

**Chemistry & Biochemistry**  
**Directed Research and Independent Study Proposal Form**  
Return completed to Olivia Mendoza at [omendoza@arizona.edu](mailto:omendoza@arizona.edu)



THE UNIVERSITY OF ARIZONA  
COLLEGE OF SCIENCE  
COLLEGE OF MEDICINE TUCSON

**Chemistry  
& Biochemistry**

Student Name \_\_\_\_\_ Student ID \_\_\_\_\_ Semester/Yr. \_\_\_\_\_

Student Phone Number \_\_\_\_\_ Student UA Email \_\_\_\_\_

Class Freshman Soph Junior Senior Major \_\_\_\_\_ Grad. Date? \_\_\_\_\_

Choose	Directed Research (graded)	392	492			
	Honors Directed Research (graded)	392H	492H			
	Independent Study (P/F)	199	299	399	499	
	Honors Independent Study (graded)	199H	299H	399H	499H	

- Most students should sign up for Directed Research; Independent Study mostly refers to non-lab work.
- Only 12 units may be earned in directed research per course code. After that, students may switch numbers or must switch to Pass/Fail if they cannot switch course codes.

Semester/Year \_\_\_\_\_ Course Section (if known) \_\_\_\_\_ # of Units \_\_\_\_\_

Project PI/Mentor \_\_\_\_\_ Research Mentor Dept. \_\_\_\_\_

Research Mentor UA Email \_\_\_\_\_ Research Mentor Phone Number \_\_\_\_\_

Title of Project \_\_\_\_\_

Est. hours per week Student will spend on project \_\_\_\_\_ Est. Research Mentor /Student contact hours per week \_\_\_\_\_

Date(s) for mid-semester evaluation of student performance \_\_\_\_\_

If any, list the name of your direct supervisor \_\_\_\_\_ email \_\_\_\_\_

**INTENDED LEARNING OUTCOMES**

There are many tangible benefits to participating in a directed research experience as an undergraduate student. Joining a research lab allows students to move beyond the traditional classroom environment into an atmosphere of discovery, collaboration and focus on projects with broad impacts to the modern world. Undergraduate research provides the opportunity:

- to integrate and strengthen comprehension of chemical principles
- to develop scientific and professional skills
- to gain a greater understanding of scientific inquiry and to contribute to the generation of new scientific knowledge
- to facilitate the formation of a mentor/mentee relationship between the faculty advisor and the student

Projects should be well-defined, have a high likelihood of completion during the undergraduate career of the student, use a variety of instrumentation or scientific techniques, promote awareness of safety practices and improve familiarity with scientific literature.

*Additionally, courses with graded units require a comprehensive report at the end of each semester.* With these requirements in mind, please provide a brief description of the planned activities for the semester, especially include those that are amenable to evaluation for grading purposes.

**REQUIRED** – A short sentence such as a general introduction of your research project, and what will specifically be done: (the box will scroll if you include more information)

Student is required (if not overlapping with regular classes) to attend and participate in lab meetings.

Student is required to maintain a lab notebook.

Lab Techniques the student intends to learn and utilize as part of this research project:

**How will the student summarize the research performed?** (e.g., written summary, poster presentation, oral presentation) Please provide specific details (e.g., 10 page literature review, if necessary, continue on the back of the page or attach a separate project plan)

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## Scheduling of Independent study or directed research

**Before meeting with a potential project advisor**, students should print out their semester schedule in graphical format from Student Link and highlight the possible time blocks available per week for directed research. Each unit of credit translates to three hours per week dedicated to research. For example, three units translate to approximately nine hours per week throughout the semester for a total of 135 hours. With the project advisor, identify which blocks of time will be used to fulfill the time requirement. You may attach the highlighted schedule to this form, initiated by the project advisor.

### **General Chemical Laboratory Safety Training** \*\*\* Successful completion of the training is required

Click on the following link for directions for completing the General Laboratory Chemical Safety Training:

<https://edgelearning.arizona.edu> Prior completion of the CHEM 405 Chemical Safety course, with a passing grade will also satisfy this requirement. Note the Fire Safety Awareness Training also needs to be completed before the Lab Safety Training.

**Responsible Conduct of Research Workshop/Certificate (RCR)** \*\* RCR undergraduate certificate completion is required You must complete either the in-person "Research: Introduction to the Responsible Conduct of Research" workshop OR the "Research: Online CITI RCR Training" module. Please follow the directions found at <http://rgw.arizona.edu/research-compliance/rcr/certificate-program#undergraduateRCR> to register and complete requirements.

**\*\*Submit your lab safety lab safety and RCR results to [omendoza@arizona.edu](mailto:omendoza@arizona.edu)**

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100% Engagement Component of all courses listed, 399(h), 499(h) 392(h) and 492(h) are Engaged Learning courses in which you will participate in significant experiential learning and reflection designed to prepare you to apply skills and knowledge to the types of problems you may encounter beyond the classroom. If you earn a grade of C or better [in the case of courses with an alternative grade, P or better], you will earn the notation "Engaged Learning Experience: Completed" on your UA transcript. The completion of this course will also appear on your Student Engagement Record in UAccess.

The course has been designated with the following Engaged Learning attributes:

Engagement Activity: Discovery

Engagement Competency: Innovation & Creativity

The University policy on Engaged Learning is available at: <http://ose.arizona.edu/faculty-staff/ua-engaged-learning-policy>

For more information on Engaged Learning visit: <http://ose.arizona.edu/100-engagement>

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## **REQUIRED SIGNATURES**

STUDENT \_\_\_\_\_

DATE \_\_\_\_\_

**For Research Mentor/PI** (The student's grade for this course is based upon the level to which they meet the criteria listed in the description of the project and the intended learning outcomes.)

Research Mentor/PI \_\_\_\_\_

DATE \_\_\_\_\_

### **FOR BIOCHEMISTRY MAJORS USE**

(Can only be signed when all other parts are filled in completely and the student and Project PI have signed, if you don't know your biochemistry faculty advisor, please ask Olivia Mendoza)

BIOCHEMISTRY FACULTY ADVISOR \_\_\_\_\_ DATE \_\_\_\_\_

Return completed to Olivia Mendoza at [omendoza@arizona.edu](mailto:omendoza@arizona.edu)