

## Departmental Honors in Chemistry

The Department Honors programs are aimed at those students who could benefit from an in-depth exposure to the methodology of a field to an extent greater than would be appropriate for most other students. Department Honors Programs offer the student the opportunity to engage in a unified, scholarly project<sup>1</sup>.

### University Honors vs. Departmental Honors

A student can receive Departmental Honors without participating in the University Honors Program. However, to receive University Honors, a student must complete Departmental Honors and must complete the 499 Honors Thesis form, registering for between 0 and 8 credits. Requirements for both programs are summarized in the table below:

	University Honors	Departmental Honors (only)
Must be in the University Honors Program	Yes	No
Must complete Departmental Honors	Yes	Yes
Register for and complete Chem 499 Honors Thesis (0-8 credits)	Yes	Yes
Apply for Departmental Honors	Yes	Yes
Cumulative GPA minimum*	3.50	3.50
Cumulative GPA in Chemistry and cognate courses*	3.50	3.50
Complete approved project involving a minimum of 400 hours of lab time	Yes	Yes
Write satisfactory Honors thesis	Yes	Yes
Successfully defend Honors thesis to Honors Committee	Yes	Yes
Complete two Honors courses	Yes	No

\* at the time of application, registration for Chem 499, and of graduation

### Application and Eligibility for Departmental Honors

The student should apply for Departmental Honors by filling out a form available from the Chemistry Department assistant. Typically, the student should apply before the end of the junior year, though applications will be accepted through the first week of the fall semester, senior year (since some students might determine during the summer that their research experience could serve as an Honors project). Students applying for Departmental Honors should have a record of demonstrated high academic ability and self-discipline. In particular, the student needs a 3.50 cumulative GPA as well as a 3.50 GPA in chemistry and cognate courses to be considered for Departmental Honors. Additionally, the student should have completed half of the credits required for a major in chemistry before applying for Departmental Honors.<sup>1</sup>

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<sup>1</sup> From Academic Catalog— Special Academic Programs & Opportunities  
<http://www4.wittenberg.edu/administration/catalog/current/special>

## **Requirements for the Award of Departmental Honors**

To receive Departmental Honors in Chemistry, the candidate must:

1. have attained a GPA of 3.50 in all chemistry and cognate courses at the time of graduation.
2. have attained a cumulative GPA of 3.50 at the time of graduation
3. complete an approved project in chemistry that involves at least 400 hours of lab time (which may accumulate in one or more summer projects or at least two semesters during the academic year)
4. register for Chem 499 (typically for zero credits)
5. write an honors thesis describing the project
6. present the results of the project to the honors committee

## **Honors Committee**

A three-person committee evaluates the student's Departmental Honors project. The department chair will choose the committee members, but will consider requests from the student. The committee will include two chemistry department faculty members and one Wittenberg faculty member from outside of the department. One person (chosen by the department chair) will serve as the committee chair. Committee members serve as potential resources for consultation on the project and thesis.

The committee will determine whether the written thesis and the defense meet the standards for Departmental Honors. The department chair will certify the student for Departmental Honors based upon the decision of the committee and whether the minimum GPA requirements above were met. Departmental Honors are awarded at graduation.

## **Honors Projects**

Projects for Departmental Honors in Chemistry will consist of laboratory research (including computational projects) in chemistry. A minimum of 400 lab hours is expected for an approved project. These hours may be completed over a summer or over at least two semesters. Note: To accumulate 400 hours of research during the academic year requires, on average, 14 hours of lab time per week over the course of two semesters. In order to allow for ample time to prepare the paper and thesis defense, these 400 hours must be completed by the end of fall semester, senior year.

A description of the research must be included in the application for Departmental Honors. Research in an interdisciplinary field is possible if there is significant chemical content in the thesis, as judged by the honors committee. The research should generally be approved in advance by the department. If a student determines after completing the research that the work could be the subject of an honors thesis, then approval afterwards is possible.

## **Projects Outside of Wittenberg**

For approval of projects to be conducted outside of the Wittenberg chemistry department, the department may ask for documentation describing the program. At the end of the project, the department will ask the research supervisor to assess the student's performance in the lab and to

provide an estimate for the number of hours worked on the project. The student should confer with the honors committee chair by the second week of fall semester to assess the research experience. Upon discussing the project with the student and obtaining information from the research supervisor, the committee chair may determine that the student needs to do further literature research and reading to complete the honors project. (For example, if the project did not lead to substantial results, the student did not work an adequate number of hours, or the student did not show sufficient understanding of the project, then further work may be required.)

### **Chem 499**

Students pursuing departmental honors must register for Chem 499. Students typically take Chem 499 for zero credits during one semester (between 0 and 8 credits are allowed by the University). Usually a S/NC option is chosen rather than a letter grade. A student wishing to take Chem 499 for one or more credits should first consult with the department chair. Forms to register for Chem 499 are available in the chemistry department office and should be submitted by early (usually by the end of the first week) in the spring semester to the Registrar's office. Students must have a 3.50 cumulative GPA at the time of Chem 499 registration.

### **Chem 400 and Honors**

The project used for departmental honors may also be used as the topic for Chem 400, and the Chem 400 paper may be revised and submitted as the honors thesis. The honors defense will be a separate presentation from the senior seminar presentation, and will generally be given at a later date. A student wishing to take Chem 499 for one or more credits will need to show that additional work will be conducted beyond that required for the Chem 400 paper.

### **Honors Thesis**

Sample student papers are available on the Wittenberg Honors Program web site: <http://www4.wittenberg.edu/academics/honors/thesis.html>. See the senior paper description in the Chem 300/400 booklet for guidance on writing the thesis. The department expects an "A" level paper for the awarding of departmental honors. That is, all the features of the senior paper described in the booklet should be present, and the writing should be clear, compelling, thoroughly referenced and virtually free of grammatical and spelling errors.

See the Deadlines section below for information about thesis drafts.

### **Thesis Defense**

The following are features of a defense that would be expected for the award of Departmental Honors. In general, the department will be most interested in the student's demonstration of chemical knowledge and understanding of the project over the student's ability to give a polished presentation.

1. The student will put the project into context with similar studies, showing both how it is related to similar studies and what is unique about the work.
2. The student will explain the rationale for the project.
3. The student will describe how the experiments were conducted (not every detail needs to be presented). The student will show chemical structures, balanced chemical equations, and reaction mechanisms where appropriate. If instrumentation was central to the

research, the student will explain how the instrument works, particularly how the signal is generated.

4. The student will present results clearly, with good use of tables and figures.
5. The student will discuss uncertainties in the data where appropriate.
6. The student will explain how conclusions follow from the data.
7. In answering questions from the committee, the student will show knowledge of the theory behind the project and a good understanding of the results.
8. The student will exhibit a command of chemical language and understanding of basic chemical principles.

### Deadlines

(assuming a traditional 4-year graduation plan)

Deadline	Task
end of spring semester, junior year or at least by Friday of 1 <sup>st</sup> week of fall semester, senior year	Submit application to department chair.
2 <sup>nd</sup> week of fall semester, senior year	Confer with honors committee chair on results of project (particularly for projects outside of Wittenberg).
end of fall semester, senior year	Complete laboratory research.
Friday, 1 <sup>st</sup> week of spring semester, senior year	Submit 499 Honors Thesis form to Registrar's office
Monday, 3 <sup>rd</sup> week of spring semester, senior year. (Note: if using the same paper as the Chem 400 paper, you will need to adhere to Chem 400 deadlines as well.)	Complete thesis draft. Submit one copy of the draft to the committee chair.
Monday, 5 <sup>th</sup> week of spring semester	Committee chair returns thesis draft with comments.
Friday, 6 <sup>th</sup> week of spring semester	Student submits date & time of thesis defense to department chair after conferring with committee members.
2 weeks prior to honors thesis defense	Complete second draft of thesis. Submit one copy to each committee member.
Friday, 10 <sup>th</sup> week of spring semester	Complete thesis defense.
Monday, 13 <sup>th</sup> week of spring semester	Complete final draft of thesis. Submit one copy to each committee member and one copy to the department chair. Additionally, submit an electronic copy to the department chair.
Friday, 14 <sup>th</sup> week of spring semester	Committee chair informs student whether thesis and defense were successful.

## Departmental Honors in Chemistry Application Form

This form must be completed prior to the end of the junior year (or at least in the 1<sup>st</sup> week of the fall semester, senior year). Return this form to the Chemistry Department Assistant.

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Name \_\_\_\_\_

Graduation Date \_\_\_\_\_

What is your current GPA, based on your chemistry, math and physics courses? \_\_\_\_\_

What is your current overall GPA? \_\_\_\_\_

How many credits have you currently completed in Chemistry? \_\_\_\_\_

Are you also pursuing University Honors? \_\_\_\_\_

List the names of the faculty members you wish to serve on your Honors Committee. Include one faculty member from outside the chemistry department.

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Please describe the project that you will complete for Chemistry Departmental Honors. If the project is to be pursued outside of Wittenberg, give contact information for the research supervisor.