Lecture 11
Ethics in engineering and the workplace

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http://rotorlab.tamu.edu/me489
**Lecture 11**

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**Today:** Ethics in Engin. & Work Place

- The four sides of engineering.
- About plagiarism.
- ASME Code of Ethics
- Ethics in the Workplace

**Team Prestige World Wide:**
- Hydraulic Fracking in the U.S

**Assignments & reading:**
- **A3:** Myths on Eng Management

**Other:** complete ONE MINUTE PAPER
Recommendation

Watch Digital NATION (Frontline, 90’)

http://www.pbs.org/wgbh/pages/frontline/digitalnation/view/

How being wired changes the way we learn? Are multitaskers more efficient?
Lecture
The four dimensions of engineering

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The Four Dimensions of Engineering

- Human Sciences
  - Engineer as humanist

- Basic Sciences
  - Engineer as scientist

- Design
  - Engineer as designer

- Crafts
  - Engineer as crafts worker

People Society

Theory

Matter Energy Information Life

Practice

The Four Dimensions of Engineering

**Engineer as scientist**

Application of the natural and exact sciences, with logic and rigor, through analysis & experimentation. Drive to discover first principles

**Application: R&D**
The Four Dimensions of Engineering

Engineer as humanist
Not just a technologist, but also a social expert, manager and business person recognizing social complexity of world and markets and of the teams they belong to.
Application: creation of social & economic value (satisfy needs)
The Four Dimensions of Engineering

**Engineer as crafts worker**

*(homo faber)* The art of getting things done.

**Application:** The ability to change the world and overcome resistance to ambiguity.
The Four Dimensions of Engineering

- **Engineer as designer**
  - Values system thinking more than analytical thinking. Design as:
    - Functional Analysis
    - Problem-Solving
    - Problem-Setting
    - Evolutionary Learning

  *design* includes compromising, non-scientific thinking, and decision when knowledge is incomplete with the help of intuition and experience.
Modern Engineers

Must learn to traverse these trans-disciplinary space to generate a constructive process.

Explore all spaces and build your own configuration.
Ethics in the workplace

Ethics: The principles of right and wrong that are accepted by an individual or a social group.

DOING THE RIGHT THING WHEN NO ONE IS WATCHING
Lecture

ASME Ethics

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Engineers uphold and advance the integrity, honor and dignity of the engineering profession by:

I. using their knowledge and skill for the enhancement of human welfare;
II. being honest and impartial, and serving with fidelity their clients (including their employers) and the public;
III. and striving to increase the competence and prestige of the engineering profession.

Document on ASME Policies on Ethics, Conflict of Interest and Discrimination available at class URL site
ASME Ethics  Fundamental Canons

1. Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.

2. Engineers shall perform services only in the areas of their competence; they shall build their professional reputation on the merit of their services and shall not compete unfairly with others.

3. Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional and ethical development of those engineers under their supervision.

http://www.asme.org
4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest or the appearance of conflicts of interest.

5. Engineers shall respect the proprietary information and intellectual property rights of others, including charitable organizations and professional societies in the engineering field.

6. Engineers shall associate only with reputable persons or organizations.

7. Engineers shall issue public statements only in an objective and truthful manner and shall avoid any conduct which brings discredit upon the profession.

http://www.asme.org
8. Engineers shall consider environmental impact and sustainable development in the performance of their professional duties.

9. Engineers shall not seek ethical sanction against another engineer unless there is good reason to do so under the relevant codes, policies and procedures governing that engineer’s ethical conduct.

10. Engineers who are members of the Society shall endeavor to abide by the Constitution, By-Laws and policies of the Society, and they shall disclose knowledge of any matter involving another member’s alleged violation of this Code of Ethics in a prompt, complete and truthful manner to the chair of the Committee on Ethical Standards and Review.
Ethics has been defined as doing the right thing when no one is watching. Are you? Is everyone around you? What should you do if they’re not? Is what you think is right the same thing as what others think is right? Use the words ethical behavior with 10 people and you’ll get ten variations just on what it means to behave ethically much less on how to do it. In this learning for engineers we’ll explore all these questions and you’ll finish with how-to’s for yourself and others.

Please watch at ASME Ethics Center:

**Engineering Education and Ethics: A Conversation with Dr. Henry Petroski**

http://www.asme.org/NewsPublicPolicy/Ethics/Ethics_Center.cfm

http://www.asme.org
The State of Texas
Texas Engineering Practice Act and Rules Concerning the practice of Engineering and Professional Engineering Licensure

Texas Board of Professional Engineers
http://www.tbpe.state.tx.us/

Whether licensed or not, all engineers must follow the practices established by the TBPE. In particular, every engineer must satisfy 1 credit hour of Ethics training every year.

http://ethics.tamu.edu/

Egregious case studies and more links
Lecture
Scholastic honesty & plagiarism

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Engineering reports and papers for publication shall not contain plagiarized material or falsified research data.

ASME defines plagiarism as the use or presentation of the ideas or words of another person from an existing source without appropriate acknowledgment to that source.

ASME views any similar misappropriation of intellectual property, which may include data or interpretation, as plagiarism.

Document on ASME ethical obligations of authors available at class URL site
All students share the responsibility for upholding the academic standards and reputation of the University. **Academic honesty is a prerequisite condition in the pursuit and acquisition of knowledge.** **Academic dishonesty** is any misrepresentation with the intent to deceive or failure to acknowledge the source or falsification of information or inaccuracy of statements or cheating at examinations/tests or inappropriate use of resources.

TAMU views AD as a **serious offense**. Aggies do not lie, cheat or steal!
Sanctions: expulsion, dismissal, suspension; isolation, etc.

In the real world, engineers can lose their jobs (and prestige), be prosecuted, even sent to jail.
As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writings, etc., which belong to another. You commit plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person.

Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which knowledge and learning cannot be safely communicated.

Do not ever pass as your own work that is NOT strictly yours. Please note that even paraphrasing (rewording an idea or sentence) may constitute plagiarism.
Plagiarism: examples

Students are responsible for authenticating all work submitted to an instructor

Intentionally, knowingly, or carelessly presenting the work of another as one’s own (i.e., without crediting the author or creator).

Failing to credit sources used in a work product in an attempt to pass off the work as one’s own.

 Attempting to receive credit for work performed by another, including papers obtained in whole or in part from individuals or other sources.

http://aggiehonor.tamu.edu/Student%20Rules/definitions.html
Plagiarism: examples

Failing to cite the World Wide Web, databases and other electronic resources if they are utilized in any way as resource material in an academic exercise.

Purchasing research reports, essays, lab reports, practice sets, or answers to assignments from any person or business is strictly prohibited. Sale of such materials is also an offense.

Students are responsible for authenticating all work submitted to an instructor. Stating you DID NOT KNOW about a rule IS NOT a valid excuse.

http://aggiehonor.tamu.edu/Student%20Rules/definitions.html
Ethics in the workplace

Ethics: The principles of right and wrong that are accepted by an individual or a social group.

DOING THE RIGHT THING WHEN NO ONE IS WATCHING

Assist me in taking a training seminar on ethics & policies

https://sso.tamus.edu/logon.aspx

Working policies are based on common sense principles:
- treat people fairly;
- keep your promises;
- do your best;
- tell the truth;
- don't take what isn't yours;
- appearances count