Graduate School: Is it for You?

- Why do it
- How to pay for it
- How to apply
- What to expect

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This talk will attempt to answer several questions:

What is graduate school?

How do I find major / school?

How do I pay for it?

How do I apply / choose?

What should I expect?
Why Graduate School?

Master’s (M.S.) and/or Doctorate (Ph.D.)

Provide advanced specialized training not available at undergraduate level: “professional practice” (M.S.)
- Medical physics, materials, solar energy, nanotech
- Expand to interdisciplinary fields (incl. business)

Training in research (Ph.D.)
future in research (industrial, national lab, academia)

Because you like to learn!
3.0 GPA typical minimum – can wiggle
Need to know *Why* and *When*:

Have a **career plan** - know *why* you do it
Graduate school won’t answer that
The “*why*” will help keep you motivated
The risk of uncertainty: graduating with a **specialized** degree & **fewer** career options!

Do it now? Or later?

**Engineering:** common to work after B.S. or M.S.
... But a much harder financial adjustment!
Many companies consider grad school a requirement for advancement (& will pay)
“Gain experience”? “Delay”? **It depends.**
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In What Would I Major?

Something of interest; exciting; enjoyable

Use your imagination and curiosity! Get inspired:

- Textbook, lecture, guest speaker
- News: New York Times, Scientific American, other media
- Professional Societies: email updates, “trade mags”

Gain “Professional” experiences involving research:

- **REU** (Research Experience for Undergrads)
- Summer job / campus research
How Do I Find A School?

“Random Walk:” Look up scientists, institutions seen in media (WWW)

More directed (these survive my “cut:”)

- Peterson’s Guides to Graduate Schools (Karrmann Library, WWW)
  - Good for all fields
- PhDs.org: build your own ranking
- Physical Sciences & some Engineering: GradSchoolShopper.com (APS/AIP)
  - (gradschools.com, international)
- Other: USNews (use late if at all…)
Investigating Schools

Find several schools to apply to

_OK_ to “change majors:” projects are _interdisciplinary_

Is your field of interest shared by faculty?
(not just a “side activity!”)

Adequate facilities for your work? On-campus?

View laboratory/research _WWW_ pages
_OK_ to email brief questions!

Location/Cost-of-Living issues
Gathering More Info…

Resources for undergraduates
National Academies (.org)
  Careers in Science and Engineering: A Student Planning Guide to Grad School and Beyond
Graduating Engineer (.com)
Princeton Review (.com/grad)
  GRE demo, applications (commercial)

University-sponsored functions
UW-Madison: “Opportunities in Engineering”
  September deadline
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Graduate tuition is high, but...

<table>
<thead>
<tr>
<th>University</th>
<th>Tuition (2023)</th>
<th>Stipend</th>
</tr>
</thead>
<tbody>
<tr>
<td>UW-Madison EP</td>
<td>$10k (in WI)</td>
<td>Free, +$up to $20.8k stipend</td>
</tr>
<tr>
<td>Purdue ME</td>
<td>$23.8k</td>
<td>Free, +$16k</td>
</tr>
<tr>
<td>Carnegie Mellon EE</td>
<td>$35.7k</td>
<td>Free, +$19k</td>
</tr>
<tr>
<td>Michigan Tech CE</td>
<td>$8.4k</td>
<td>Free, +$9.5k</td>
</tr>
<tr>
<td>U. Washington Nano</td>
<td>$19k</td>
<td>Free, +$27-$35k</td>
</tr>
<tr>
<td>U. Toledo Math</td>
<td>$9.1k</td>
<td>Free, +$12k</td>
</tr>
<tr>
<td>Michigan Chemistry</td>
<td>$28.5k</td>
<td>Free, +$25k</td>
</tr>
</tbody>
</table>
Most graduate work is supported financially

Teaching Assistanceship (TA)
  teach undergraduate courses ($12.9k @ UW EP)

Research Assistanceship: (RA)
  perform research ($19.6k @ UW EP)

Fellowship: Free money!
  Government, department, university ($20.8k @ UW EP)

- Support indicates interest; if none, “take the hint”
- Support can be easier to garner for Ph.D.: varies
Each source of funding has its pros and cons

Teaching Assistance: (TA) (10 @ UW EP – small!)
Usually several positions available
Very time-consuming
Did you want to teach?

Research Assistance: (RA) (51 @ UW EP)
Can be harder to acquire initially
Can be better-paying, research toward degree

Fellowship: (5 @ UW EP)
Competitive, time-consuming application
Several sources provide funding information

Peterson’s Guide, GradSchoolShopper, phds.org
* application information for TA/RA
* number/type of students currently funded

Use the WWW: search by discipline, school, source

UW-Platteville’s Funding Pages:
SPIN: Searchable database of sources
List of Federal Agencies
Oak Ridge Inst. Science & Education (ORISE), list
American Assoc. University Women (AAUW)
Several “pots of money” exist for disciplines, groups

- NSF: $30K (general/science)
- DOE/Computation: $32.4K
- DOE/Fusion: $19.8k
- DOD: $30.5K (NDSEG)
- DHS: $27.6K
- NASA: $30K (1 yr.)
- Hertz Foundation: $31K (general/all)

Google: (agency)

Graduate Research Fellowship
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Application deadlines are approaching (already!)

Apply by mid-December to late January – some May
  * $40-$70 fee
  * Admission often accepted through June

Typically 3.0 GPA required
  * Cumulative, last 60 credits or, no GPA requirement!
  * More than just GPA is considered

Department faculty review applications

Acceptance: “quickly;” Funding: March/April
Graduate Record Examination (GRE) is usually required

General: SAT-like, computer-based, $150
Verbal Reasoning; Quantitative Reasoning

**GRE:** Analytical Writing

- Issue task (45 minutes)
- Argument task (30 min.)

Take the GRE early in order to be received by application deadline (10-15 day delay)

Madison, year-round, ~3+ hours

* Subject test ($130) sometimes required [GRE.org]
  * register by 3/12 to take 4/10 (also 10/10, 11/7)
  * get report by 5/21 (11/20, 12/18)
Important: visit the campus before accepting an offer

VISIT the campus
* If they’re interested in supporting you, they may help bring you to campus ($)

Faculty:
* with whom might you work?
* well-supported? Solo or program effort?

Students:
* a good atmosphere? Excited about work?

Don’t neglect the importance of
* People
* Atmosphere/Comfort
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What’s Ahead: Rough Timeline

Years 1-2:

**Coursework**, balanced with TA/RA

Master’s: Thesis or Non-Thesis (+6 credits)

Year 2-3: Qualifying Exam

Comprehensive: material from grad, u-grad

**Must pass** to formally become Ph.D. student

** after this point, it becomes a “research job” **

Preliminary Exam: Research Proposal

Complete Thesis: Open-ended!
The Ph.D. Can Take A While

Physics: 2003 & 2004

*Remember that graduate school is more of a job than “school!”*
Graduate school can ultimately be financially beneficial

Expected salaries vary widely by field, occupation

In general, M.S. Engineers start at $5k to $9k more than B.S. Engineers did

ME Ph.Ds start at $10k to $20k (!) more than M.S. did, but only ~$9k more than promoted worker with B.S.

Physics majors with M.S. start at ~$10k/year more, 5-8 years after graduation; Ph.D. start another +$20k

The “gains” very strongly depends on field/employer

Don’t do it for money, do it for opportunity

* takes 10-30 years to “catch up” in total earnings

In conclusion, graduate school can be an exciting opportunity to gain expertise in an advanced field.

Know what you’re getting into:

Research your opportunities

Ask questions: of faculty at UWP, target school

Plan ahead! Deadlines approaching!

This talk and links at my homepage (~evensenh).

Questions?