BIOL:3994 (Introduction to Research)

(Every faculty member supervising a student taking BIOL:3994 and every student taking BIOL:3994 is to receive a copy of these guidelines)

Students enrolled in BIOL:3994 receive training in research process skills and scientific communication by completing an independent, investigative research project mentored by a faculty member affiliated with the Department of Biology or in a laboratory outside the Department of Biology. Students conducting independent research are given the unique opportunity to connect what they have learned in their courses to cutting-edge research in Biology.

Three (3) semester hours (s.h.) of BIOL:3994 credit may be used to satisfy one of the Biology Electives for the B.A. degree. Along with 1 s.h. of Communicating Research (BIOL:4898), 5 s.h. of BIOL:3994 may be used to satisfy the Experiential Elective requirement in any of the B.S. Tracks.

COURSE OUTLINE AND EXPECTATIONS:

1) **Enrollment** -

For approved research conducted *inside* the Department of Biology -

Every student taking BIOL:3994 must sign up for BIOL:3994 with a Biology faculty member. Students are expected to work 3-5 hours per week for every semester hour of enrolled credit. This expectation doubles if a student enrolls in BIOL:3994 during the 8-week summer session; students are expected to work 6-8 hours per week for every s.h. of enrolled credit.

For approved research conducted *outside* of the Department of Biology-

a) If the research is to be conducted in a laboratory outside the Dept. of Biology, the student much secure a faculty sponsor in the Dept. of Biology. The faculty sponsor bears full responsibility for approval of the project, assignment of the number of credit hours, approval of the independent study contract (see #2) and submission of grades. For approval, a project must be biological in nature and involve a hypothesis and experimental or field research in which data are gathered and analyzed. Clinical, survey or interview-based research is not appropriate.

b) The Biology faculty sponsor is responsible for project oversight. At a minimum, this should involve consultation with the faculty member under whom the research is conducted 1) at the time when the project is proposed by the student, 2) when the independent study contract is submitted and reviewed, 3) when mid-term grades are due, and 4) prior to the submission of final grades.

2) **Independent Study Contract** - Independent study contracts are required for all independent undergraduate courses and must be kept on file by the department. Within the first two weeks of the semester, an independent study contract must be completed and signed by both the student and faculty member. This is also a good

time to review expectations for the research experience (see example on page 3). The signed independent study contract should be turned in to Misty Lyon in the main office 143 BB. The contract can be found here: https://clas.uiowa.edu/sites/default/files/faculty/indepstudy_contract.pdf

3) **Grading** - The faculty sponsor is responsible for informing the student of the basis on which the final grade will be given; i. e. on the mix of laboratory effort/accomplishment and evaluation of a final paper or presentation that will determine the student's grade. An example grading rubric is provided on page 4. Plagiarism in reports is not tolerated and will result in a zero for the report and/or an F for the whole course. The student is responsible for understanding what kinds of actions constitute plagiarism under University of Iowa policy. These are available in the CLAS student handbook (*http://clas.uiowa.edu/students/handbook/academic-fraud-honor-code*).

   If the work was conducted *outside* the Dept. of Biology, the Biology faculty sponsor should consult with the direct faculty research supervisor for evaluation. However, the actual assigned grade is the undivided responsibility of the faculty sponsor in the Dept. of Biology.

4) **Disability** – If a student has a disability that may hinder any aspect of his or her performance in this course, (s)he should discuss the matter with the faculty sponsor prior to approval of the project.

5) **Complaints** - If the student has any complaints or concerns about this course, (s)he should first discuss them the faculty sponsor. If the sponsor cannot resolve the matter to the student's satisfaction and the student wishes to take the matter further, s(he) may contact the Chair of the Biology Department at 143 Biology Bldg. Further details concerning complaint procedures are available on in the CLAS student handbook (*http://clas.uiowa.edu/students/handbook/student-rights-responsibilities#rights*).

If there are any questions regarding this course or its requirements, please contact the undergraduate academic advisor Anna Gaw: 353-2484, anna-gaw@uiowa.edu.

Updated and approved by Undergraduate Curriculum Committee 3/1/2019

BIOL:3994 Research Experience Expectations

Values	Students will:	Advisors will:
Responsibility	• behave properly in the lab and accommodate himself/herself to the routines of the lab, • inform the mentor promptly and early whenever a change of schedule is necessary, • be a self-starter, ready to offer suggestions and accept responsibilities, and • complete the tasks assigned to him/her.	• inform student of the lab's code of practice, • assess the suitability of the scope of the research project and establish a manageable work plan with the student at the onset, • designate staff or student from the lab to peer coach and guide the student in the day-to-day lab work • provide student with resources • be patient.
Respect	• develop good working relationships with others in the lab, • follow instructions and advice of the mentor and supervisor.	• encourage student to treat all lab members with respect, • treat the rotating student with respect.
Perseverance	• learn to pursue his/her interest until completion of the research work, and • not give up easily when things go wrong.	• help guide the student along to enable him/her to complete a manageable amount of research within the timeframe given.
Commitment	• be punctual, attend the sessions as agreed upon, and call in advance whenever a change of schedule is necessary, • familiarize themselves with the background information of the project and develop an understanding of the work he/she is doing and how it contributes to the overall goal of the lab.	• explain the relevance of the research done by the student in relation to the research carried out by the PI's team of researchers.
Adaptability	• accept an alternative project graciously.	• provide a worthwhile experience that gives the student some insight into the world of research.

Laboratory Performance, Team Work & Ethics, and Communication Skills Assessment Form

Rating level
10 – Consistently good
9 – Occasional lapses
8 – Needs improvement

Rating	**Laboratory Performance**
	Follows laboratory safety procedure and practices.
	Is able to prioritize laboratory work and use time efficiently.
	Is able to analyze own data with some assistance. Makes attempts to pose new questions.
	Is self-directed, can accomplish tasks without supervision, yet willing to ask for help when appropriate. Can solve problems and trouble shoot experiments.
Rating	**Team Work & Ethics**
	Takes responsibility for maintaining a clean and orderly laboratory environment.
	Shows willingness to work with others and functions effectively as a team member.
	Maintains integrity in the recording and interpretation of data and in drawing conclusions based on solid evidence.
Rating	**Communication Skills**
	Can clearly communicate the broad and specific gap of knowledge that their research project seeks to address.
	Uses appropriate scientific terminology to accurately describe results (how the data were collected and analyzed; controls that were used, etc.)
	Clearly distinguishes between plagiarism and appropriate referencing of others' work.