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# So Many Choices Yet So Little Time:

## Planning Your Next Move After Graduation

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# What are My Post-Graduation Options?

Travel

Join the Military, Peace Corps, Volunteer

Technical Grad School

- MS or PhD?
- Same Field as UG or New Field?

To MBA or Not To MBA?

Industry: Get a Job and Make Lots of Money

Academia: Path to Fundamental Science and Research

Government/National Labs: Lots of Options

# Travel and/or Leisure

What Travel May Offer:
- Stop and "Smell the Roses" for a while
- Allow you time to decide what you want to do
- New cultural experiences, languages

Questions to ask yourself:
- How can you afford it?
- How long of a break?

Can be positive or negative with potential employers if you decide to get a conventional job in future
- May be respected for learning new cultures (positive connotation)
- May be perceived as a partyer (negative connotation)
- Depends on how you present it to your potential employer

# Purposeful Travel

Join Military, See the World *and* get experience

- Reserves, National Guard
- May be able to use technical background
- If you enlist, you may be assigned to get an advanced degree
- Expanded network for future employment

Peace Corps and Volunteer Options

- Knowledge of new cultures, languages, etc
- Practical "problem solving" experience
- Potentially "real engineering"
- Expanded network for future employment

# Technical Grad School

General requirements to be accepted into a grad program:

- Maintain 3.0+/4.0 Undergrad GPA
- Good GRE scores (min. accepted score is school dependent)

Additional desired application elements:

- Internships, Research Experience, and/or Technical Summer Jobs – Any of these help!!
- Good recommendations from Faculty

With these you have a very good chance of getting a Research Stipend, Possibly a Competitive Fellowship (Krell, Hertz, NSF GRP, DOE, DOD, etc.)

- Make sure to apply for the fellowships you qualify for!

Remember: You can get paid to go to Grad School!

# Should I get an MS or PhD?

Options: R&D, Academia, Fundamental Science vs. Engineering, Make $$

**PhD**

PhD – Fundamental Science

What is Fundamental Science in Engineering Fields?

- Apply Physics & Chemistry Principles to understand the Why (Usually PhD is fundamental science based)
- PhD required for Tenure Track Faculty Position

**MS**

MS – Engineering, Make $$

- Engineering finds solutions to problems but don't really delve into the Why
- MS is practice for PhD
- Some Employers prefer MS because it shows you can complete a project, and more technical maturity than BS

# Should I get an MS or PhD?

General Comparisons between MS and PhDs

- MS will likely make more $$ long term as you start work sooner than PhD
- MS makes ~$10-15K more than BS, PhD makes ~$10-15K more than MS, **but** you have been in school 2-5 years longer.

Some employers will pay for an advanced degree but usually require commitment to stay for X years with company (this is company dependent)

# Selecting a Graduate School and Advisor

Do your homework on the School, Program, Professor (Advisor), and ask yourself:

Does you technical interest align with the Program? (Sometimes no choice on MS or PhD)

Do you want to work in a large group at a name school?

Do you want to work one on one at a smaller school?

Depends on the School – Sometimes you can't choose your Advisor. If you ***do*** get to choose….

- Where is the professor in their career – Asst, Assoc, Full, Near Retirement?
- Look at Technical Publications to see if Students are first authors on Papers (an indicator of how much professor supports student success)

# Additional Factors in Grad School Selection

Geography? – A way to travel with purpose….

Change Fields? – Additional course work may be required,

Same field? – You may have to take some standard courses that you already *thought* you took (…but may be very different)

If you stay at the same school, you may run out of classes to take…

Tips for making an informed grad school decision:

- Try to meet faculty during your undergrad years
  - Go to conferences, visit the school of interest
- Talk to students in the program at the school – they will give you the inside scoop!

**Go in with Eyes Wide Open**

# To MBA or Not To MBA

Usually 2 years like MS

Some employers will pay for it

Advantages of an MBA:

Potentially More $$ than MS or PhD and Faster Rise in $$ Possible

Engineering Deg + MBA Great Combo, Attractive to Many Employers

May be helpful when pursuing the Entrepreneur route

- Entrepreneurs: Degree Optional, Innovation and Salesmanship Required!
  Note: Less than 5% of all Patents actually make $$

Anecdotal Comments about MBA:

Many Engineers don't like Business Classes because they aren't technical

No challenging math, No real Science (Soft Science - Psychology and Sociology)

# General Trends: Industry, Academia, Government

Industry:

BS, MS – Production, R&D engineering, quality engineering, management

MBA – Quality, procurement, technical sales, management

PhD – R&D

Academia:

BS, MS – Possibility to be a lab technician/lab manager at a university, instructor

PhD – Tenure track or research professor

BS, MBA - Administrative capacity

Government/National Labs:

BS, MS –Engineering solutions, lab technician R&D

PhD – Fundamental science, R&D

MBA – Administrative, project management

Note: all can be eligible for management, this is company/department dependent

# Industry - Get a Job

Make $$ and start paying off Loans

Get Experience Immediately

Possible to have employer pay for advanced degree

A Break from School, No Exams, No Papers, No Professors, BUT ….

If you go back to school, you will have to re-adjust to school

- Monetary adjustment (i.e. lower income, maybe ***much*** lower unless your company pays)
- Loose math skills (i.e. calculus, diff EQ – but you can re-learn)
- More mature engineer when you return, so you'll know when Profs are saying something is important when it really isn't, fundamental science is either interesting or you know it doesn't matter
- You will know what you want out of the degree and will be driven to get it in a timely manner

Tip: Try to stay at a job for 2 years

- When you stay less you don't really gain a mature experience

  Job timeline: 6-18 months - honeymoon, all is rosy,

  12-24 months - cynicism,

  24+ months - status quo; you have figured out the culture

# Academia

**Remember:** You need a PhD for Tenure Track Faculty Position (and really, most any professor position)

- You should aim for lots of technical publications and presentations during PhD - at least 1 per year

Post Doc can be optional, (depends on department), but increases your chances of scoring a position

- Additional focused, fundamental science research experience
- More connections with potential (academic) employers
- Yet another opportunity for travel (with a defined timeframe)
- Limit Post Doc to 3yrs max (longer may be a concern)

Finding Academic Positions:

Talk to your advisor, committee

Make contacts at conferences for potential employers*

*Applies to all types of jobs!!!

# Plan for the Future –Your Vision

Active Goal Setting:

Make a 2 year Plan – Significant Other/Family, Travel, Money, Take a class, Gain expertise, Publish a paper, Present paper at a conference

Make a 5 year Plan – Promotion, Recognition as a Subject Matter Expert (SME), Host a Symposium, Home Ownership, Family, Start your Own Business

Make a 10 year Plan – Be a Millionaire, Management, Consulting, Specific type of Job???

Note: 2yr is fairly well defined, 5 is partial, 10 is variable

**This is a structure that may be adjusted

The goal setting exercise requires you to focus your goals and determine how you will strategically meet them

If you meet your goals early, set new ones and **Congratulations** on your success!

You are not a failure if you do not meet your goals; reset them as things change. Set reasonable goals - it make take several tries to scope them right.

# Tips on Active Goal Setting

Doing your homework increases your chances of meeting your goals

Consult with a mentor that you trust (i.e. experienced professional)

- Don't always trust assigned mentors rather seek out <u>trusted</u> mentoring
- Good mentors will **help** you achieve your goals (or at least help position you to achieve them)
- Talk to other professionals a few years ahead of you and learn from them

**<u>Remember:</u>**

Be Selfish! This is about what YOU want for your future

# Participant Questions

1. Some companies would benefit from having Materials Engineers but still have no idea about the benefits that Materials Engineers provide. What is the best way to discuss this with recruiters and companies in a professional way (i.e. without sounding like you know better than them, offending them)?
    1. First, meet the basic job requirements
    2. Then, discuss ***your value added*** because of your materials background
    3. Salesmanship!

2. What's the right path for an international student? Specifically when deciding between pursuing a career in industry vs working as a researcher/post-doc then becoming a professor?
    1. See "Active Goal Setting" and answer what **you** want to do
    2. Research current citizenship/immigration laws
    3. Learn the culture/language of the country where you plan to work