Graduate Studies at the TTU Department of Physics & Astronomy

Igor Volobouev
September 6, 2018
Welcome to the Physics Graduate Program!

- Congratulations on continuing your science career at Texas Tech!
- I will cover graduate program basics: degree requirements, courses, research, milestones, financial assistance, etc
- More details can be found in the Graduate Booklet: http://www.depts.ttu.edu/phas/Forms/grad_booklet_2018-08-07.pdf
The Path to Ph.D.

- Fulfill course requirements
- Pass the Prelim Exam
- Choose your Research Advisor (PHAS faculty or adjunct)
- Perform pilot studies and build a research plan
- Form Ph.D. advisory committee and defend your thesis proposal
- Research, research, research (also scratch your head, have eureka moments, present your findings, write papers, apply for grants and scholarships, collaborate, compete, network, become accepted in your field…)
- Find your next job
- Write and defend your thesis

- These steps are not necessarily sequential
Core Courses

• All graduate programs (M.S. and Ph.D.):
  – Classical Dynamics (Fall)
  – Quantum Mechanics I (Fall)
  – Electromagnetic Theory (Spring)
  – Statistical Physics (Spring)

• The Ph.D. program:
  – Quantum Mechanics II (Spring)
  – Advanced Electromagnetic Theory (Fall)

• Core course GPA must be at least 3.0 (required for both M.S. and Ph.D.)
Other Common Courses

- Seminar (required for the first three semesters)
- Instructional Laboratory Techniques in Physics (required for TAs)
- Tool courses (recommended):
  - Methods in Physics I
  - Computational Physics

- Finish your required coursework as soon as you can!

- Additional courses will be up to you and your Research Advisor. Overall GPA in all courses/research taken in the graduate program must be at least 3.0.

- To be a full-time student at TTU, you must enroll in at least 9 credit hours per regular semester (this includes research and thesis/dissertation hours)
The Ph.D. Prelim Exam

• A fairly comprehensive exam on the topics of the four core courses plus some general physics
• Consists of written and oral parts
• The outcome is the pass/fail decision made by the examination committee
• Typically offered before the start of the Fall semester
• Can be retaken once if the first attempt results in a fail
• A prelim-prep course is usually offered in the Summer
Research

• Find a Research Advisor as soon as possible
• Think of your research not only in terms of its intellectual challenges and scientific merit but also in terms of propelling your career as a scientist
• While attaining M.S. or Ph.D. degree is your near-term goal, you should definitely look beyond that
• The book A PhD is Not Enough!: A Guide to Survival in Science by Peter J. Feibelman offers good advice on various aspects of research and scientific career planning
Typical Timeline

- Completion of M.S.-level core courses – one year after enrollment
- Selecting Research Advisor – one year
- Prelim Exam – one year (two years if the first attempt fails)
- Completion of Ph.D.-level core courses – two years
- M.S. degree – two years
- Thesis proposal defense – three years
- Thesis defense and graduation – five to seven years

Note: This graph depicts the number of full-time equivalent years of physics graduate study completed in the U.S. by PhD classes of 2010 & 2011 combined and excludes PhDs who had previous graduate study at a non-US institution.

http://www.aip.org/statistics
Financial Assistance

- TA, RA, or GPTI assistantships
- TTU fellowships and scholarships
  - TTU general fellowships (application deadline Jan 15, 2019)
  - Dissertation completion fellowship
  - Graduate student research support scholarship
  - PHAS graduate scholarships
  - Graduate school and PHAS travel funds
- External fellowships and awards
- You can apply for some of these scholarships yourself. For others, convince your Research Advisor or some other faculty to nominate you. Apply early.
- See [http://www.depts.ttu.edu/gradschool/](http://www.depts.ttu.edu/gradschool/) (click on “Financial Support”)
People

• Graduate Advisor: Igor Volobouev
  i.volobouev@ttu.edu, SCI 109
• Assistant Advisor: Melanie Ungar
  melanie.ungar@ttu.edu, SCI 120B
• Director of Teaching Laboratories: Keith West
  keith.h.west@ttu.edu, SCI 116
• Graduate Affairs Committee Chair: Juyang Huang
  juyang.huang@ttu.edu, SCI 35
• GRASP President: Eric Sowell
  eric.sowell@ttu.edu, SCI 122
The Graduate Association of Physicists was formed to establish a community of students at Texas Tech University. Our main goal is to be a representative body for physics graduate students at Texas Tech University and in the Department of Physics & Astronomy.

Visit https://graspttu.wordpress.com for more info.
What Do We Do?

- Outreach activities
- Social events (Poster competition, Bowling, Superbowl party, etc)
- Monthly meetings (the 1st one in the Fall is 09/07 @ 4pm)
- Graduate talks