

Second-Semester Undergraduate Research in Biochemistry & Molecular Biology (BMB) for 2 credits

Guidelines and Expectations for both Students and Research Mentors within or outside of the BMB Program (BB 341)

The [general guidelines](#) for all courses for credit in undergraduate research and/or honors are applicable to this course and should be incorporated with the following guidelines that pertain the earning general education credit for taking this course.

Responsibilities of the Student:

HUB requirements: Earning general education units involved requirements for earning HUB units in the first semester of undergraduate research for credit, which will continue during the second semester. This includes continuing gaining experience in the use of the online research information and literature (RIL). Please note that BB 341 will not earn a student an additional Hub unit in RIL. This semester there are additional requirements for earning a HUB unit in Oral and Signed Communication (OSC) by required attendance and participation in laboratory meetings on a regular basis.

Responsibilities of All Research Mentors:

In the first semester of research, all students should begin the learning of how to use the literature in their efforts to learn the background information for the project you are giving them. The timeframe for this achievement is mostly as a prerequisite before and during the application process. Continue to work with your student and teach them how to access research information, both as they prepare and submit a research proposal and any specific sources of information pertinent to their research project.

In addition, it is expected that you will have weekly group meetings to which you should invite your undergraduate research student. At some point during the semester, your student should be asked to give at least 1-2 oral presentations of their work and attain feedback on their performance from the group members.

General Education (BU Hub)

1. Oral/Signed Communication (OSC):

Learning Outcome 1: Students will be able to craft and deliver responsible, considered, and well-structured oral and/or signed arguments using media and modes of expression appropriate to the situation.

Learning Outcome 2: Students will demonstrate an understanding that oral/signed communication is generally interactive, and they should be able to attend and respond thoughtfully to others.

Learning Outcome 3: Students will be able to speak/sign effectively in situations ranging from the formal to the extemporaneous and interact comfortably with diverse audiences.

HUB credit for Oral Communication will be earned during the second semester of 2-credit undergraduate research. The ability to orally present and discuss one's research results is an essential part of successful scientific inquiry. We include within this domain poster presentations, which by nature require both the oral presentation and an often-intense subsequent discussion. The main procedure for this training is the weekly research group meetings, and (often) additional subgroup meetings. As noted, all research groups have group meetings, and it is expected that an undergraduate registered for four credits of research will present at these meetings. This was made clear for all UGR mentors before they are allowed to approve a student's on-line application. Research provides the ideal format for achieving the three learning outcomes accomplished for OSC proficiency:

- 1) Craft and deliver responsible and well-structured arguments using media – typically in group meetings using PowerPoint presentations or other media appropriate for each research group.
- 2) Understand the interactive nature of OSC is clearly in action during research group meetings, and in particular, the skill of responding during discussions that follow their presentation at group meeting presentations. There is often considerable give and take amongst the group members, often with follow-up "chalk talk" analyses.
- 3) Speak effectively to diverse audiences in both formal and extemporaneous modes – groups meetings fulfill this as well with formal presentations required for the full project, and "Progress Reports" being of less formal nature.

Training in the preparation and presentation of oral presentations is typical of research groups as well. Groups often have their own signature style, which has evolved over the years, with training of undergraduates prior to their presentation undertaken by an assigned graduate student or post-doctoral fellow as the mentor. Further opportunities for presentations exist as well, typically for juniors and seniors.