

MCB



ILLINOIS

School of Molecular
& Cellular Biology

COLLEGE OF LIBERAL ARTS & SCIENCES

Advising Program

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MCB 492 SENIOR THESIS

MCB 492 Senior Thesis is a capstone experience for students who have undertaken a sustained research endeavor during their undergraduate training. Enrollment in MCB 492 occurs in the last semester before graduation and involves continuation of the work done previously for MCB 290. It is intended to indicate that you will be writing and submitting a senior research thesis for a grade and/or for consideration of graduation with high or highest distinction. Students wishing to be considered for high or highest distinction are also required to present a poster on their research at an approved conference or symposium. MCB 492 cannot be counted towards the 15 hours of advanced course credit required by MCB for graduation. It will, however, count towards the 21 hours of advanced course credit required by LAS.

REQUIREMENTS FOR CREDIT IN MCB 492

- Complete a minimum of 2 semesters of MCB 290, in the same lab, with at least 2 credit hours each term. Participation in any of the MCB sponsored Summer Research Fellowships can be substituted for one semester of MCB 290.
- Register for 3 credit hours (or more) of MCB 492 in the final semester before graduation.
- Submit a written Senior Thesis according to the format below by posted deadline.
- Request a faculty research advisor letter of support be submitted by posted deadline.

ADDITIONAL REQUIREMENTS FOR HIGH OR HIGHEST DISTINCTION CONSIDERATION

- If seeking High Distinction, must have earned a minimum cumulative GPA of 3.25 at the end of penultimate semester (next to last semester).
- If seeking Highest Distinction, must have earned a minimum cumulative GPA of 3.90 at the end of penultimate semester (next to last semester).
- If seeking High or Highest Distinction, must present and submit a poster based on the thesis research at an approved venue by posted deadline.
- If seeking High or Highest Distinction, must be free of academic integrity violations.

Students are expected to discuss the Senior Thesis project with their faculty research advisor to determine what should be included in the thesis. **The research project must consist of original research, which should attempt to answer a specific scientific question.** Simply learning to master a technique is not sufficient. The best approach to your project is to have a clear understanding of the questions you are asking and why you are asking those particular questions. This understanding is aided by a familiarity with the literature in your area.

The thesis must be approved by the faculty research advisor and submitted electronically using our online form in order for MCB 492 credit to be earned, even if you are not seeking to graduate with high or highest distinction. All theses will be evaluated by the MCB Distinction committee using an agreed upon rubric. The score earned will determine the level of distinction assigned. Faculty research advisors will assign an appropriate grade for MCB 492, independently from the distinction decision, based on their personal evaluation of the student's research.

GRADUATION WITH HIGH OR HIGHEST DISTINCTION

To provide recognition for senior students in the MCB major, who have demonstrated excellence in both their academics and research, the MCB Distinction Committee, which is composed of MCB faculty and staff, evaluates the quality of the student's accomplishments and may award the graduation honor of High Distinction or Highest Distinction. The final Illinois transcript will note if a student earned distinction and at what level. All required items listed above must be submitted by the deadlines indicated on our web site, <http://mcb.illinois.edu/undergrad/opportunities/distinction/>.

THE RESEARCH THESIS

The research thesis should be a formal report of your results and, therefore, should follow accepted professional standards. Your faculty research advisor should be a valuable resource for details. **An acceptable thesis should describe research discoveries of sufficient quantity and quality to constitute a body of work that presents a problem, addresses that problem through specific and well-defined experimental approaches, and interprets the results in the context of the relevant research field.**

Your thesis should contain the elements listed below and should be double-spaced using a 12 point standard font with 1 inch margins. Include page numbers, in the center of the top or bottom page, on all but the title page. Examples of previous theses can be found at <http://mcb.illinois.edu/undergrad/opportunities/distinction/#samples>. Note formatting requirements may have changed from sample theses.

TITLE: The title page should include each of the following on separate lines.

- [TITLE OF THESIS - all CAPS]
- BY
- [FULL NAME - all CAPS]
- UNDERGRADUATE THESIS
- Submitted to The School of MCB in the College of LAS as part of an undergraduate research program.
- University of Illinois at Urbana-Champaign, [YEAR]
- Urbana, Illinois
- Faculty Advisor/mentor(s):
- [FACULTY ADVISOR/MENTOR NAME, POSITION IN DEPARTMENT]

ABSTRACT: A brief summary of the research project (150 words or less). The first sentence should give a broad introduction to the field of your research and should be followed up with a more detailed sentence providing specific background for your study. The next sentences should include a summary of your objectives and results. The final sentence should indicate your final conclusions.

ACKNOWLEDGEMENTS: You must fully credit any data, analyses, illustrations, etc., that are produced or obtained by or through collaboration with other individuals. This credit must include the names of those with whom you collaborated and an explanation of the nature of their assistance and/or collaboration. This information should be included within the experimental sections as well as the acknowledgments section. Failure to give proper credit may disqualify you from consideration for graduation with high or highest distinction.

INTRODUCTION: (3 to 6 pages, depending on the topic) The Introduction should introduce the thesis topic and state why it's important. It should clearly state the question you are trying to answer or problem you are trying to address. Be sure to provide any scientific background information necessary to understand to project, including previous literature related to the topic.

EXPERIMENTAL APPROACH: (typically 2 to 4 pages) The Experimental Approach and Methods section should clearly describe how the thesis project addressed the problem, what the experimental design was, and details on how the experiments were conducted, including sources of materials.

RESULTS: (typically 4 to 7 pages, excluding figures and tables) The Results section should summarize the results of the experiments, showing the experimental data in graph and figure format with adequate statistics. Be sure to label and caption all Tables and Figures.

CONCLUSION: (typically 1 to 2 pages, excluding figures and tables) The Conclusion section should evaluate the results obtained and the figures, tables, or graphs presented and should succinctly discuss the work in the context of the appropriate field(s).

DISCUSSION: (typically 2 to 3 pages) The Discussion section should consider how this work fits into a bigger picture and how it moves the field forward (it's ok if you have negative results). Be sure to discuss what should come next for this research topic.

BIBLIOGRAPHY: Adequate references should be cited in a bibliography with complete information (all authors, complete title of article, journal name, volume, date, etc.) should be given.

Recognize that communication of your results is the final step in scientific research. Therefore, your thesis should be as clear as you can make it. **A well-written, concise thesis should be understandable to researchers in allied fields as well as to specialists in your own field.** The senior thesis is not a "paper," so there are no hard-fast page limitations. Since this is an undergraduate senior thesis, it is not expected that students will have the same depth and level of accomplishment that might be found for a master's or doctoral thesis, but the format is similar. An unduly long thesis is discouraged. The goal is to have a thorough, clearly written, yet concise presentation of your research project.