Orientation for Physics Graduate Students

Fall 2012

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CWRU
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Director, Graduate Program
Logistics:

> Everyone must have seen Betty Gaffney and/or Kathy Kjaglien in Business Office. Sign up, get paid, etc.

> Mail slots for new students in business office. Check daily. (coming soon).

> You MUST check and ANSWER email daily. Your Case email account is the primary mechanism for Timely communication of critical information.

> See Pat Bacevice regarding keys. Need ID to get these. TA desks will be available in Rock 106.
First Year Courses for Most Students:

Fall:

PHYS 413: Classical Mechanics
PHYS 423: Electromagnetism
PHYS 481: Quantum Mechanics I
PHYS 666 (mandatory, zero credit hours)
UNIV 400 A, B or C as appropriate (zero credit hours)

Spring:

PHYS 414: Statistical Mechanics
PHYS 472: Grad Lab (usually a required course)
PHYS 482: Quantum Mechanics II
PHYS 666 (mandatory, zero credit hours)
What to do if you think you might want to skip one or more of the regular first-year graduate courses:

(1) Review results from Aug 2012 Qualifying Exam; these will appear Friday afternoon, 24 August.

(2) Consult with first-year course instructors.

(3) Consult with Corbin Covault:

   -- Which specific courses have you already taken?
   -- Are you well-prepared in the given topic area?
   -- What other courses would you take instead?
First-year grad course instructors, Fall 2011:

Craig Copi
PHYS 413
Classical Mechanics

Rolfe Petschek
PHYS 423
Electromagnetism

Harsh Mathur
PHYS 481
Quantum Mechanics I
Steps to Register for Fall 2012 Classes:

(1A) If you are planning to take the standard sequence of three courses taken by most first-year graduate students, (PHYS 413, 423 and 481) then come see me (if possible) at
10:00 AM, tomorrow: Friday, 24 August, Rockefeller 207

OR

(1B) Email me: (corbin.covault@cwru.edu) to make an appointment to meet with me during office hours:

Fri 24 Aug: 2:30 to 4:00 PM
Mon 27 Aug: 2:00 to 3:00 PM

THEN

(2) Log on to the SIS system to register for those agreed-upon approved courses. Do this As Soon As Possible after meeting with me but in any case no later than Tuesday morning, 28 August.
Graduate Lab in the Spring 2012:

> Almost always a “required” course, especially for theorists.

> If you have significant lab experience as an undergraduate, you may be “excused” from this.
PhD Program Required Coursework:

> 2 courses from “List A” -- or petition for alternate (“breadth”)

> 1 course from “List B” -- or petition for alternate (“depth”)

> Grad lab or “waiver” to be excused from this.

A TOTAL of 36 credit hours (12 courses)
  (students with masters only need 18 credit hours)

--> All 400, 500 level courses “count”
--> GPA must be kept above B average
--> After first year, courses selected in consultation with research adviser.
--> PHYS 601 `independent research' counts as one of these 12 courses. Sign up for this when you do not already plan to take other courses. Max usually 12 credits of 601.

PHYS 701 `PhD dissertation research' need a total of additional 18 credit hours before your PhD.
Ethics and Academic Integrity

> It's taken very seriously at CWRU.

> Main issue is dealing with assignments to be done out of class: e.g., homeworks, take home exams.

Is “collaboration” allowed?

What does it mean to 'share results'?

Rule of Thumb: It Must Be Obvious if the work is Not your Own. If you collaborate to understand, then you still must “regenerate” your own work.

ASK THE INSTRUCTOR! DON'T ASSUME!
--- Annual review of graduate student progress: “Grad Student Checklist” completed every summer.

--- Students who pass the qual, who maintain a “B” average or better in course work and who have a tentative research home for dissertation work will be declared “Advanced to Candidacy” by Summer 2012.

--- Students must complete an informal “Topical Oral Exam” (presentation on putative PhD dissertation research plan) by end of second year (Summer 2013).

--- Students work with Grad Program director and research advisor/supervisor to plan program of future study, develop timeline to complete the PhD.
PhD Qualifying Exam:

> End of May, 2013, two days, 3 hours each day

> Four topic areas:
  (1) Classical Mechanics
  (2) Quantum Mechanics
  (3) Electromagnetism
  (4) Statistical physics

> “Pass at PhD” level (usually about 60% score) required to advance to candidacy.

> Students who don't pass allowed “second try” Aug 2013.

SEE F.A.Q Document
Your TA responsibilities:

>> You are assigned EITHER to the "Intro Labs" or as a grader for an advanced-level undergraduate course.

>> Intro Lab TA's started.

>> Expect 15 to 20 hours per week for a given full-time TA assignment. Includes time in lab, preparation, grading lab reports and grading intro course exams.

>> We expect your best and most professional effort as a TA. You represent a critical component in the overall educational service we provide to our undergraduates. We are counting on you.

>> "TA mentoring program" -- department will be directly involved in continuous support and evaluation during the semester.

>> UNIV 400 A/B/C is a critical component of your training and preparation as a TA for physics. Please take your efforts here seriously.
Getting involved in research

PHYS 666: = Weekly department colloquium. You “must” be there, sign-in, questions, etc.

Weekly Seminars: Particle Astro and Condensed Matter.

Check out research group web pages.

Not too soon to start introducing yourself to particular faculty that you might want to work for.

Starting in early Spring: “informal” process of tenatively matching new grad students with faculty research groups. Goal is to set up a “summer job” as a trial period for both students and faculty.

Ideally all students are assigned to dissertation research groups by the start of the Fall 2012 semester.
Graduate Study in Physics at Case Western Reserve University

Doctoral Program Objectives

Mission Statement
The Department of Physics at Case Western Reserve University seeks to broaden and deepen the graduate student's understanding of physics, and to promote the progress of physics as a research discipline. Neither of these efforts can be completely separated from the other. A student's understanding of physics is necessarily reflected in research, as research will help to deepen the student's understanding of physics. Thus, the relative emphasis of a student's education gradually shifts during graduate study from early concentration on formal course work to original research that is necessary for a Ph.D. dissertation. Throughout the student's graduate career, s/he will interact with faculty and students from all subdisciplines within the department, as well as with faculty from other departments. Additionally, teaching is an important component in a student's education, particularly in his or her ability to transmit information clearly. Early in the graduate career, nearly all students serve as teaching assistants, under the supervision of the director of graduate studies and the undergraduate laboratory director.

Ph.D. research at CWRU has two main foot:: condensed matter physics and particle/astrophysics, with a third leg involving medical physics. Condensed matter physics programs include nanoscopic physics, ultrafast spectroscopy, optical materials and optoelectronic devices, surface science, and exciting new opportunities in biophysics and biomaterials. These technologically critical fields are rich in applications in optical and electronic innovations, including displays and telecommunications devices, and in new medical technologies.

The primary thrust of the particle/astrophysics research areas includes both experimental and theoretical efforts to understand the evolution and contents of the universe from its earliest moments to the end of time. These investigations require our faculty and students to
Attend colloquia ever week. Attend seminars as you are able.
new to cwru:

technology immersion for learning, living and playing at Case Western Reserve University

1) Account

a. Network ID Activation

Sign me up! Your network ID is automatically generated as soon as you are accepted to CWRU. With your acceptance notification, you will receive a PIN enabling you to activate your CWRU network ID. Please go to help.case.edu and click on the “New to CWRU” button and select the Network ID Activation link. You will also be required to supply a security question and answer pair to help us authenticate you for performing password resets. Your network ID will be activated within an hour.

b. Network ID and Email

Also referred to as “Username” or “Login”, your CWRU network ID is your passport to CWRU’s networking and computing services. Anytime you need to use restricted online resources, such as the Student Information System, WebMail, eStore, Software Center and Launchpad portal, the system will prompt you for your CWRU network ID and password. Your ID will remain the same during your entire CWRU experience.

c. Password requirements

CWRU Information Security requires every user to follow specific guidelines when creating and maintaining their CWRU password. Your CWRU password is initially created using your last name. It is recommended to be made strongly.
Welcome to the Physics Graduate Student Association (PGSA)

The PGSA exists to provide a forum for all Case Graduate Physics students to express internal concerns, as a collective conduit for interaction with faculty and the University, and to provide its members with social activities.

PGSA Constitution: [PDF] [DOC]
PGSA 2005-2006 - 1st year in Review: [PDF] [DOC]

2011-12 Officers

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<thead>
<tr>
<th>Position</th>
<th>Person</th>
<th>Bio</th>
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<tr>
<td>Supreme Leader</td>
<td>David Jacobs</td>
<td>David is a 5th year Phd student in the Particle-Astro Theory group working with Glenn Starkman. He is most interested in topics in gravity, cosmology, and quantum field theory. David was PGSA president for 2010-11, and served as a graduate student senator from 2008-2010. Some of his hobbies include running, mountain biking, and home beer brewing.</td>
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Final Advice:

Take full advantage of all of the human resources available to you: me, faculty, other students, staff, etc.

Study in groups. Build community.

Find time to relax. Laugh. Get out. Enjoy Cleveland.

Think about research all of the time. Constant vigilance.

Act at all times as a professional. As a student and as a TA.

The more you know the more you know that you don't know.

You are not preparing to do important work in the future. You are not going to spend the next 4 to 6 years “getting ready for life”. You are actually going to live it. Sure, hard work is required. But feed your interests and passions in real-time starting now. If you can't find a way to be personally fulfilled as a grad student, it won't happen later either.

Take responsibility for your own path but ask for help when you need it.