Orientation for New Grad Students

- **Introductions and General Information (~60 minutes)**
  - Lance Cooper/Mel Schweighart/Denise Donnelly…..Welcome
  - Jerry Cook……………Information on Facilities/Keys/Inventory
  - Elaine Schulte……..Information for Graduate Teaching Assistants
  - Celia Elliott...........Information on Graduate Fellowships
  - Mary Schlembach........Information on Library
  - Nick LaRacuente/Tanya Perlova.........Physics Grad Student Association
  - Garrett Vanacore/Bill Rose....Graduate Employees Organization

- **Break** (10 minutes)

- **Grad Program Information (~30 minutes)**
  - Lance Cooper….Overview of the Illinois Physics Grad Program
  - Rebecca Wiltfong..............Information on My Physics/Website

- **Welcome Luncheon:** ~12:00 noon, Interaction Room, Loomis Lab

- **TA Training Session:** 2:00 – 5:00 p.m. (Elaine Schulte and others)
New Grad Student Orientation

- What you should have already done: New Student Checklist
- What you will be doing: Life as a UIUC Physics Grad Student
- What else you can do: Things to Do Outside of Physics
New Grad Student Checklist

☐ By now, you should have done the following:

☑ Filled out your paperwork with Mel Schweighart

☑ Met with me for course and teaching assistantship advising

☑ Registered for classes on-line!
   -- You must maintain at least 8 (12) credit hours to be a full-time student and keep an assistantship (fellowship)

☑ Registered for the qualifying exam (if applicable)

☑ Received and accepted your teaching/research assistantship
   -- You should have received your assignments yesterday!
   -- Sign up for mandatory campus TA training next week!

If you haven’t done all of these yet, please see me today!
Life as a UIUC Physics Grad Student

HOW GRAD SCHOOL IS JUST LIKE KINDERGARTEN

ALL DAY NAPPING IS ACCEPTABLE
THERE IS CONSTANT ADULT SUPERVISION

YOU GET COOKIES FOR LUNCH
MOST COMMON ACTIVITY: CUTTING AND PASTING

THERE ARE NO GRADES (YOU JUST HAVE TO PLAY WELL WITH OTHERS)
CRYING FOR YOUR MOMMY IS NORMAL
First Year at UIUC

- There are few course requirements
  - Biophysics
  - Nuclear and Particle
  - Astrophysics
  - Quantum Optics & Information or Atomic Physics
  - Condensed Matter or Emergent States of Matter
  - But it’s likely you will start with
    - Quantum Mechanics I and II (580,581)
    - Mathematical Methods 1 and 2 (508, 509)
    - Electricity and Magnetism (505), Statistical Mechanics (504)
    - Undergraduate Quantum 2 (487), E&M 2 (436), Classical Mech 2 (326), Stat Mech (427)

- And everyone takes 596 (Physics Orientation)
Agenda for Phys 596 (Friday, 11:00-12:50, Rm. 144):

- Research opportunities in the department, finding advisors, etc.
- Instruction/practice in scientific writing and presentation
- Scientific publishing process, using on-line resources, etc., etc.

http://courses.physics.illinois.edu/phys596/fa2014/
**Physics 596 - Course Syllabus - Fall 2014**

(Syllabus is subject to change)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
<th>Lectures</th>
<th>Assignments</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1</td>
<td>Aug 29</td>
<td>Introduction and course expectations</td>
<td>slides</td>
<td>Major Group Assignment</td>
<td>Create and present a group Journal Club</td>
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<td>How to find an advisor</td>
<td>slides</td>
<td>PowerPoint talk – individual referee reports</td>
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<td>Creating/giving a journal club presentation</td>
<td>slides</td>
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<td>2</td>
<td>Sep 5</td>
<td>Research in Experimental Intermediate Energy Physics - Prof. Anne Sickles</td>
<td>slides</td>
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<td>Research in Computational Biological Physics - Prof. Alex Kostinetsiev</td>
<td>slides</td>
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<td>Tips for reading a scientific paper</td>
<td>slides</td>
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<td>Publication process; How to write a referee report</td>
<td>slides</td>
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<td>3</td>
<td>Sep 12</td>
<td>Research in Experimental Biological Physics - Prof. Paul Selvin</td>
<td>slides</td>
<td>mini-Assignment #1 On-line resource activities</td>
<td>Resource Activities</td>
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<td></td>
<td></td>
<td>How to use on-line scientific resources</td>
<td>slides</td>
<td></td>
<td>Prof. Casey Miller (U. South Florida) advice on using scientific resources</td>
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<td>On-line research with SCOPUS</td>
<td>slides</td>
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<td>4</td>
<td>Sep 19</td>
<td>Research in Experimental Atomic, Molecular, and Optical Physics - Prof. Bryce Gadway</td>
<td>slides</td>
<td>mini-Assignment #2 Write an abstract for selected paper</td>
<td>Abstract Papers</td>
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<td>Research in Experimental Condensed Matter Physics - Prof. Peter Abbamonte</td>
<td>slides</td>
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<td>Research in Experimental Intermediate Energy Physics - Prof. Liang Yang</td>
<td>slides</td>
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<td>5</td>
<td>Sep 26</td>
<td>Research in Experimental Condensed Matter Physics - Prof. Vidya Madhavan</td>
<td>slides</td>
<td>mini-Assignment #3? Write an abstract for selected paper</td>
<td>Abstract Papers</td>
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<td>How to write a scientific abstract</td>
<td>slides</td>
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**Agenda for Phys 596**
(Friday, 11:00-12:50, Rm. 144):

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- Instruction/practice in scientific writing and presentation
- Scientific publishing process, using on-line resources, etc., etc.


Make sure you register for this course! It is required!
First Few Semesters at UIUC

- Advanced courses specialize
  - Solid State Physics II
  - Quantum Field Theory I and II
  - Liquid Helium and Superconductivity
  - Particle Physics I and II
  - *Special topics* (Phys 598) courses – one benefit of a big department!!

A few recent Phys 598 offerings:

- Computational Physics and Astronomy *Charles Gammie*
- Nonequilibrium Statistical Mechanics *Klaus Schulten*
- Physics in Two Dimensions *Tony Leggett*
- Ads/QFT Correspondence *Rob Leigh*
- Communicating Physics Research *Lance Cooper*
- Topological Phases in Condensed Matter *Eduardo Fradkin*
First Few Semesters at UIUC

☐ Teaching

- This is important training, giving you an opportunity to make an impression on professors you might do research with, so take it seriously!
- A chance to learn how to be a good teacher: we have many award-winning T.A.’s! This looks good on your resume, especially if you’re applying for faculty positions!

☐ The Qual:

- Start of 2nd year. FAQ: https://my.physics.illinois.edu/info/index.asp?id=6
- Archive of Problems: https://my.physics.illinois.edu/info/index.asp?id=7
Research !!

- Picking an advisor (there are many available)
  - Physics 596 Research Talks in Fall
  - Research opening advertisements on Grad Student Blog
  - Make your own one-on-one arrangements!
  - Start looking early, attend seminars, talk to faculty!

- There are a diverse range of research opportunities in Physics:
Research at Illinois Physics

Research Programs---Department of Physics

As a top-10 ranked department, our philosophy is to maintain strength in all major disciplines while growing targeted areas and promoting interdisciplinary programs.

Condensed Matter Physics
- 10 experimentalists
- 11.5 theorists
- +1 new faculty

High Energy Physics
- 8 experimentalists
- 4.5 theorists
- +2 new

Atomic-Molecular-Optical (AMO) Physics
- 2 experimentalists
- 0 theorists
- +2 new faculty

Intermediate Energy (Nuclear) Physics
- 5 experimentalists
- 1 theorist
- +1 new

Biological Physics
- 6 experimentalists
- 4 theorists

Astrophysics/Cosmology
- 1 experimentalist
- 4 theorists

Cross-Cutting Research
- 3 experimentalists

Physics Education Research
- 3 educators
Even More Research !!

- Additional research opportunities elsewhere
  - Astronomy
  - Electrical and Computer Engineering
  - Materials Science and Engineering
  - Biophysics (not only within our dept.)
  - Mathematics
  - Computer science
  - About 10-15% of our grad students are here

- Other stellar units & program on campus
  - Seitz Materials Research Laboratory
  - NCSA
  - Beckman Institute for Advanced Science & Technology
  - Center for Theoretical Astrophysics
  - Theoretical Biophysics Group
Years 2-N: Research in Full Throttle

- You’re in a group
  - Often supported by an R.A. (some teach)

- The Prelim
  - 15 page paper, oral presentation
  - “Plan” of research
  - Typically in 3rd year

- Thesis defense
  - Your own personal “book”: you’re the world’s expert!
  - Time to Ph.D. ~ 6 years on average (depends on field)
Life After UIUC Grad School

- Universities (post docs and faculty)
- Government Research Laboratories
  - Argonne, Fermilab, Jefferson Lab, NISTs, LANL, Livermore, LBL, Sandia, NRL, …
- Industry
  - Intel, IBM, AT&T, HP, Microsoft, AMD, Shell, Kodak, and hosts of high-tech start-ups
- Computing (hardware and software)
- Wall Street
- Management consulting
Frequently updated information about:

- Academic deadlines and rules
- Research openings
- Fellowship opportunities
- Postdoc and job opportunities

Important Grad Student Info on curriculum, qual, prelim, MS degree, thesis, etc., etc.
How to keep informed?

Physics Grad Student Blog

Frequently updated information about:

- Academic deadlines and rules
- Research openings
- Fellowship opportunities
- Postdoc and job opportunities

Important Grad Student Info on curriculum, qual, prelim, MS degree, thesis, etc., etc.

Important Grad Student Info on workshops: Watch for prelim/final and NSF Fellowship workshops in September!

http://physics.illinois.edu/grad/posts.asp
Upcoming Events

- Taste of Champaign, Westside Park
  - Aug. 15-16, Westside Park
Urbana Sweet Corn Festival

Aug. 22 (Friday night) and Aug 23 (Saturday, all day). For schedule, location, see: http://www.urbanabusiness.com/events/urbana-sweetcorn-festival/
Upcoming Events

- Departmental Picnic
  - Saturday, September 6, 4-7 PM, Illini Grove
Local Things To Do

http://www.visitchampaigncounty.org/

Downtown Festival of the Arts
August 20
Explore the culinary and artistic flavors of the downtown community. Grab some eats and listen to eclectic music as you stroll along viewing fine works of art from artists across the country. Check out Little Artist Alley and make some great crafts of your own with the family.

Illinois Restaurant Week
September 1-17
Enjoy specialty created, multi-course dinners at our wonderful restaurants. Fixed price menus will be offered at participating restaurants. And why not indulge yourself by taking advantage of the exclusive lodging packages being offered this week only? It’s the perfect culinary getaway!

36th Annual Sweetcorn Festival
August 26-27
The 36th Sweetcorn Festival, located in the heart of downtown Urbana, will be serving up delicious hot, buttery sweet corn! Offering free music and entertainment, it's a favorite among locals and visitors alike. Don’t miss this year’s music headliner: Survivor!

Girlfriend Getaways
Take time out with your girlfriends to relax with a spa day, dance through a culinary tour, hop from shop to boutique shop and more. We’ll put together a dream package.

GirlChampaign County
Hit the links at Steve Stricker’s Angus Oaks and enjoy some of the best golfing in Central Illinois. From Par 3 to championship courses, we’ll help you create the perfect weekend.

Family Fun
Affordable family fun has never looked this good. Spend quality time together at our water parks, petting zoo, museums, orchards, planetarium, parks... the list goes on.
Cool places in town

Krannert Center for the Performing Arts
Virginia Theater
Westside and other parks
Downtown Champaign
Cool places in the surrounding area

Lake of the Woods (~15 min)

Turkey Run (Indiana, ~1 hr)

Kickapoo State Park (~30 min)

Allerton Park (~20 min)
Cool places in the surrounding area

Cool cities you can visit:

- ~2.5 hours
- ~3 hours
- ~1.5 hours
Final Pieces of Advice

- Enjoy the ride and take advantage of all the opportunities of this place...This can be one of the best times of your life!
Final Pieces of Advice

- Get to know your classmates...you’ll form some of your closest long-term relationships in grad school!
Final Pieces of Advice

- Work hard, but keep socially active...staying involved in PGSA and other social activities helps relieve the stress of grad school
Final Pieces of Advice

- And always feel free to e-mail or meet with me if you have problems or questions!