

# Majors' Handbook

## Information for Students in Department of Chemistry and Physics

(Last Revision: September 2011)

### Contacts

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Website: [www.aug.edu/chemphys/](http://www.aug.edu/chemphys/) general information, events, faculty research info, etc.

Information on seminars, special functions, and departmental social events will often be emailed to majors.

### **Faculty Contact Information: phone, email, office room number**

Dr. Crute (Professor of Chemistry & Department Chair)

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Dr. Datta (Assistant Professor of Physics)

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Dr. Hauger (Professor of Physics)

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Dr. Hobbs (Associate Professor of Chemistry)

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Dr. Myers (Professor of Chemistry)

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Dr. Poppeliers (Associate Professor of Physics)

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Dr. Stephens (Associate Professor of Chemistry)

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Dr. Gutierrez (Engineering)  
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Dr. Krupa (Chemistry)  
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Dr. Robbins (Chemistry)  
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Mr. Rucker (Weather and Climate)  
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Dr. Scarmoutzos (Chemistry)  
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Ms. Steeper (Geology)  
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Dr. Willoughby (Geology)  
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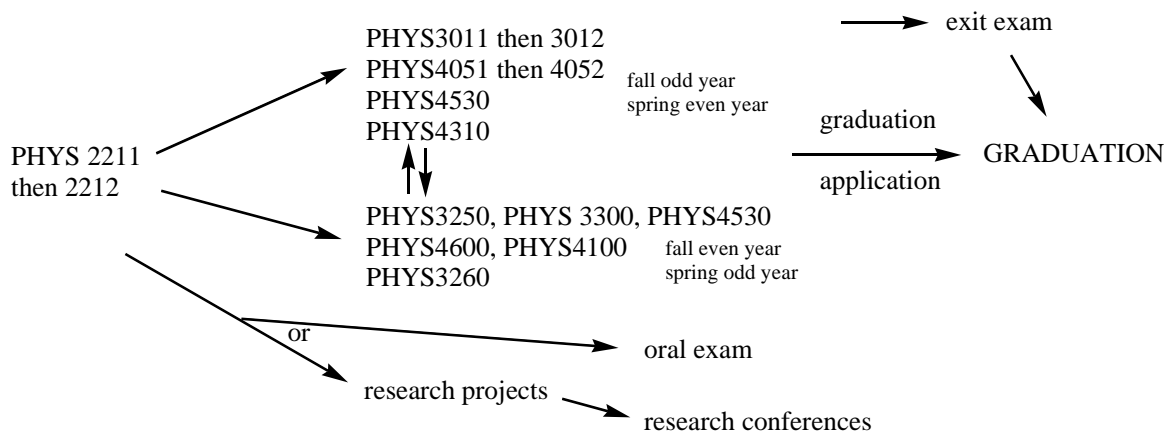
**Departmental Staff Contact Information: phone, email, office room number**

Ms. Nancy Bourne-Burke - Administrative Assistant  
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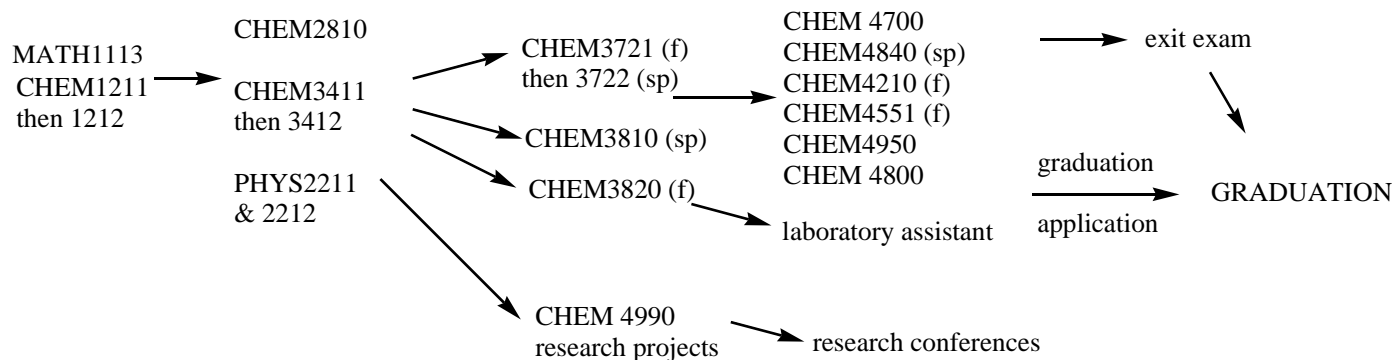
Ms. Thuy Nguyen- Laboratory Coordinator  
706-667-4022      [tnguyen@aug.edu](mailto:tnguyen@aug.edu)      SCI-E3019

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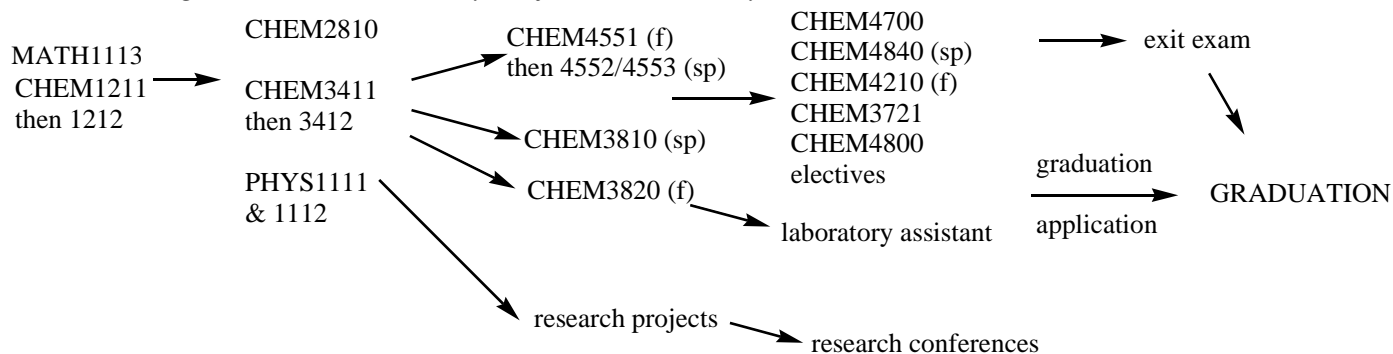
### General Progression as a Physics Major



### General Progression as a Chemistry Major- Professional Track



### General Progression as a Chemistry Major- Biochemistry



### Advisors

You will meet with your advisor at least once per semester. After meeting with your advisor, your PIN for registration will be available to you, without which you may not register. These sessions are designed to help you stay on track with required courses and prerequisites, meet university requirements, and plan for post-graduate work and careers. You may wish to choose an advisor based on their expertise (such as premedical, prepharmacy, or preengineering), their discipline (such as analytical chemistry or health physics) or your familiarity with them through a course.

Otherwise advisors are assigned alphabetically according to your last name. Advisors will try to make helpful suggestions and provide the benefit of their knowledge of university regulations and expertise in their academic disciplines. While you will be required to see them each fall and spring prior to the registration week, you should see them any time you feel that you could benefit from their advice.

#### Advisor List

##### *Chemistry Advisors*

Last Names A – G, physical chemistry, secondary education: Dr. Zuckerman

Last Names H – Q, organic chemistry: Dr. Miao

Last Names R – Z, organic chemistry, medicinal chemistry: Dr. Stephens

Sr Pre-medical and pre-dental, biochemistry: Dr. Hobbs

Fr-Jr Pre-medical and pre-dental, analytical chemistry, forensic chemistry: Dr. Myers

Pre-Pharmacy: Dr. Crute

##### *Physics and Preengineering Advisors*

Last Names A – L:

Dr. Colbert or Dr. Datta

Last Names M – Z:

Dr. Hauger or Dr. Poppeliers

#### **Career Information**

Graduates with science degrees generally have a wide variety of career options available to them. The ASU Career Center ([http://www.aug.edu/career\\_center/](http://www.aug.edu/career_center/)) can offer job leads, help with construction of a good resume, offer mock interviews, etc. Your advisor can assist you with career ideas. The department occasionally receives messages from companies that are looking to hire our graduates, and we try to share that information.

#### **Graduate School**

Completing a chemistry or physics degree offers excellent preparation for graduate study in a variety of areas. Generally the selection of an appropriate graduate program requires careful consideration of not only the schools of interest, but the specific faculty mentors and research projects. Students will find it helpful to explore options with the help of their faculty advisors. Since graduate programs offer research degrees, it is advisable for students to become involved with undergraduate research projects for valuable experience, insight, and increased competitiveness for quality graduate programs. Unlike professional programs such as medical school and law school, most graduate programs in the sciences pay students an annual stipend as a graduate student (typically \$25,000 - \$30,000 per year).

#### **Pre-professional programs of study**

Many students are satisfying prerequisite courses for specialized programs of study. Some of these programs are:

- Medicine
- Dentistry
- Engineering

- Pharmacy
- Physicians Assistant
- Health/Medical Physics
- and many others.

Some students intend to transfer into these programs once they complete the required prerequisite courses while others intend to complete the bachelor's degree before beginning the professional program. You should speak to your advisor about which of these options is best for your situation. Generally students have more options available and are stronger candidates for the professional programs if they make progress towards a degree, even if their intention is to transfer before completing the degree.

### **Course load**

For reasons such as financial aid, insurance, etc., most students will want to be classified as full time which requires a course load of at least 12 hours. To complete 120 hours for the degree plus 4 hours of wellness courses, one must average just over 15 hours per semester to graduate in 4 years. Some students may wish to take some of the lower level courses in the summer so they can average less than that and still finish in 4 years.

Generally it is best to sign up for a manageable load that you can do well in and retain the knowledge. Do NOT get in the habit of signing up for too many courses and withdrawing or earning poor grades. You do not want withdrawals or poor grades on your transcript.

### **Core courses vs. majors courses**

A science major generally takes courses that build on each other. This means you need to retain knowledge for the next courses. This also means that you need to take the courses in your major that will allow you to make adequate progression towards the degree. This usually means that you should put off some of the core courses until your junior and senior years. Majors outside of science tend to do the opposite, so listen to your advisor when it is suggested that you take the math and science now and put off the history and political science until later. Many courses have prerequisites. Your advisor can help you keep it all straight.

### **Tutoring in Chemistry & Physics Learning Center**

The learning center offers a benefit to students in two ways. Students in their first couple years of study have free access to tutors who can assist them with their classes. Once students reach the upper level courses in the curriculum, they may have the opportunity to serve as paid tutors in the center. The classes that are generally supported in the tutoring center are

- CHEM1211 and 1212
- PHYS1111 and 1112
- PHYS2211 and 2212
- CHEM3411 and 3412

Each tutor has expertise in a different set of courses. You will need to check the posted schedule (<http://www.aug.edu/chemphys/> then click on Tutoring Center link on left menu) each semester to find out which tutors support the class you are taking and which hours they are available in the tutoring center.

### **Student Laboratory Assistants**

Chemistry and physics majors frequently serve as paid student assistants, with the most common assignment being in a lower level laboratory course. Instructors in these courses need good, reliable help from the majors. Upper level students generally gain much from the experience, in addition to earning some money. Duties for a student in this role include preparation of materials for experiments, supervision and assistance during the experiment, and cleanup at the conclusion of the laboratory period.

### **Scholarships**

There are a variety of scholarships available through the department for chemistry and physics majors.

- ADP scholarships are general scholarships awarded to students who show great academic potential. Students selected for these scholarships will be informed of their selection
- Research scholarships are awarded to students who have demonstrated proficiency in their initial research efforts and will be continuing a research project. More information on these may be obtained by discussing the matter with the faculty member who is supervising your research
- Applications for Mixon and Dinwiddie Chemistry Scholarships are available each spring to the outstanding chemistry majors and are awarded based on academic achievement and service to the department. The Dinwiddie scholarship also requires demonstrated interest in the fine or performing arts.
- Other scholarship programs- talk with your advisor about other scholarships that might be available to you such as the Savannah River Scholars Program or the PRESTIGE scholarships.

### **Oral Examination**

A physics degree graduation requirement is completion of an oral examination. Chemistry majors will take the CHEM 4800 course to satisfy oral presentation requirements.

#### *Option 1- oral exam questions*

If you do not complete and present results of a research project, then your oral exam will consist of a set of questions that you will orally present to your committee during a 1-hour exam block. This exam will take place during the spring semester prior to your graduation. You will receive your customized set of questions a couple weeks prior to your examination date.

#### *Option 2- research presentation*

Many students choose to complete a research project. If you choose to orally present the results of your research at an appropriate conference, then your presentation may be evaluated by the department faculty and used to satisfy your oral examination requirement. Successful research projects often require more than one semester, so you are encouraged to start research no later than your junior year.

Students who are unsuccessful in their first attempt at satisfying the oral examination requirement must repeat the process until they are successful in order to meet this graduation requirement.

## Research Projects

One of the most meaningful endeavors you can undertake as a college student is participation in undergraduate research. You will work with a faculty mentor to design and carry out a research project in some facet of science that is interesting and appropriate. Different faculty have various interests, and the types of projects will vary considerably. Presentation of your research may satisfy your oral exam requirement. You may be eligible for a research scholarship as well. It will certainly be a memorable and rewarding experience.

Generally students begin research at the junior year or before. Contacting various faculty in the department will help you identify research that interests you. Once you work out the details with your faculty mentor concerning research that you will pursue, you may choose to register for course credit. You will formalize an agreement with your research advisor about the goals for the project, the hours that you will devote to it, the report that will describe it, etc. Generally you can expect that three hours of research work per week will be necessary for each one hour of course credit.

Physics faculty are involved in experimental, computational, and theoretical research in the areas of geophysics, atomic & molecular physics, instrumentation, and materials physics research. Chemistry faculty are involved in synthetic, analytical, computational, and theoretical research in analytical, biological, inorganic, medicinal, organic, and physical chemistry.

## Graduation Application

Prior to the midterm date of the semester before you graduate (for a May graduation date this usually means an October deadline), you will need to submit a graduation application ([http://www.aug.edu/registrar\\_va/forms/Application%20for%20Grad.pdf](http://www.aug.edu/registrar_va/forms/Application%20for%20Grad.pdf)). You will need to fill out a "clean" checksheet of the courses you have taken to satisfy your degree, identify remaining requirements for your major(s) (and minor(s) if you will have a minor), fill out the graduation application, and obtain the proper signatures (from your major and minor advisors, department chair(s), and business office to verify that you have paid the graduation fee). Getting the paperwork filled out and verifying that it is correct can take some time, so start ahead of time to give your advisor sufficient time to review it properly.

- Biochemistry track checksheet- <http://www.aug.edu/chemphys/BiochemistryChecklist.pdf>
- Physics checksheet- <http://www.aug.edu/chemphys/PhysicsChecklist.pdf>
- Chemistry- professional track checksheet- <http://www.aug.edu/chemphys/ChemistryProfessionalChecklist.pdf>
- Other checksheets (such as secondary education certification tracks) are available from your advisor

## Exit Exam

Prior to graduation each student must complete an exit exam. Chemistry majors must score at least 25 correct for the Diagnostic of Undergraduate Chemistry Knowledge exam in Chemistry. This test is scheduled through the Dept. of Chemistry and Physics. Physics majors must score at least 135 for the ETS Major Field Test in Physics. This test must be scheduled by the student through the ASU Testing Center. A student who does not earn a sufficiently high score on the test will not meet this graduation requirement and must take the test again to earn at least the minimum score.

**Clubs**

Both the Physics Club (<http://www.aug.edu/chemphys/physicsclub.html> ) and the Chemistry Club (<http://www.aug.edu/chemphys/chemistryclub.html> ) are vibrant, active organizations with a variety of activities each year. These clubs offer social interaction, professional development, and opportunities for service to the school and community. The clubs typically meet monthly and communicate through email lists, pipeline announcements, posted fliers in Science Hall, and announcements in science classes.