Lecture 6
Engineering – What You Don’t Necessarily Learn in School

Your comments and +questions

http://rotorlab.tamu.edu/me489

Sept 15, 2011
Date: September 15, 2011

**Today:** *What you don’t learn in engineering school*

Your comments on Wisler’s paper

**The Alphas’** on laser weapons

Read to debate next week:

**How to bring schools to the 21st century!**

**Other:** complete ONE MINUTE PAPER

**Assign2** The state of our education (09/29)
Know more about you & your needs. Posted data in

http://rotorlab.tamu.edu/me489

**Background:** education, work experience, daily habits & interests

**Why are you in engineering?** What do you think engineering is?

**Dreams and potential. Expectations**
### Schedule group presentations

<table>
<thead>
<tr>
<th>Group Name</th>
<th>Tuesday</th>
<th>Thursday</th>
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<tbody>
<tr>
<td><strong>The Alphas</strong></td>
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<td><strong>Team Hoof-Hearted</strong></td>
<td>Sep 20</td>
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<td><strong>Team RamRod</strong></td>
<td>Sep 27</td>
<td>Tuesday</td>
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<td><strong>Prestige World Wide</strong></td>
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<td><strong>Dynamics</strong></td>
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<td><strong>Globogym</strong></td>
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<td><strong>Lobster Golf</strong></td>
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- **SEPT 22 Thursday**
  - Melissa Wilcox & Chris Kulhanek, SWRI

- Select ONE *EW*, listen and discuss as a group
- Group prepares presentation (15 slides max) for (max 15 min) + discussion in class
- Play *EW* and lead discussion in class

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*EW*: [engineeringworks.tamu.edu](http://engineeringworks.tamu.edu)

**Note:** MUST reference all material copied from URLs, journals, textbooks, etc.
Assignment 1


Assignment:
what is the issue or issues that impacted you more?
How to embrace the needs of an engineering career?

400 word essay

http://www.asme.org/publication.htm
Assignment 1


(Editied) assignments posted on class URL site. Download to learn what other groups think.

Editions (in red). Missing reference in all but one essay

http://www.asme.org/publication.htm
The most impactful issues were: 1) to have fun, 2) manage your career, and 3) learn to be business oriented.

As Aggies, it is a consensus that “unyielding integrity” is a fundamental characteristic of all engineers in industry, and thus does not need to be mentioned….

Choose a career path that is fulfilling in a positive company …… Not everyday can be great and not every coworker can be cooperative but one can always choose to make the most of his or her circumstances
Lobster Golf

The most beneficial advice were: Learn to be Business Oriented, Learn the Difference between Academe and Industry, and Learn to Differentiate all over Again (capture the 4 E’s).

If you bring energy to work, have the ability to jump start your co-workers, have that knack that sets you apart from the rest and continuously produce results, you will be a successful individual.
There comes a point when added work does not translate into added value.

Typically engineers enjoy being right or having things done their way regardless of other GOOD ideas, letting their ego get in the way. The 7th insight, “Being Open to Ideas from Every Where,” shows how an egotistical mentality can ruin you in industry and that attitude is everything.

Attitude influences everyone that an engineer encounters, so why choose to react to others poorly without considering their ideas and beliefs?
Team Dynamic

Greatest impact…. new engineer’s ability to learn the business side of working. While school prepares engineers well in technical capabilities, much is left untouched as far as knowledge of businesses and how they work.

Great ideas do not reach fruition because of ..... a deep-rooted corporate mindset to always do what has worked and not risk large amounts of money and research on new ideas.

The professional integrity of the modern engineer is paramount in the success of modern companies.
Long gone are the days of specialization as well.

Unfortunately, success for a young engineer isn’t just laid in their laps.

The fact remains that if you want something for yourself, you have to go after it.

Finally, attitude really sets the tone for your career. Nothing great was ever achieved without passion. Approaching problems with the right attitude promotes passion in ones work. Having an emotional attachment makes the process personal and easier to fully commit.
Eng education misses skills…. the ability to be teamwork oriented with people no matter what their discipline or nationality, to have excellent communication skills, and to understand the difference between academic and industry timescales.

Engineering students must get involved with activities that allow them to interact with persons who are different from them and projects that require more than a day’s work

Engineers and their educators must work to catch up if we are to survive in this ever-shrinking world.
most noteworthy issue .... is the need to think about engineering with a business perspective

An engineer must understand the values, codes of conduct and culture of the company.

If the business mentality is not implemented into the modern engineer’s curriculum, the students in the US will fall behind other cultures
Another part of the paper that had a lot of impact was the parts about the improbability of new ideas ever reaching fruition.

Another issue that had impact was the issue of...

As the engineering world is adapting to society and a global economy, it is important to step out of one’s preconceived notions and take on new rules and challenges that will set themselves apart (the rules?)

One important component of understanding the business side of engineering is the understanding of …..
How do you have an enthusiastic attitude in the workplace

Love what you do. The rest is easy!

Which E is the most important?
Which of the 12 insights is the most important?

4Es go together (Energy, Energize, Edge, Execute)!
For Dr. SA: most important=ALWAYS DELIVERS (on time)!

What do you look for in a good manager?

Ability to lead & empower others (not to be confused with ability to delegate)
Do all (current) engineers have the characteristics or qualities of modern/successful engineers?

Many do, many don’t. The ones having the 4Es (for ex) are the most successful ones.

How can engineers better develop their potential managerial skills?

How can we keep our eng/tech skills when promoted or transferred to a management position?

Learn to lead and be a team player.
Stay involved with product line and customers. Remain as the source to “solve” issues.
Any suggestions for getting the most out of on-the-job training?

Find a mentor! Someone willing to teach and to learn (from your mistakes)

Good sources for engineering news?

Education: www.asee.org
Engineering & economics: www.economist.com
(S&T quarterly & news)
A way to get into the engineering sales career in various companies?
   a) Transfer to (ET) Industrial Distribution
   b) When in technical side be involved with customers.

Any benefits about working non-profit?

   Even non-profit orgs have to be cost-effective, etc. The satisfaction of doing something meaningful (personally) is a major reward. What else could you ask for?
Taking time off (w or m) b/w graduating and starting a job?

If you can afford to travel (with a purpose) do it!
Do not seat still though. The world moves too fast!

How hard is it to start over if laid off?

The older, the harder. Keep your skills sharp, learn new ones, be ahead of the game and you will not be laid off
How important is our final GPA when looking for a job?

Very important if you have no prior engineering experience.

What are some practical ways to get an EDGE? A Master’s?

A M.S., M.Eng. or even a MBA will give you more skills. The edge comes from how you use those skills.
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Give more information on educational system in foreign countries

Is a MS from a European school comparable to a MS from A&M? How different they are, what companies think of them?

US advanced degrees are different from those in Europe and rest of the world. They stress academic work + independence in thinking + individuality
Comments on education

Should the US implement a school system as in the UK where students focus on specific subjects at a younger age?

Should Engineering be a 5yr program to take more stem & soft skill classes?

A 5-year MS as a first Eng. degree is on its way at private institutions (MIT, Standford, etc)
Comments on education

Why American students are behind their peers from India and Asia?

There is a push for advancement in math & science but **will there be enough jobs in the future?**

US students are both behind and ahead. Behind in math skills but ahead on being independent minds and quickly adapting to business practices.... Etc.

More later......

The moment we stop thinking about the future, the USA will not be the USA anymore.
Next lecture

About writing and working in groups