# **Biology 598-04: Biology Honors Thesis**

Loyola Marymount University Spring 2020, 2 credit hours

### Instructor

Dr. Kam Dahlquist, Professor of Biology

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Office hours: Mondays, Tuesdays, Wednesdays 10:00 – 11:00 AM and by apointment

## **Pre-requisites**

Membership in the University Honors Program and consent of the instructor.

### **Class Meetings & Attendance:**

TBD, Life Sciences Building 263

This is a 2-unit research course. The expectation is that the student will attend one, 1-hour meeting per week and perform 8-9 hours of research per week, typically in two, 4-hour blocks. The meeting time and research blocks will be mutually agreed upon by the student and instructor. It is understood that the student may need to come into lab at other times in order to complete experiments. An unexcused absence will result in a 5% reduction in the overall course grade. The instructor should be notified as soon as possible, electronically or by phone, of the reasons for all absences. Arrangements will be made for the student to make up the missed work.

# **Work Load Expectations**

LMU's Credit Hour Policy

(https://www.lmu.edu/media/lmuacademics/provost/documents/LMU%20Credit%20Hour%20Policy\_Final.pdf) states that the work load expectation for a course is that for every one hour (50 minutes) of classroom instruction, the student will complete a minimum of two hours of out-of-class student work each week. This is a 2-unit research course where this expectation is met through the combination of meeting and research time, which constitutes an 8-10 hours per week commitment.

### **Laboratory Environment**

We are all responsible for maintaining a laboratory environment that is safe and conducive to learning.

- 1. As an LMU Lion, by the Lion's code (http://studentaffairs.lmu.edu/wellness/lmucares/aboutlmucares/livethelionscode/), you are pledged to join the discourse of the academy with honesty of voice and integrity of scholarship and to show respect for staff, professors, and other students.
- 2. You are responsible for your own learning.
- 3. Meetings and lab work will start promptly on time.
- 4. You are expected to come to meetings and lab having done the assigned reading and preparatory work in your laboratory notebook so that you are ready to participate in discussions and to perform the laboratory exercises.
- 5. You are expected to bring the required materials to each session.
- 6. Cell phones must not become a distraction to your work, and should be silenced and put away out of sight. Laptops and tablets may be used for your work; however, if they are being used for other purposes and become distracting to you or others, you will be asked to put them away.
- 7. All students are governed by LMU Community Standards publication (https://studentaffairs.lmu.edu/media/studentaffairs/osccr/documents/1920-LMU-community-standards.pdf). Disruptive behavior which is persistent or significantly interferes with classroom activities may be subject to disciplinary action. A student may be referred to the Office of Student Judicial Affairs if his or her behavior constitutes a violation of the conduct code.
- 8. Laboratory safety and citizenship rules will be followed (see separate handout).

### **Required Textbook**

There is no required text for this course. The student is expected to read all references cited in his or her thesis.

### **Course Websites**

The Honors Program Thesis Website describes the policies and procedures for the Honors Program here: <a href="https://academics.lmu.edu/honors/resources/current/thesis/">https://academics.lmu.edu/honors/resources/current/thesis/</a>. The Guidelines below are in keeping with the information posted on that website. The Dahlquist Lab website is found at <a href="http://kdahlquist.github.io/DahlquistLab/">http://kdahlquist.github.io/DahlquistLab/</a>. The student needs to register at OpenWetWare.org to use the lab wiki found at <a href="http://www.openwetware.org/wiki/Dahlquist">http://www.openwetware.org/wiki/Dahlquist</a>. Depending on the project, the student may also need to register for an account at GitHub, <a href="https://github.com/join?source=header-home">https://github.com/join?source=header-home</a>.

### **E-mail Communication**

At times I will communicate with you using campus e-mail systems, so it is essential that you regularly check your lion.lmu.edu e-mail address or forward your lion account e-mail to your preferred e-mail address. Messages sent to me at night or on the weekend will be answered the next school day.

# **University Policy on Academic Honesty**

Loyola Marymount University is a community dedicated to academic excellence. Academic honesty in scholarship and creative work stands at the center of LMU's academic life, and is essential for true learning and creation of knowledge to take place. As a university in the Jesuit and Marymount traditions, this community expects its members to act in accordance with the highest standards of honesty and ethics at all times. Violations of academic honesty undermine the fundamental educational mission of the University and cannot be tolerated.

Academic dishonesty will be treated as an extremely serious matter with severe consequences. The minimum penalty for an instance of academic dishonesty in this course, even on a 1-point assignment or extra credit assignment, is a one-letter grade penalty in the course and a zero on the assignment. It is never permissible to turn in any work that has not been authored by the student, such as work that has been copied from another student or copied from a source (including Internet) without properly acknowledging the source. It is the student's responsibility to make sure that your work meets the standard set forth in the "Academic Honesty Policy" (see http://academics.lmu.edu/honesty.) You are responsible for contacting the instructor before assignments are due to proactively resolve any questions you may have.

- LMU Academic Honesty Policy and Procedures http://academics.lmu.edu/media/lmuacademics/academichonesty/documents/Academic%20Honesty%20Policy%20FINAL%20Appendices--051116.pdf
- Guidelines for Literature Citations in a Scientific Paper handout
- BIOL 367, 368, or 478 LibGuide found at http://libguides.lmu.edu/BIOL367, http://libguides.lmu.edu/BIOL368, or http://libguides.lmu.edu/BIOL478
- Davidson College Department of Biology Statement on Plagiarism http://www.bio.davidson.edu/dept/plagiarism.html
- Notes on plagiarism from an electrical engineering & computer science perspective http://dondi.lmu.build/share/misc/plagiarism.pdf

You are required to sign the Academic Honesty Agreement for this course.

# **Americans with Disabilities Act - Special Accommodations**

Students with special needs who require reasonable modifications, special assistance, or accommodations in this course should promptly direct their request to the Disability Support Services (DSS) Office. Any student who currently has a documented disability (ADHD, Autism Spectrum Disorder, Learning, Physical, or Psychiatric) needing academic accommodations should contact the DSS Office (Daum Hall 2<sup>nd</sup> floor, 310-338-4216) as early in the semester as possible. All discussions will remain confidential. Please visit <a href="http://www.lmu.edu/dss">http://www.lmu.edu/dss</a> for additional information. Please schedule an

appointment with the instructor early in the semester to discuss any accommodations for this course for which you have been approved.

# **Course Description**

This course fulfills the capstone 500-level research requirement for the Biology major as well as the preparation, research, and publication of the Honors Thesis for the University Honors Program.

### Thesis Guidelines and Schedule of Due Dates

- The thesis constitutes a formal write-up of all the research you have conducted in the Dahlquist Lab during your undergraduate career.
- The thesis will be formatted as a manuscript for submission to a biology journal and will include the following sections: abstract, introduction, materials and methods, results, discussion, acknowledgments, and references.
  - O Use 1" margins, Times New Roman, 12 point font, and double-space the lines.
  - o Number your pages.
  - o Follow the APA format for references, listing them in alphabetical order.
  - The cover sheet for the thesis can be downloaded from: https://docs.google.com/document/d/1-bPOF4PzsRXScRFh\_cnR46u0BfhgsC6Lccw78g--A\_M/edit?pli=1
- The description, minimum length for each section, number of references, and due dates are specified below.

Section	Description	Due date
Title and annotated bibliography	<ul> <li>The function of the title is to identify the main result or takehome message of the thesis. It should be as specific as possible and name the organism. It can be a phrase or a sentence.</li> <li>The annotated bibliography is a list of a minimum of 10-15 primary research articles. (The list should include review articles, but these do not count toward the 10-15 total.)</li> <li>Each should have a properly formatted citation (in the APA format).</li> <li>Each should have 2-3 sentences as to why the article relates to the research project.</li> <li>A minimum of 3-5 of the references from this bibliography will be discussed in depth in the Introduction and Discussion sections of the report.</li> </ul>	5:00 PM on Friday, January 24 (end of Week 2)  Electronic <i>or</i> hard copy
Outline	<ul> <li>Outline of all sections of the thesis</li> <li>In text citations must be used, and a properly formatted References section must also be included</li> <li>Include a list of figures and tables</li> <li>No set length; it needs to be long enough to be inclusive of all results from your body of work in the Dahlquist Lab</li> </ul>	5:00 PM on Friday, January 31 (end of Week 3)  Electronic <i>or</i> hard copy
Results	<ul> <li>All figures and tables must be included, numbered sequentially in the order they appear in the text, with descriptive legends that give a key to all labels and abbreviations.</li> <li>The results section includes a narrative description of all figures and tables along with analysis of results that includes detailed explanation of the evidence</li> <li>In text citations must be used, and a properly formatted References section must also be included.</li> <li>The narrative description (not including figures, tables, or legends) needs to be a minimum of 5 pages. However, beyond this minimum, it needs to be long enough to cover all</li> </ul>	5:00 PM on Friday, February 14 (end of Week 5)  Electronic <i>or</i> hard copy

	of the research results from your body of work in the Dahlquist Lab to date.	
Discussion	<ul> <li>Research results must be discussed in terms of their significance, relevant literature, and future directions; write a concluding paragraph that summarizes the entire work</li> <li>Minimum length of 5-7 pages</li> <li>In text citations must be used (minimum of 2 per paragraph), and a properly formatted References section must also be included.</li> </ul>	5:00 PM on Friday, February 28 (end of Week 7)  Electronic <i>or</i> hard copy
Introduction Introduction Importance Known Unknown Clues  Question Experimental Approach	<ul> <li>The introduction should tell a story and should provide all of the background information necessary for the reader to understand the project. The outline of a good introduction is shown at the left.</li> <li>A critical review of a minimum of 3-5 references to primary research articles from the annotated bibliography must be performed in the introduction.</li> <li>Minimum length of 6-10 pages</li> <li>In text citations must be used (minimum of 2 per paragraph), and a properly formatted References section must also be included</li> </ul>	5:00 PM on Friday, March 20 (end of Week 9)  Electronic <i>or</i> hard copy
Materials & Methods	<ul> <li>Enough information must be provided in the methods for a practitioner in the field to reproduce all of the results, typically 3-5 pages.</li> <li>In text citations must be used, and a properly formatted References section must also be included.</li> </ul>	5:00 PM on Friday, April 3 (end of Week 11)  Electronic <i>or</i> hard copy
Second draft of complete thesis	<ul> <li>All sections, including: Abstract, Introduction, Materials &amp; Methods, Results, Discussion, Acknowledgments, References</li> <li>Abstract should be 250-500 words.</li> <li>Results and Discussion are updated with results gathered after the February 14 deadline</li> </ul>	5:00 PM on Friday, April 17 (end of Week 13)  Electronic <i>or</i> hard copy
Final draft of complete thesis	<ul> <li>All sections, including: Abstract, Introduction, Materials &amp; Methods, Results, Discussion, Acknowledgments, References</li> <li>Include the Honors Thesis Cover Sheet in your document (found at https://docs.google.com/document/d/1-bPOF4PzsRXScRFh_cnR46u0BfhgsC6Lccw78gA_M/edit?pli=1)</li> <li>Both a hard copy and electronic copy of the thesis must be submitted to Dr. Dahlquist by the deadline.</li> <li>The University Honors Program also requires that you submit an electronic copy of your thesis to the Hannon Library Digital Commons Honors Thesis collection found here: http://digitalcommons.lmu.edu/honors-thesis/</li> <li>You must also submit a hard copy of a permission letter, signed by Dr. Dahlquist, to the Honors Program Office. The form is found at https://digitalcommons.lmu.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&amp;httpsredir=1&amp;article=10000&amp;context=libraryforms</li> </ul>	5:00 PM on Friday, May 1 (end of Week 15, last day of classes)  Electronic <i>and</i> hard copy

	of the research results from your body of work in the Dahlquist Lab to date.	
Discussion	<ul> <li>Research results must be discussed in terms of their significance, relevant literature, and future directions; write a concluding paragraph that summarizes the entire work</li> <li>Minimum length of 5-7 pages</li> <li>In text citations must be used (minimum of 2 per paragraph), and a properly formatted References section must also be included.</li> </ul>	5:00 PM on Friday, February 28 (end of Week 7)  Electronic <i>or</i> hard copy
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Final draft of complete thesis	<ul> <li>All sections, including: Abstract, Introduction, Materials &amp; Methods, Results, Discussion, Acknowledgments, References</li> <li>Include the Honors Thesis Cover Sheet in your document (found at https://docs.google.com/document/d/1-bPOF4PzsRXScRFh_cnR46u0BfhgsC6Lccw78gA_M/edit?pli=1)</li> <li>Both a hard copy and electronic copy of the thesis must be submitted to Dr. Dahlquist by the deadline.</li> <li>The University Honors Program also requires that you submit an electronic copy of your thesis to the Hannon Library Digital Commons Honors Thesis collection found here: http://digitalcommons.lmu.edu/honors-thesis/</li> <li>You must also submit a hard copy of a permission letter, signed by Dr. Dahlquist, to the Honors Program Office. The form is found at https://digitalcommons.lmu.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&amp;httpsredir=1&amp;article=10000&amp;context=libraryforms</li> </ul>	5:00 PM on Friday, May 1 (end of Week 15, last day of classes)  Electronic <i>and</i> hard copy

### **Grading**

The final grade for this course will be based on three criteria:

- 1. Attendance at all meetings, research blocks, and scheduled presentations at conferences. An unexcused absence will result in a 5% deduction from the overall course grade.
- 2. Meeting the interim deadlines for sections of the thesis on time. Late work will result in a deduction of 2% from the overall course grade per day it is late. If you anticipate handing in something late, please come see me ahead of time. Requests for extensions well in advance of the due date will be looked upon more favorably than those made at the last minute.
- 3. The quality of the final submitted Honors Thesis, evaluated by the rubric provided.

Final course grading scale:	96-100%	A
	90-95%	A-
	86-89%	B+
	82-85%	В
	78-81%	B-
	74-77%	C+
	70-73%	C
	67-69%	C-
	60-66%	D
	≤ 59%	F

## **Policy on Electronic Submission of Assignments**

- The schedule notes when electronic copies of assignments are permissible and when hard copies must be submitted.
- When documents are submitted electronically, your assignment is not considered "turned in" until I have received the attachment and have been able to open it. Missing attachments and corrupt files that cannot be opened are not considered "turned in" on time. You will receive an e-mail confirmation when your file has been received and opened.
- Please use your last name and the date as part of the file name for your attachment.

### **Dissemination**

- You are expected to present your Honors research at the LMU Undergraduate Research Symposium held on Saturday, March 21, 2020. The abstract deadline is Friday, February 7. Note that all that is required for the Honors Program is *submission* of the abstract, not acceptance, but we will work together to make sure that the abstract is accepted and that you present.
- You are expected to present your Honors research in at least one other external research conference during the senior year. For example, you can present at the West Coast Biological Sciences Undergraduate Research Conference (WCBSURC), the TriBeta Pacific District Convention, or other professional meeting. The Honors Program has travel funding available through the Honors Ambassadorial Grant program.

### **Extra Credit**

There are no extra credit opportunities for this course.

### **Revision Notice**

If necessary, the contents of this syllabus and schedule are subject to revision; students are responsible for any changes or modifications announced in class. The most current version of this information resides on the Dahlquist Lab website Courses page: <a href="http://kdahlquist.github.io/DahlquistLab/courses.htm">http://kdahlquist.github.io/DahlquistLab/courses.htm</a>.

# Biology 598-04: Biology Honors Thesis

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	that is the main message of	message of the results	topic instead of message	topic, not a message	all relevant sections and
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	understood by a	field and summarizes the			
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	summarizes the	main results, and			
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	pages	pages			
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methods	accurate	with some details missing	but minimal descriptions	inaccurate	
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	longer	pages	<ul> <li>Length barely 3 pages</li> </ul>	pages	
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	supporting evidence	legends) is a minimum of 5	(excluding figures, tables,		
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