Fall Physics Career/Graduate Town Hall

What this year's graduates wish they had known.

Your Physics Career at WVU

- Early Physicists (before you complete Physics 112)
- Mid-Career Physicist (not any of the other categories)
- Real Juniors (will graduate by summer next year)
- Real Seniors (will graduate by this summer)

Early Physicist

Before completing Physics 112

Learn to be a Successful Student

- Research is important but learn to be an effective student first.
- Get mostly "A"s in all your classes, especially math and physics classes.
- Make yourself at home in the building – get a key to the undergraduate physics lounge and use it.
- Join the Society of Physics Students (SPS) or the WVU Astronomy club (or both) and attend some events.

Get to Know Your Physics Professors – Attend Office Hours

- Dr. Miller, Tu, and Stewart teach 1000 students a semester. Unless you make an effort, you are just a face in the crowd.
- Come to office hours and talk with your professors.
- I have had to decline letters of recommendation for "A" physics students in Physics 112 because I simply didn't know them. A professor cannot write an effective letter of recommendation for a student based on a grade only.

Make Sure Your Adviser Knows You

- Develop a relationship with your physics adviser. Discuss your goals, challenges, and concerns. Ask about various career paths and advice on selecting a research adviser. If you are not getting what you need, request a change in adviser.
- Your adviser is not always your best letter of recommendation but they should be a possible letter. They must know you as a person to write the letter.
- From a former SPS leader, after 4 years his or her adviser did not know him or her well enough to write an effective letter. They had to use a letter from another institution (REU).

The Temptation of Double Majors

- The is a lot of time left in your undergraduate career. Should you consider a minor or double major?
- Yes. If you are considering a career path and additional course work would formalize skills.
- Yes. If you are considering graduate school in the second major.
- No. If the second major will substantially lower your GPA.
- No. If the second major will prevent you from fully participating in a research experience.

When to start research?

- Once you are being successful in classes and have developed connections with the department and fellow students, you can start thinking about finding a research group.
- Remember, research takes time (~10 hours per week) so it takes time away from academics. If starting research too early lowers GPA, it was a mistake.
- As an Early Physicist, there is not pressure to select a research group at this time.
- The SPS suggests the SURE program at WVU as a possible research experience the summer after freshman or sophomore year. (It is not as hard to get into as people make out).

Mid Career Physicist

After completing Physics 112, but not yet a real junior or senior.

The middle years

- Continue to be successful in classes.
- Continue to develop relationships with your professors and advisers.
- Have a presence in the building.
- Select a research group.
- Consider a leadership role in the SPS or the astronomy class.
- Apply for a Research Experience for Undergraduates (REU) or an internship for the summer.
- Start thinking about your career – what you want to do after graduation.

Finding a Research Group

How to find and join a research group is discussed here.

Research Experience for Undergraduates (REU)

- Students at the end of their sophomore and junior year should consider summer research experiences which are discussed here.

Real Juniors

Will graduate next year.

One year to graduation

- Figure out what you want to do next.
- Summer Research Programs are Discussed here.
- The general and physics GRE will be discussed in the spring.

Letters of Recommendation

- For either summer research programs or graduate school you will need letters of recommendation which are discussed here.

Curriculum Vitae (CV)

- To write a decent letter of recommendation, I need to know a bit about you. This is capture in your Curriculum Vita (CV) which is described here.

Real Seniors

Will graduate now.

Applying to Graduate School

- You should be through the GRE. It is time to apply to graduate school which is discussed here.

Graduate School

What is it like?

Graduate School

- Graduate school will be one of the best times of your life.
- You will enter with a cohort of students passionate about physics.
- You will all take the same classes and prepare for the qualifying exam.
- All physics graduate programs teach the same stuff, so if you get into a great program it won't be tons harder than a weaker program.
- Most will TA for large introductory classes the first year.
- Most will join a research group after the first year and no longer have to TA.
- It will take you about 5.5 years to graduate. Enjoy them.

Qualifying Exam

- Most graduate programs require you to pass a Qualifying or Candidacy Exam to advance to a PhD.
- This exam usually tests mechanics, E+M, and quantum at the first year graduate level.
- Most programs give you 2 attempts at each topic with a free attempt as you enter.
- Consider preparing for the free attempt and getting some of the qual out of the way as you enter.

Jobs

What is it like?