College of Science

Biochemistry
Departmental Honors in Biochemistry requires the following sequence of courses totaling 12 credit hours:

Research/thesis requirement
BCHM 4910  Requires at least two semesters of honors research with 4 credits per semester (for a total of 8 credits) under the same faculty mentor. Only regular tenured or tenure-track faculty within the department may serve as mentor for departmental honors in biochemistry.

BCHM 4920  Honors Thesis in Biochemistry (1)

Lecture course requirement
Three (3) additional hours from the following list of BCHM Honors courses:

BCHM 3010  Molecular Biochemistry (3)
BCHM 4310  Physical Approach to Biochemistry (3)
BCHM 4320  Biochemistry of Metabolism (3)
BCHM 4360  Molecular Biology: Genes to Proteins (3)
BCHM 4400  Bioinformatics (3)
Requirements for Departmental Honors in Biochemistry include completion of a senior research thesis and an oral research presentation to the departmental faculty in a seminar setting. The research presentation and thesis are to be completed in the same semester either concurrent with or after the second semester of the required BCHM 4910 honors research. Students will register for BCHM 4920 in the semester they intend to write their thesis and present their research. The final thesis must be approved by the research advisor and the BCHM 4910 honors coordinator, then submitted to the department and the Calhoun Honors College in order for students to receive Departmental Honors.

To be eligible for Departmental Honors in Biochemistry you must achieve a grade of C or better in all required Biochemistry courses, a GPR of 3.30 or better in all required Biochemistry courses, and an overall GPR of 3.40 in all courses.

Up to eight credit hours of GEN/BCHM 4910 may be used towards the science requirement so that the total credits taken by honors students need not be more than those taken by non-honors students.

To earn dual Departmental Honors in Biochemistry and Genetics, students must complete the lecture course requirements for both Biochemistry and Genetics Departmental Honors, three semesters of honors research with four credits per semester (8 credits in biochemistry and four credits in genetics), and BCHM 4920.

**Biological Sciences**

Departmental Honors in Biological Sciences requires the following sequence of courses totaling 12 credit hours:

- **BIOL 4910** Undergraduate Research in Biological Sciences (2-4) for a total of 6 credit hours
  Over two semesters under a single research advisor.

- or -

- **BIOL 4940** Undergraduate Research Microbiology (2-4) for a total of 6 credit hours
  Over two semesters under a single research advisor.

The additional 4-8 hours are to be taken from the following courses:

- **BIOL 3020** Invertebrate Biology (3)
- **3030** Vertebrate Biology (3)
- **3040** Biology of Plants (3)
- **4000** Insect Morphology (4)
- **4010** Plant Physiology (3)
- **4060** Introductory Plant Taxonomy (3)
- **4080** Comparative Vertebrate Morphology (3)
- **4090** Comparative Vertebrate Morphology Laboratory (2)
- **4110** Limnological Analyses (2)
- **4140** Basic Immunology (3)
- **4200** Neurobiology (3)
- **4320** Animal Histology (3)
The honors courses taken will be selected with the approval of your advisor, the course instructors, and the chair of the department. Research results from BIOL 4910 will be written in a style appropriate for publication and presented in an open seminar to the Biological Sciences faculty.

Chemistry
Departmental Honors in Chemistry requires four of the following courses totaling 12 credit hours:

CH  4430  Research Problems (3)
     4440  Research Problems (3)

The additional six semester hours must be taken from the following list.

CH  3320  Physical Chemistry (3)
     4010  Organometallic Chemistry (3)
     4020  Inorganic Chemistry (3)
     4040  Bioinorganic Chemistry (3)
     4130  Chemistry of Aqueous Systems (3)
     4210  Advanced Organic Chemistry (3)
     4270  Organic Spectroscopy (3)
     4350  Atomic and Molecular Structure (3)
Departmental Honors in Chemistry requires a two-semester sequence of research and a senior honors thesis while registered in CH 4430/4440. Both semesters should be performed on a continuation of the same research project with the same advisor, since research of the caliber required for an honors thesis cannot be completed in one semester. Therefore students should make sure that the project embarked upon is one of interest and that s/he can work well with the advisor chosen by the student. In addition the research advisor will choose an advisory committee of two other faculty members who will read the thesis and provide feedback. Students will write an interim paper at the end of CH 4430 and a full research paper at the end of CH 4440. The advisory committee will give an oral examination on the research project.

**Genetics**

Departmental Honors in Genetics requires the following sequence of courses totaling 12 credit hours:

Research/thesis requirement

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 4910</td>
<td>Requires at least two semesters of honors research with 4 credits per semester (for a total of 8 credits) under the same faculty mentor. Only regular tenured or tenure-track faculty within the department may serve as mentor for departmental honors in genetics.</td>
<td>8</td>
</tr>
<tr>
<td>GEN 4920</td>
<td>Honors Thesis in Genetics (1)</td>
<td>1</td>
</tr>
</tbody>
</table>

Lecture course requirement

Three (3) additional hours from the following list of GEN Honors courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 3020</td>
<td>Molecular and General Genetics (3)</td>
<td>3</td>
</tr>
<tr>
<td>4100</td>
<td>Population and Quantitative Genetics (3)</td>
<td>3</td>
</tr>
<tr>
<td>4200</td>
<td>Molecular Genetics and Gene Regulation (3)</td>
<td>3</td>
</tr>
<tr>
<td>4400</td>
<td>Bioinformatics (3)</td>
<td>3</td>
</tr>
<tr>
<td>4500</td>
<td>Comparative Genetics (3)</td>
<td>3</td>
</tr>
</tbody>
</table>

Requirements for Departmental Honors in Genetics include completion of a senior research thesis and an oral research presentation to the departmental faculty in a seminar setting. The research presentation and thesis are to be completed in the same semester either concurrent with or after the second semester of the required GEN 4910 honors research. Students will register for GEN 4920 in the semester they intend to write their thesis and present their research. The final thesis must be approved by the research advisor and the GEN 4910 honors coordinator, then submitted to the department and the Calhoun Honors College in order for students to receive Departmental Honors.

To be eligible for Departmental Honors in Genetics you must achieve a grade of C or better in all required Genetics courses, a GPR of 3.30 or better in all required Genetics courses, and an Overall GPR of 3.40 in all courses.

Up to eight credit hours of GEN/BCHM 4910 may be used towards the science requirement so that the total credits taken by honors students need not be more than those taken by non-honors students.
To earn dual Departmental Honors in Genetics and Biochemistry, students must complete the lecture course requirements for both Genetics and Biochemistry Departmental Honors, three semesters of honors research with four credits per semester (8 credits in genetics and four credits in biochemistry), and GEN 4920.

**Mathematical Sciences**

Departmental Honors in Mathematical Sciences requires the following sequence of courses totaling 8 credit hours:

MTHS 3820  Honors Seminar (1) for a total of two credit hours over a period of two semesters
MTHS 4820  Undergraduate Research (3) for a total of six credit hours over a period of two semesters

Students beginning the Departmental Honors program in Mathematical Sciences must complete two credits of MTHS 3820, taken in both semesters of the junior year, and six credits of MTHS 4820 in the senior year. MTHS 3820 is a weekly seminar that prepares students for their senior thesis. In this course, students undertake readings in the philosophy and foundations of mathematics and in research strategies. Students also attend the thesis presentations of senior honors students. By the end of the second semester of MTHS 3820 the student is expected to have identified a research topic and an advisor.

In MTHS 4820, taken in both semesters of the senior year, the student pursues the research topic under the guidance of the faculty advisor. By the end of the first semester the student submits a written interim report and makes an oral presentation on the research progress to date. By the end of the second semester the student submits a written thesis and presents an oral defense to honors students and faculty.

**Microbiology**

Departmental Honors in Microbiology requires the following sequence of courses totaling 12-13 credit hours:

MICR 4910  Undergraduate Research in Microbiology (3) for a total of 6 credit hours taken over two semesters under a single research advisor
MICR 4940  Undergraduate Research in Microbiology (2-4) for a total of 6 credit hours Over two semesters under a single research advisor.

-and- Two (2) honors courses selected from the following:

MICR 4000  Public Health Microbiology (3)
MICR 4010  Microbial Diversity and Ecology (3)
MICR 4070  Food and Dairy Microbiology (4)
MICR 4100  Soil Microbiology (3)
MICR 4110  Pathogenic Bacteriology (3)
MICR 4120  Bacterial Physiology (3)
MICR 4130  Industrial Microbiology (3)
MICR 4140  Basic Immunology (3)
To qualify for Departmental Honors you must earn a grade of A or B in MICR 3050 (General Microbiology).

The goal of MICR 4910, which is normally undertaken in the senior year, is to provide honors students with practical applications of the scientific method through the design and execution of an original research project. The results of the research project will be written as a manuscript suitable for publication, and will be presented in a seminar to Microbiology faculty and other honors students. Students are expected to choose and to arrange to work with a faculty research advisor prior to registering for the first semester of MICR 4910.

**Physics**

Departmental Honors in Physics requires the following sequence of courses totaling 11-13 credit hours:

**PHYS**
- 3000  Introduction to Research (1)
- 4010  Senior Thesis (1-3) for a total of four to six credit hours over a period of two semesters

In addition, you must take at least six credits of 3000-4000-level honors courses from the following list:

**PHYS**
- 3210  Mechanics I (3)
- 3220  Mechanics II (3)
- 3250  Experimental Physics I (3)
- 3260  Experimental Physics II (3)
- 3550  Modern Physics (3)
- 4170  Introduction to Biophysics I (3)
- 4320  Optics (3)
- 4410  Electromagnetics I (3)
- 4420  Electromagnetics II (3)
- 4460  Solid State Physics II (3)
- 4520  Nuclear and Particle Physics (3)
- 4550  Quantum Physics I (3)
- 4560  Quantum Physics II (3)
- 4650  Thermodynamics and Statistical Mechanics (3)

The Departmental Honors program in the Department of Physics and Astronomy is open to honors students with junior standing that are judged capable of pursuing and completing a comprehensive research project under the supervision of a faculty advisor. To participate in the program you must be recommended by your advisor or honors director and approved by the department chair. You will then be required to satisfactorily complete the required honors courses, culminating in an approved thesis.

In your junior year you will take PHYS 3000, which is designed to introduce you to research activities within the department and to help you identify a research project and a faculty advisor to supervise your senior-year thesis work.
In your senior year you will take PHYS 4010. You will be required to do a literature survey of your chosen topic, conduct a research program, and present a summary of the background and results of the project in the forms of a senior thesis and a public seminar. The thesis must be approved by the department chair.