

BIOL 4996 Honours Thesis – Syllabus

Preamble: If you have questions, first visit <http://biology.acadiau.ca/honours-page.html>. If your questions aren't answered there, contact Dave Shutler: Biology 430; 902-585-1354; dave.shutler@acadiau.ca, acadiau.ca/~dshutler/

Requirements: Biology core, BIOL 4023 and 4996, and 21h additional Biology courses at the 3000-4000 level all completed with a minimum grade of B-; MATH 2223 and 2243, CHEM 1013 and 1023, each completed with a minimum grade of C-.

Important items and dates

Item	Date(s)
Identify a supervisor	As early as you can manage
Apply for scholarships	Acadia HSRA* and NSERC USRA applications are due the 1 st week of February
Initiate research	Generally, begins in May
Oral comprehensive exam	Last 2 weeks of Sep and 1 st week of Oct
BioFeedback	Wed/Thu before spring study break
Thesis defence	Mid March
Thesis due to Research and Graduate Studies	Date varies- see University Calendar

* You must be enrolled in the BScH program before you can apply for an HSRA.

Outline

In a sense, the sky is the limit here in terms of topic variability. Start shopping around the faculty webpages to find out who is doing research that interests you. Send them an email to find out whether they're looking for students; if so, find a mutually acceptable time to meet. The last thing you want to do is jump into something about which you are not passionate. Your supervisor will be similarly disappointed if you aren't enjoying what you're doing. Which leads to the next point; you and your supervisor should have some chemistry before you take the plunge. A tight working relationship is essential to your success; it can also make the entire experience a lot of fun for both of you.

If you are working with an external supervisor, you also need an internal supervisor who is in the Biology Department. Contact Dave Shutler for a copy of an agreement that needs to be signed by both the internal and external supervisors.

Grade:

Item	Grade Mechanism	% Grade
Oral Comprehensive	Pass/ Conditional Pass	10
Research Effort	Determined by supervisor (internal)	45
Seminars	Honour system	5
Biofeedback	Required but ungraded	
Thesis quality	Determined by Thesis Committee	30
Thesis defence	Determined by Thesis Committee	10
Total		100

Oral Comprehensive Exam

This exercise serves multiple purposes. First, it trains you to think about biology on your feet without reference materials to guide you. Second, it should reveal to you how broad the field of biology is, and consequently the certainty that you cannot know it all. In fact, you may be asked questions for which the answer is not yet known. Third, it should also leave you with a sense that you have stored a lot of biology information as your life has moved forward, and that some of the approaches to answering questions involve walking through the logic of possibilities. In the words of Soren Bondrup-Nielsen, the “exam should become a conversation”. In the words of Steve Mockford, “There are 3 people in the room having fun. Your job is to become the 4th.”

The exam will focus on topics covered in the Biology Core as well as upper level courses that you have taken. Students start the exam with a brief overview of their research to get the ball rolling. Students review in different ways so please talk to your supervisor. One approach is to review chapter summaries from your textbooks, another is to talk with the members of the committee for potential areas of discussion. This exam is graded Pass/ Conditional Pass. Conditional Pass means that follow-up work will be required by the exam committee.

Rubric for Feedback on Oral Comprehensive Exams*

	A Exemplary	B Competent	C Developing	D Conditional Pass
Overall Understanding	Shows a deep/robust understanding of the material with a fully developed argument per the categories below.	Shows a limited understanding of the material, not quite a fully developed argument per the categories below.	Shows a superficial understanding of the material, argument not developed enough per the categories below.	Shows no understanding of the material and no argument per the categories below.
Argument	Clearly articulates a position or argument.	Articulates a position or argument that is incomplete or limited in scope.	Articulates a position or argument that is disjointed or ambiguous.	Ideas are disjointed and/or do not flow logically.
Evidence	Presents sufficient, relevant and accurate evidence to support argument.	Presents evidence that is mostly relevant and/or mostly accurate.	Presents evidence that is somewhat inaccurate and/or irrelevant, but corrects when prompted.	Doesn't present enough evidence to support argument, even when prompted repeatedly.
Prompting	Did not have to prompt with probing questions.	Prompted minimally (one or two probing questions).	Prompted a lot (a series of probing questions).	

* Modified from *Grading Rubric for Oral Exams* by Susan Ambrose, Carnegie Mellon University

3 April 2017

Research Effort

The grade for research effort will be determined by the supervisor based on the performance of the student throughout the Honours program. For students who are working with an external supervisor, the internal supervisor is responsible for this part of the grade with input from the external supervisor. Students are encouraged to talk with their internal supervisor early in their research to identify shared goals.

Seminars

This includes attending eight biology seminars throughout the academic year. Students are responsible for making sure their name is recorded in the attendance book.

BioFeedback

This is a day of celebration of you and your peers' research. You will need to prepare an abstract that needs to be vetted by your supervisor (and any other co-authors) about a week before your presentation. Feel free to have some fun with your presentation, as long as your message doesn't get buried. Again, you will want to run this past your supervisor. This is a day where supervisors usually feel exceptionally lucky to have participated in the journey.

Thesis Quality

The grade for thesis quality is determined by the thesis committee at the defence. Note that the structure of the thesis is discipline-specific and committees are to be flexible in their definition of what a thesis should look like.

University requirements and instructions are found here:

http://research.acadiau.ca/Undergraduate_Student_Honours_Research.html.

Thesis Defence

This grade is determined by the thesis committee at the defence. The attached rubric provides a template for how the defence will be graded.

As in any course, if you would like to appeal grades associated with your honours thesis, please talk to the Department Head.

Honours Defence Rubric

(Adapted from ABRCMS Judging Rubric – Poster & Oral Presentations. Copyright © 2015. American Society for Microbiology/ABRCMS)

SCORE	HYPOTHESES, OBJECTIVES	METHODS (sample/study participants, study design, procedures)	RESULTS	CONCLUSION/DISCUSSION
1	<ul style="list-style-type: none"> Hypotheses/objectives inappropriate or missing Little or no background information included 	<ul style="list-style-type: none"> Methods are not adequately described No discussion of choice of methods 	<ul style="list-style-type: none"> Results not yet available or reproducible Missing data presentation 	<ul style="list-style-type: none"> Conclusions/discussion missing No connection with hypotheses/objectives
2	<ul style="list-style-type: none"> Hypotheses/objectives not clearly presented Some relevant background information included, but not entirely connected to the project 	<ul style="list-style-type: none"> Lacks some key information to fully understand methods used Little discussion of why methods were chosen 	<ul style="list-style-type: none"> Data presented partially address hypotheses/objectives Presentation of data not entirely clear 	<ul style="list-style-type: none"> Some reasonable Conclusions / discussion presented Missing connections with hypotheses/objectives
3	<ul style="list-style-type: none"> Logical hypotheses/objectives presented Relevant background information included with some clear connections to the project 	<ul style="list-style-type: none"> Clear explanation of methods used Some discussion on the choice of methods 	<ul style="list-style-type: none"> Sufficient amounts of data presented to address some of the hypotheses/objectives Presentation of data mostly clear and logical 	<ul style="list-style-type: none"> Conclusions/discussion supported with evidence presented Connections with hypotheses/objectives established, but relevance not discussed
4	<ul style="list-style-type: none"> Logical hypotheses/objectives clearly presented Relevant background information included and summarized well. Clear connections of the project to previous literature and broader issues included 	<ul style="list-style-type: none"> Clear and accurate explanation of methods used Clear and appropriate rationale for why specific methods were chosen 	<ul style="list-style-type: none"> Substantial amounts of high-quality data presented to address the hypotheses / objectives Presentation of data clear, thorough, and logical 	<ul style="list-style-type: none"> Conclusions/discussion presented and strongly supported with evidence Connections with hypotheses/objectives well established, relevance in a wider context was discussed

Continued...

SCORE	OVERALL PRESENTATION & HANDLING QUESTIONS	POWERPOINT PRESENTATION
1	<ul style="list-style-type: none"> ● Demonstrates poor knowledge of the research project ● Does not understand questions ● Very confusing presentation 	<ul style="list-style-type: none"> ● Poorly laid out and confusing to follow ● Text hard to read, messy and illegible, and contains multiple spelling or typographical errors with very poor background ● Visual aids, figures and tables are not used or unrelated to the presentation
2	<ul style="list-style-type: none"> ● Demonstrates some knowledge of the research project ● Has some difficulty answering challenging questions ● Presentation is generally unclear and inconsistent 	<ul style="list-style-type: none"> ● Layout sometimes confusing and difficult to follow ● Text is relatively clear and legible, but inconsistently free of spelling or typographical errors; background may be distracting ● Visual aids, figures and tables are not always appropriate, or are labeled incorrectly
3	<ul style="list-style-type: none"> ● Demonstrates a good knowledge of the research project ● Answers most questions ● Presentation is clear for the most part, with few inconsistencies 	<ul style="list-style-type: none"> ● Layout mostly clear and relatively easy to follow ● Text is relatively clear, legible, and mostly free of spelling or typographical errors; the background is unobtrusive ● Visual aids, figure and tables are appropriate and improve understanding of the topic
4	<ul style="list-style-type: none"> ● Demonstrates a very strong knowledge of the research project ● Answers difficult questions clearly and succinctly ● Presentation is consistently clear and logical 	<ul style="list-style-type: none"> ● Clearly laid out, and easy to follow ● The text is concise, legible, and consistently free of spelling or typographical errors; the background is unobtrusive ● Visual aids figures and tables are consistently appropriate, labeled correctly, and improve understanding of the topic