Guidelines for Fulfilling Directed Research (BIOL 499)

The purpose of this course is to provide undergraduates majoring in the life sciences at the University of Hawai‘i at Mānoa an opportunity to undertake directed research projects under the mentorship of professionals in the biology community, on or off campus. Your mentor’s role is to provide overall guidance and day-to-day supervision of your project, and to be the principal resource person with the expertise to authenticate the content and quality of the project.

Before enrolling in Directed Research, you must identify a research mentor. Consider approaching faculty members you have completed coursework with, search the webpages of the departments within the College of Natural Sciences (Nat. Sci.), the School of Ocean and Earth Science and Technology (SOEST), suitable faculty members, or talk with other experts in your field of interest at UHM or in the community. We recommend you work on finding a research mentor 1-2 semesters before you intend to start your research project.

Credit Requirements
Directed research major graduation requirements vary. For the Department of Biology undergraduate degrees, the requirements are as follows:

<table>
<thead>
<tr>
<th>Major</th>
<th>Minimum Major-Required Directed Research Credits*</th>
<th>Maximum Directed Research Credits for Major</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS Marine Biology</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>BS Biology (Entered Pre-Fall 2014)</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>BS Biology (Entered Fall 2014 or later)</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>BA Biology</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>BS Zoology</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>BA Zoology</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>

*1 credit = 4 hours/week working on project

Example:
1 credit x 4 hours/week x 16 week long semester = 64 hours over the semester

This course is repeatable, allowing for completion of project(s) that may span multiple semesters or for students to undertake multiple projects during their academic career. Pay careful attention to the maximum number of credits that can be applied towards your major requirements, as these vary by major.
**Grading Option**
For Directed Research to apply towards your major requirements it must be completed for a letter grade (A to F) and you must obtain a minimum C (not C-).

Under special circumstances, a student may be given a grade of Incomplete, which extends the project completion date to November 1 for Spring and Summer enrollments, and April 1 for Fall enrollment. Be aware that while a grade will be assigned, the incomplete designation may not be removed from the student’s final transcript.

**Gaining Approval to Register**
Your research mentor’s affiliation with UHM and/or the Department of Biology will affect the steps necessary to register for Directed Research credits. The table below outlines how you acquire the CRN and approval necessary to register. For pathways requiring Biology Department Chair approval, please refer to the “Gaining Biology Department Chair Approval” section for directions on how to seek approval.

<table>
<thead>
<tr>
<th>Research Mentor</th>
<th>BIOL 499</th>
<th>BIOL 499</th>
<th>BIOL 499</th>
<th>BIOL 499</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Biology Faculty</td>
<td>SOEST or Nat. Sci. Faculty</td>
<td>Other UHM Department/College Faculty</td>
<td>Non-UHM Researcher</td>
<td></td>
</tr>
<tr>
<td>Course Number</td>
<td>BIOL 499</td>
<td>BIOL 499</td>
<td>BIOL 499</td>
<td>BIOL 499</td>
</tr>
<tr>
<td>Biology Department Chair Approval</td>
<td>Not Required</td>
<td>Required to apply credit towards Department of Biology majors</td>
<td>Required to enroll</td>
<td>Required to enroll</td>
</tr>
<tr>
<td>Approval to Register</td>
<td>Research mentor must provide CRN</td>
<td>Research Mentor must provide CRN</td>
<td>Biology Department Chair must provide CRN</td>
<td>Biology Department Chair must provide CRN</td>
</tr>
</tbody>
</table>

*Note: If you are completing HON 495 & 496 you may be able to apply those credits towards your Directed Research requirement. Contact your major academic advisor (bioadvis@hawaii.edu) for more information.*
Gaining Biology Department Chair Approval

To obtain approval from the Department of Biology Chair to register for BIOL 499 or apply credits from a SOEST or Nat. Sci. department towards your major, please do the following:

1. Complete the request for Approval of BIOL 499 Directed Research Project
   • http://manoa.hawaii.edu/biology/directedresearch
2. Submit the following to biology@hawaii.edu
   • Student resume or curriculum vitae
   • Letter of support and approval from research mentor

Deadlines to request approval for BIOL 499:

• For projects requiring Biology Department approval, applications should be submitted at least one week before the start of classes in the term in which you will register for BIOL 499

At the end of the semester a written report must be submitted in the format of a scientific paper. The report is due the last day of instruction for the semester (usually the Wednesday or Thursday before finals). The written report should include the following:

• Project Title
• Student’s name, student ID number, contact information
• Mentor’s name, contact information
• Narrative:
  o Introduction – providing background, significance and objectives of project
  o Materials and methods
  o Results – including any supporting figures or tables
  o Discussion and Conclusions – including future directions based on results and interpretation of findings
  o List of references cited

Submit Final Report to: biology@hawaii.edu