

## 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)  
4310 Physical Approach to Biochemistry (3)  
4320 Biochemistry of Metabolism (3)  
4360 Molecular Biology: Genes to Proteins (3)  
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 Clemson University 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 (HON) (2-4) for a total of 6 credit hours taken under a single research advisor for six consecutive semester hours.
- BIOL 4980 Thesis in Biological Sciences (HON) (1). Taken the semester the thesis is written and presented. A grade of Pass is required to receive Departmental Honors.

An additional 5 credit hours of Honors course work are required in BIOL at the 3000 level or higher. Contract Honors courses are excluded. Honors courses in other departments require the pre-approval of the Department's Honor Liaison.

Research results from BIOL 4910 (HON) are submitted as a thesis written in a style appropriate for publication and presented in two open seminar forums: 1) at a national, regional, or local meeting and 2) at the Department of Biological Sciences Undergraduate Research Symposium. Student theses are approved and submitted by the research faculty mentor to the Department's Honors Liaison. Students are expected to choose and arrange to work with a faculty research advisor prior to registering for the first semester of BIOL 4910 (HON).

### ***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

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| GEN | 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 genetics. |
| GEN | 4920 | Honors Thesis in Genetics (1)  |

#### Lecture course requirement

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

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|-----|------|--|
| GEN | 3020 | Molecular and General Genetics (3)         |
|     | 4100 | Population and Quantitative Genetics (3)   |
|     | 4200 | Molecular Genetics and Gene Regulation (3) |
|     | 4400 | Bioinformatics (3)                         |
|     | 4500 | Comparative Genetics (3)                   |

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 Clemson University 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:

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| MATH | 3820 | Honors Seminar (1) for a total of two credit hours over a period of two semesters         |
|      | 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 MATH 3820, taken in both semesters of the junior year, and six credits of MATH 4820 in the senior year. MATH 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 MATH 3820 the student is expected to have identified a research topic and an advisor.

In MATH 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 credit hours:

MICR 4910 Undergraduate Research in Microbiology (HON) (2-4) for a total of 6 credit hours taken under a single research advisor for six consecutive hours.

MICR 4980 Thesis in Microbiology (HON) (1). Taken the semester the thesis is written and presented. A grade of Pass is required to receive Departmental Honors.

An additional 5 credit hours of Honors course work are required in MICR at the 4000 level or higher. Contract Honors courses are excluded. Honors courses in other departments require the pre-approval of the Department's Honor Liaison.

Research results from MICR 4910 (HON) are submitted as a thesis written in a style appropriate for publication and presented in two open seminar forums: 1) at a national, regional, or local meeting and 2) at the Department of Biological Sciences Undergraduate Research Symposium. Student theses are approved and submitted by the research faculty mentor to the Department's Honors Liaison. Students are expected to choose and arrange to work with a faculty research advisor prior to registering for the first semester of MICR 4910 (HON).

### *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.