The Culture of the Engineering Profession
661.315.01

Instructor: Pamela H. Sheff
Campus extension: 410.516.7056
Cell: 410-336-0679
E-mail: pamsheff@gmail.com
Office: 102 Whitehead
Office hours: M: 11:30 -1p.m. T: 1:30 – 3 p.m., Wed. 10:30 - noon and by appt.

Course Assistant: Brett Schwartz
Office: 104 Whitehead
Email: bschwa7@gmail.com

Teaching Assistant: Scott Clark
Office: 104 Whitehead Hall
Email: sclark34@jhu.edu

Required Texts:
The Engineer in America, T.S. Reynolds, ISBN 0-266 -71032-7
Guns, Germs and Steel, Jared Diamond, ISBN 9780-393-31755-8

In addition, there are a series of readings that will be distributed in class or placed on blackboard. Reading assignments will be made, in advance, for discussion in class and use in written assignments.

Course Overview: The Culture of the Engineering Profession is designed to engage you in thinking critically, theoretically, empirically and historically about critical issues encountered by professional engineers. Course goals and objectives incorporate the
following key ABET, Inc. (formally the Accreditation Board for Engineering and Technology) standards for professional engineers:

- an understanding of professional and ethical responsibility;
- an ability to communicate effectively;
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
- a recognition of the need for, and an ability to engage in, life-long learning;
- and a knowledge of contemporary issues.

The course, taught in seminar style, requires you to explore issues like professional ethics and social impacts of engineering interventions by examining cases, readings and inventions that express the decisions engineers make on a daily basis.

Content is focused around three specific course goals: teaching you to consider the culture and consequences of engineering decisions and interventions; equipping you with the framework to investigate issues of unintended consequences and professional ethics in the context of organizational cultures; and providing you the communication skills to convey your ideas and findings to various professional audiences.

In addition, course activities revolve around several specific objectives that apply to all assignments. You will learn to

- recognize and understand indicators of organizational culture and how they affect the decision-making;
- apply the standards for engineering ethics to situations and decisions that practicing engineers make every day;
- research, analyze and consider the social, community and global impacts that engineering interventions create (and have generated) in society;
- consider the concept of half-life of knowledge, especially as applied to your discipline;
- select and use evidence compellingly in making the case for an argument or idea;
- identify the characteristics of different audiences and use appropriate strategies to meet the needs and desires of each target audience;
- work with others as colleagues to complete, improve and present findings and products; and
- use best practices for a variety of writing and oral communication issues, including visuals, internal reports, writing for more than one audience and oral presentations.

Assignments: You will complete five (5) written assignments during this semester. Expect to produce 25-35 pages of final copy as well as several presentations (all assignments included) for class. Written directions for each assignment will be distributed and discussed in class. Each assignment sheet includes information about due dates, product specifications, grade value of products, and grading criteria. You will
complete at least one assignment as a collaborative project as explained on the assignment sheet for that work.

While your instructor reserves the right to adjust assignments and their values, you may expect our assignments and their value to be as follows:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethics case analysis</td>
<td>15%</td>
</tr>
<tr>
<td>Reaction papers (2) to selected texts</td>
<td>15%</td>
</tr>
<tr>
<td>Comparative analysis of engineering organization culture</td>
<td>10%</td>
</tr>
<tr>
<td>Oral presentation on culture project</td>
<td>10%</td>
</tr>
<tr>
<td>Proposal memo/bibliography</td>
<td>15%</td>
</tr>
<tr>
<td>Technical report on impacts of engineering intervention</td>
<td>25%</td>
</tr>
<tr>
<td>Presentation on technical report</td>
<td>10%</td>
</tr>
</tbody>
</table>

Grades: Grades are assigned for class participation (exercises, assignment activities, workshops, and discussion), presentations, draft copy, editorial comments, revision, and final copy. Further, the final semester grade is influenced by evidence of growth, based on written work. Expect some in-class writing, especially in response to draft copy from classmates.

Each assignment is graded, based on criteria for that assignment. Assignments carry individual weights toward your final grade with individuals weights indicated on each Assignment Sheet. Typically your papers are returned for consideration within two weeks and/or before the next product is due.

You may re-write any one assignment in an effort to improve the grade you earned; your final grade for that assignment becomes the higher of the two marks. Re-write means major revision and involves rethinking and reworking papers rather than just correcting grammar mistakes. Re-writing activities include meeting with your instructor, preparing a written plan for the revision and producing final copy. Note that your instructor reserves the right to substitute an alternative assignment as your rewrite opportunity. Rewrites are due not later than the last day of classes.

Normally a grade of "Incomplete" is not available; if a problem arises, please see me and we will work on the issues.

The penalty for plagiarism is an automatic "F" and possible dismissal from the University. We will discuss the meaning of the term in class.

Academic Integrity: The strength of the University depends on academic and personal integrity. In this course you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, forgery and falsification, lying, facilitating academic dishonesty and unfair competition.

You will complete some assignments with a colleague. Other assignments you must complete independently. Most “final copy” of papers must be completed independently. However, on several assignments, part of your grade is determined by the quality of feedback you provide to another classmate. You need not accept the feedback another classmate gives you on the draft, but you must consider it as well as
provide written feedback on another student’s paper. The expectations for different assignments are explained on the Assignment Sheets.

You must reference sources of information in your papers. We will discuss guidelines for references in class.

Report any violations of academic integrity that you witness to your instructor. You may consult the Associate Dean of Student Affairs and/or the chairperson of the Ethics Board beforehand. See the guide on “Academic Ethics for Undergraduates” and the Ethics Board Web site (http://ethics.jhu.edu) for more information.

Conferences: Informal or scheduled visits are welcome anytime during office hours. Expect to have at least one scheduled, required conference sometime during the semester.

Papers: Papers must be printed by laser or inkjet and submitted on appropriate paper for the kind of product you are writing. Most copy will be submitted on 8 1/2” x 11” paper with 1” margins on all sides. Place your name and appropriate identification on each page. Staple pages together rather than use a binder. Back up your work and keep a copy of each paper for your records. Your graded papers will be returned for your examination and as part of a general class discussion. Note on the Assignment Sheets how many copies of any given assignment you must submit; expect to submit more than one copy of some draft materials.

Due Dates: Writing products and presentation materials are due as class begins on the date indicated on the assignment sheet. Late (which means anytime after class activities have begun) papers will be marked down one letter grade for each missed class. Draft materials also are required for several assignments; appropriate information is noted on individual Assignment Sheets and discussed in class. Papers will not be due on religious holidays you observe.

Writing Assistance: You will find a tutor to help you with a specific skill, a grammatical problem, or provide a general reaction to your draft at the JHU Writing Center. The phone number is (410) 516-4258 or via email at writingcenter@jhu.edu. If you request or your instructor determines that you need ESL assistance, you will be referred to an ESL tutor provided by the CLE.

Attendance and Participation: Class attendance and participation are required. If you are late to class, please enter quietly. Also remember to turn off cell phones until class is over. During class, please participate in the discussions and exercises.

Accommodating Students with Disabilities: The University and your instructor are committed to provide appropriate accommodations for students with documented disabilities. Turn in documentation and register with the Associate Director for Disability Services, Garland Hall, Suite 130, and (410) 516-8949. Notify me of your special needs early in the semester. If issues occur during the semester, please bring information within two weeks.
Class Schedule: The following class schedule describes how we will spend our time together this semester. Note the due dates for assignments. While the schedule may change due to class dynamics and your instructor reserves the right to change this schedule, use the draft to plan your semester activities.

Week One (August 30 – Sept. 1)
Introduction: semester plans, assignments, expectations, etc.
What is Organizational Culture; What is Engineering Culture?
   Readings: What is Organizational Culture by C.M. Christensen, Harvard Business School, 9-399-104.206.
   Guns, Germs and Steel – this is a lengthy book and while we will discuss it thoroughly later on, we will reference it throughout the semester. Start reading NOW.

Assigned: 2 page primary research paper on engineers and communication – due Sept. 6

Week Two (Sept. 6 – 8)
Workshop on oral presentation, including how to create effective visuals
Guest speakers: Macie Hall and Reid Sczerba: presentation and design skills
Assigned: Project 1

Engineering Ethics: Review Engineering Code of Ethics and FAQs

Week Three (Sept. 13 -15)
Ethics, cont.
Discuss the types of ethical decisions engineers make and the factors that influence their considerations; play “You be the Judge.”
Discuss sample ethics cases from readings; review options and drafts for Project 1.
   Readings: cases from http://ethics.tamu.edu/ethics; begin reading Freakonomics

Week Four (Sept. 20 - 22)
Due: Project 1 written form on Sept. 20
The Impact of Engineers on Society: discuss great engineering achievements and the idea of an engineering achievement as an “intervention;” discuss the intended and unintended social consequences of engineering interventions as well as the idea of the “stakeholder.”
Generate a list of engineering interventions and their social impacts.
   Reading: Invention by Design
Assigned: Project 2, parts A and B
Week Five (Sept. 27; no class on Sept. 29 – Rosh Hashonnah)
Discuss Invention by Design in the context of Guns, Germs and Steel; discuss writing for different audiences
Review drafts of Part A

Week Six (Oct. 4 - 6)
Due: Part A in written form
Review drafts of Part B in class

Week Seven (Oct. 13; no class Oct 11 – Fall break)
Due: Part B in written form
Assigned: Project 3 – Investigation of Engineering Cultures
Handouts
Prepare to investigate contemporary engineering environments and cultures; develop a list of potential engineering organizations to explore as well as a list of elements that define “engineering culture.”
Divide into project teams

Week Eight (Oct. 18 - 20)
Discuss guidelines and procedures for interviewing subjects; create scripts/models to be used in interviews; review rules for contacting organizations and techniques for gathering data.
Finalize choice of organizations to study
Review draft interview guides and finalize list of elements to investigate

Week Nine (Oct. 25 - 27)
Update class on project progress; review the basics of writing a formal report and presenting your findings as a team; review drafts.
Assigned: Projects 4 & 5

Week Ten (Nov. 1 - 3)
Due: Project 3 in written and oral form
Formal presentation of team reports

Week Eleven (Nov. 8 - 10)
Does engineering culture influence the social impact of engineering interventions?
Review the basics of writing a project proposal by looking at sample proposals; discuss ideas for reports on the social impact of interventions. Finalize research topics.

Week Twelve (Nov. 15 - 17)
Review Guns, Germs and Steel as model for research writing
Review draft proposals (Project 4)
Week Thirteen (Nov. 22)
Due: Project 4
Oral Presentation of research findings and ideas to date
Week Fourteen (Nov. 29 – Dec. 1)

Oral presentations, cont.

Project 5 due as Final Exam on Wednesday, Dec. 7 @ noon.