

CENTER FOR BIOLOGICAL CHEMISTRY

GUIDELINES FOR AN UNDERGRADUATE THESIS IN BIOCHEMISTRY (For Both Arts and Sciences Majors and CASNR Majors) (Revised September 2006)

I HONORS AND/OR DISTINCTION

Undergraduate students are encouraged to conduct original research and write an undergraduate thesis based on their research investigations. There are **two** ways an undergraduate thesis may embellish a biochemistry major's academic record.

HONORS THESIS

The Honors program requires a thesis, and a student who completes the Honors Program requirements will have that recognized on his or her diploma. Furthermore, the same thesis may be used for a distinction thesis.

If a student does not want to be considered for graduating with levels of Distinction, he or she may choose to submit a thesis only for HONORS requirements. In such cases, the student must satisfy the department's requirement of presenting his/her research in a public forum such as a national or international conference or the University Undergraduate Research Fair, and the approval from the student's mentor acknowledging the student's research efforts.

DISTINCTION THESIS

A thesis may aid a biochemistry major (Both Arts & Sciences and CASNR students) in graduating with highest distinction, high distinction, or distinction.

Points to Remember:

1. Producing an acceptable thesis entails a year or more of laboratory research plus a few months to organize data, prepare figures, summarize results, and write the thesis.
2. The minimum thesis requirements in terms of quality and scope are the same for honors and distinction theses.
3. Completions of details and deadlines differ for the two types of theses.

II GENERAL PROCEDURES AND REQUIREMENTS

1. STARTING RESEARCH:

Research must be started at least **THREE** semesters before graduation. It is recommended that students start their research as early as possible (some start as early as their freshman year). Some faculty members may require a longer period of research. It is the responsibility of the students to contact several faculty members to inquire about their willingness to direct their research. Joining a particular research group is always by mutual agreement between the student and the professor who will become his or her "Research Advisor".

2. PERFORMING RESEARCH:

The time commitment to perform research is arranged by mutual agreement between the student and Research Advisor. Most students, however, will spend 12 hours or more per week in the laboratory. A Research Advisor may also expect the student to participate in various group activities such as lab group meetings to discuss lab members' research progress. The student is expected to become a participating member of his/her Research Advisor's laboratory team, and often receives a modest level of financial support. Competitive Undergraduate Research Fellowships (UCARE, ARD) are also available for qualifying students.

During the research phase, a student can earn up to SIX credits for their research by enrolling in either BIOC 499H, Honors Thesis (for Honors Program Students), or BIOC 498, Undergraduate Research. These courses are available in both semesters and in both summer five-week sessions. Generally students take one or two credit in a given semester or session. ***Normally Incomplete ("I") grades are assigned until the completion of the thesis when all "incompletes" are replaced with one letter grade.***

3. THESIS PROSPECTUSES AND DISTINCTION EVALUATION COMMITTEE

(Note: A thesis prospectus form is available only from the College of Arts and Sciences and not from CASNR; Students who belong to CASNR will submit the same thesis prospectus form from Arts and Sciences to the Department of Biochemistry, until such a form is made available from CASNR)

- a. a) A thesis prospectus **must** be submitted to the Director of the Center for Biological Chemistry during the semester prior to the semester in which the thesis is to be submitted. The prospectus consists of a "Thesis Prospectus Form" and a Thesis Proposal (one or two pages in length). These are to be completed with the aid of the student's Research Advisor.
- b. b) The Thesis Prospectus Form identifies two Co-Advisors, one of which is the student's Research Advisor and the other is a faculty member identified by the student and the Research Advisor. The Research Advisor is the primary Co-Advisor. The secondary Co-Advisor must approve the student's thesis prospectus, and reads preliminary drafts of the theses as needed
- c. c) An "Evaluation Committee" approved by the Director of the Center for Biological Chemistry, is also listed on the form. Members of the Evaluation Committee* include both of the Co-Advisors and **may have one additional Faculty member**. Of these **three committee members, at least two must be members of the Center for Biological Chemistry**. The Thesis Prospectus must be approved and signed by the Evaluation Committee.
- d. d) ***The Thesis Prospectus will be submitted to the College of Arts and Science or to the College of Agricultural Sciences and Natural Resources (CASNR) along with the completed thesis if a distinction thesis is being pursued.***
- e. e) If a student is pursuing an Honors Thesis only, the thesis prospectus is retained by the Center for Biological Chemistry.

4. WRITING THE THESIS

A student should allow several months for writing a thesis, which will be comparable in form and quality to that of a M.S. degree thesis, but need not be as long or as broad in scope.

Copies of successfully defended undergraduate Honors theses will be posted on Biochemistry Department website for reference. The exact format to be followed is usually determined by the Research Advisor, but all theses will have: 1. An Abstract, 2. A Literature Review, 3. Description of Materials and Methods, 4. Results, 5. Discussion, and 6. References.

When the thesis is completed and approved by the Co-Advisors, it should be submitted to the other members of the Evaluation Committee. ***Students should submit copies of their theses to the Evaluation Committee at least TWO weeks before their defense date.***

5. STUDENTS WITH PUBLICATION(S)

A student who has co-authored (***the student should be the first listed author***) a publication in a refereed journal is permitted to submit that publication as a thesis requirement. But the publication should be accompanied by:

- a) An extensive Literature review section
- b) An extensive discussion of the results
- c) A summary, and
- d) A succinct account of possible Future Investigations

6. COMPREHENSIVE EXAM

A student's comprehensive examination is scheduled at a time mutually agreed upon by the student and the Evaluation Committee member.

- a) The exam should be scheduled for a maximum of 2 hours (though in most cases it may not last that long)
- b) The exam will primarily be an oral thesis defense, which includes a formal seminar-type presentation. This part of the exam is open to the public.
- c) The student is required to contact Ms. Carol Hegel (N 200 Beadle) ***at least one week before the scheduled exam for a meeting room and prepare a seminar announcement.***
- d) During the seminar, the student should expect to field questions and points of clarifications from the audience.
- e) Following the formal presentation, the examination will continue with only the Evaluation Committee and the student present. The committee may pose additional questions about the thesis research, interpretation of data, appropriate directions for future research, as well as questions that test a student's background knowledge in biochemistry.
- f) Immediately after the comprehensive exam the student will be asked to leave the room while the Evaluation Committee discusses the student's comprehensive exam performance and the quality of his/her thesis.
- g) Generally, the student will be informed of the Committee's conclusions before the committee disbands. The committee may require minor revisions in the thesis, and it is the student's

responsibility to submit the corrected thesis to the respective colleges and to the Honors program on or prior to their submission deadlines.

h) The Thesis, the Co-Advisor Evaluation Form written by the primary Co-Advisor, and the Final Departmental Evaluation Form prepared by the secondary Co-Advisor, are submitted to the Director of the Honors Program and/or, along with the thesis prospectus, to the College of Arts & Sciences OR to CASNR for degrees with distinction.

III Summary of Procedures to be followed by both the Student and the Thesis Prospectuses and Distinction Evaluation Committee

Responsibilities	Semester Prior to Graduation	Semester of Graduation
Student	Files Thesis Prospectus Form with the Department of Biochemistry. Obtain signatures from two faculty co-advisors and ONE other member of the thesis Prospectuses and Distinction evaluation Committee* (Ref 3b)	<ol style="list-style-type: none"> 1. Completes Research. 2. Should start writing the thesis at least 8 weeks prior to the submission deadline. 3. Submits thesis to the committee at least two weeks before the thesis defense date 4. Contact Carol Hegel (N 200 Beadle) at least a week before the scheduled exam for a meeting room and prepare a seminar announcement. 5. Defend the thesis and take the oral comprehensive exam administered by the committee 6. Submit the approved thesis to the respective colleges and to the Honors Program
Co-Advisors	<ol style="list-style-type: none"> 1. Agree to supervise student's research 2. Sign the Thesis Prospectus Form 	<ol style="list-style-type: none"> 1. Supervise Research 2. When the thesis is completed, evaluate the thesis on Co-Advisor Evaluation Form
Thesis Prospectus and Distinction Evaluation Committee	<ol style="list-style-type: none"> 1. Signs Thesis Prospectus Form 	<ol style="list-style-type: none"> 1. Evaluates completed thesis on the Final Department Evaluation Form 2. Oversees quality of the comprehensive exam and rates student's performance on the Final Department Evaluation Form 3. Sends a copy of the student's thesis, the Thesis Prospectus Form, the

		Co-Advisor Evaluation Form, and the Final Department Evaluation Form to the respective Dean's offices by deadlines listed on their respective websites
--	--	--

* If a student wishes to write a thesis outside of CBC (Center for Biological Chemistry), for example on the research work done at UNMC, USDA or other agencies, he or she should petition for permission from the Director for the Center for Biological Chemistry through Dr. S. Madhavan, Undergraduate Research and Honors Program Coordinator for the Department of Biochemistry.

IV FORMS

1. *Arts and Science Majors: Go the following website*

<http://cas.unl.edu/>

Go to CURRENT STUDENTS

Select and Click on the **ADVISING** Icon

At the bottom of this page there is a **DISTINCTION** icon. Click on that to get all the necessary information and forms.

2. *CASNR Majors*

None of the forms listed for Arts and Sciences majors is currently available for CASNR (casnr.unl.edu) majors. Yet, you will still go the College of Arts and Sciences website, <http://cas.unl.edu> and print out the Thesis Prospectus Form. This needs to be submitted to the Center for Biological Chemistry (Department of Biochemistry).

3. *Honors Program Website for both Majors*

Go the website : <http://honors.unl.edu>

Click on Current Students Icon

Select **YOUR THESIS** to get the required information.