** (phase three) **IN CLASS TODAY:** • Presentations • Where do we go from here? • Final feedback and reflections

[1] Could this class possibly be any cooler?

[2] *The irony of using a “talk” to resolve a problem with “discussions” is not lost on us. In fact, we spent weeks building layers of intellectual dissonance such as this into all aspects of the class. You’re welcome.*

Rights

Use of Materials on the OEC

Resource Type

Instructor Materials

Topics

Workplace Ethics

Discipline(s)

Engineering