

Registration for Fall and Summer classes will begin next week. This newsletter covers common advising questions relating to preregistration and has some announcements for graduating seniors. As usual, this document is not intended to be a substitute for seeing a Physics department advisor or talking to students who are a year ahead of you in classes. The list of Physics department advisors and their office hours is maintained at:

<http://www.phys.ufl.edu/academics/undergraduate/>

Announcements for Seniors

1. We will be having a party in the department for our graduating seniors, their families, and friends on the afternoon of the Friday before graduation (May 2). This has been a fun event in the past, and I encourage all who can attend to do so. Formal announcements will go out in a few weeks.
2. Students who are planning to attend commencement are strongly encouraged to consult the graduation checklist at

<http://www.registrar.ufl.edu/commencement/gradchecklist.html>

3. The Honors program has information about honors and senior theses at:

<http://www.honors.ufl.edu/upperdivisionhonors.html>

<http://www.honors.ufl.edu/forms/thesis.pdf>

A copy of your thesis is due to the Student Services Office by noon on Wednesday, April 16. As in the past, we will ask you to make a short (15 minute) presentation about your thesis. Any of the advisors will be happy to review your thesis prior to submission. You should also, of course, have your mentor proof your thesis.

Requirements for Physics Degrees

The Physics department offers both Bachelor of Science (BS) and Bachelor of Arts (BA) degrees, as well as a minor in Physics. The course requirements for these degrees are listed on our web site at:

BS Degree <http://www.phys.ufl.edu/academics/undergraduate/reqBS.html>

BA Degree <http://www.phys.ufl.edu/academics/undergraduate/reqBA.html>

The minor requires only three appropriately chosen courses after introductory physics, the BA degree requires approximately 30 credits in physics, and the BS degree requires approximately 40 credits in physics. The BA degree was created because many of our students do not go on to graduate school in physics, but go on to jobs in industry, to other graduate schools such as engineering, and to medical school. It has the scheduling flexibility to allow students to take courses outside of physics to further their career goals.

General Advising Comments

In physics (or any other discipline) the courses become more difficult as one goes from the freshman-sophomore courses to the junior level courses to the senior level courses. One reason for the courses becoming more challenging is that you need to have mastered more material, i.e., there are more prerequisites for the junior and senior level courses than for the introductory courses. However, the junior and senior level courses are also just harder. The problems take longer to do and will require deeper thinking. Thus, in choosing courses you should (a) make sure you have the necessary background and (b) make sure that the difficulty level of the course you are taking is not too far beyond those you have taken before hand. In the course descriptions given below, we try to help you in making an informed decision.

Introductory Physics Courses

Before beginning the Junior and Senior level courses described below it is recommended that you finish Physics 1 (PHY 2048 or PHY 2060) and Physics 2 (PHY 2049 or PHY 2061), as well as the associated laboratory courses, PHY 2048L and PHY 2049L.

Fall 2008 Junior and Senior Level Physics Major Courses

Modern Physics - PHY 3101 :

Modern Physics covers such topics as relativity and quantum mechanics. Most students cite modern physics as one of their favorite classes. This class is recommended as the first class you should take after completing the introductory physics sequence. There is another version of this class, PHY 3063, which is offered in the Spring semester; however, there is not much difference between the two courses.

Mechanics 1 - PHY 3221 :

Mechanics 1 covers the same material as the introductory mechanics courses except at a more advanced level. Students who have taken PHY 2060 may skip this course and take Mechanics 2, PHY 4222, in the Spring semester. Students who have taken PHY2048 should take PHY 3221 before taking PHY 4222. This course along with PHY 3101 (Modern Physics) are good 3000 level courses to start with once you have finished the introductory physics sequence.

Electricity and Magnetism 1 - PHY 3323 :

This is the first semester of our Junior/Senior electricity and magnetism sequence. It covers the same topics you would have had in PHY 2049 or PHY 2061, but at a more advanced level. This class is more difficult than Modern Physics and Mechanics 1, and about the same level of difficulty as Thermal Physics.

Thermal Physics - PHY 3513 :

This course is an introduction to thermal physics focusing on thermodynamics. The difficulty level of this course is above Mechanics 1. Thus, if you already taking two physics major classes such as Modern Physics and Mechanics 1, you may wish to postpone this course until next year. PHY 3513 has now been combined permanently with the old PHY 3062. Thus, students who have taken PHY 2060 and 2061 should sign up for PHY 3513.

Introduction to Theoretical Physics - PHZ 3113 :

This course is part of the enriched sequence. It covers the mathematical techniques needed in the junior and senior physics classes and also applies these techniques to some physics problems. This is a challenging course, probably the most difficult of the 3000 level courses; however, students who take the course say that it is very useful in their other physics courses. Thus, although it is part of the enriched sequence, I recommend it for anyone who wishes to improve their mathematics background with the understanding that it is a challenging course for even our best students.

Electricity and Magnetism 2 - PHY 4324 :

This is the second course in the upper level electricity and magnetism sequence. It covers time dependent phenomena in electromagnetism.

Quantum Mechanics 1 - PHY 4604 :

This is the first course in our senior level quantum mechanics sequence. It is required for both the BA and BS degrees in physics because quantum mechanics plays such a central role in current physics research. This is not an easy course, and it is recommended that you take at least one other 4000 level course before taking quantum mechanics. A course in linear algebra is also encouraged before taking this class.

Advanced Lab 1 - PHY 4802L :

This lab covers building electronic circuits. The formal prerequisites are introductory electricity and magnetism (PHY 2049 or PHY 2061) and differential equations. Because this is a 4000 level course, we recommend that you finish most of the 3000 level courses before taking this course. You should also be aware that the course demands a considerable amount of time in the lab. You can expect to spend approximately 12 hours per week in the lab.

As noted above there will be two sections of PHY 4802L in the Fall. You will need to get a section number from Student Services (NPB 1210) in order to register for this class.

Advanced Lab 2 - PHY 4803L :

This lab covers modern physics experiments like nuclear magnetic resonance, X-ray scattering, lasers and light scattering, low temperature transport, etc. Like PHY4802L, this is a very time consuming course, and you will need to get the section number Student Services (NPB 1210).

In recent years the enrollment has been very high in Lab 2 in the Spring and somewhat under enrolled in the Fall. You can take either Lab 1 or Lab 2 first. We encourage as many people as possible to take Lab 2 in the Fall. It will be a more pleasant experience than in the Spring when virtually all the experiments are in use at the same time.

Physics Electives:

PHZ 4390 - Introduction to Elementary Particle Physics

This course is an introduction to both theoretical and experimental elementary particle physics. The only prerequisite for this course is Modern Physics, although a more advanced class in quantum mechanics will be helpful.

Summary of Course Offerings

Fall 2008

PHY2060 Enriched Physics w/Calc. 1
PHY2061 Enriched Physics w/Calc. 2

PHY3101 Intro. Modern Physics

PHZ3113 Intro. Theor. Physics
PHY3221 Mechanics 1

PHY3323 Electromagnetism 1
PHY4324 Electromagnetism 2

PHY3513 Thermal Physics 1

PHY4604 Quantum Mechanics 1

PHY4802L Laboratory Physics 1
PHY4803L Laboratory Physics 2

PHZ4390 Intro. Elem. Part. Physics

Spring 2009

PHY2060 Enriched Physics w/Calc. 1
PHY2061 Enriched Physics w/Calc. 2

PHY3101 Intro. Modern Physics
PHY3063 Enriched Modern Physics

PHY3221 Mechanics 1
PHY4222 Mechanics 2

PHY3323 Electromagnetism 1
PHY4422 Optics 1

PHY3513 Thermal Physics 1
PHY4523 Statistical Physics

PHY4605 Quantum Mechanics 2

PHY4802L Laboratory Physics 1
PHY4803L Laboratory Physics 2

PHZ4710 Intro. Biophysics
PHY4905 Intro. Solid State Physics

Honors Courses

A few of our courses are also part of the Honors Program: PHY2060, PHY2061, PHZ3113, PHY3063. Any physics major can take these courses, but you may need our help in signing up for them if you are not in the Honors Program. Any advisor or Chris Scanlon can help you get into these classes. This year these classes are listed under the Honors section of the schedule of classes.

Math Electives:

Both the BS and BA degrees require 3000-level or higher math/computer science electives. The BA degree requires only one such course, while the BS degree requires two.

We recommend that you take at least one course in computer programming if you are not already familiar with programming. A good introductory course, which also satisfies the math elective requirement, is CGS 2421, Computer Programming for Engineers. This course is listed under Industrial and Systems Engineering. Also, before taking quantum mechanics you should take a course which covers linear algebra like MAS 3114, Computational Linear Algebra. (Linear algebra is also covered in PHZ 3113.)

Other Electives:

Writing in the Physical Sciences - ENC3254:

This course has been developed to help you improve your writing and speaking skills that are necessary for success as a scientist. The class focuses on documents that are important for your career such as graduate school application essays, resumes, and cover letters.

EEL 3701C - Digital Electronics:

A number of you have expressed an interest in taking a course in digital electronics after you complete PHY 4802L, which is largely analog electronics. The above electrical engineering course covers digital electronics and contains a laboratory component. Students who have completed PHY 4802L will be well prepared for this course.

If you have any questions, comments, or additions please contact Selman Hershfield at selman@phys.ufl.edu .