BTEC 495: Professional Internship and Project-based Research Experience
Monthly Meetings: TBD

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Learning objectives

At the end of the semester, students should have:

a. Acquired basic and advanced knowledge and vocabulary pertaining to the topic of the research based project
b. Gained an understanding of general and specific laboratory procedures involved in their research experience.
c. Grasped the nuances of conducting original, state-of-the-art life science research
d. Attained competency designing experiments, collecting and evaluating data, drawing inferences from experimental research, and modifying published or otherwise existing protocols
e. Attained competency communicating results and ideas in the technical language that is habitual for the life science research community
f. Gained a general understanding of the importance of working within a modern, structured research environment
g. Gained an appreciation for the difficulty and rewards of conducting professional research in the life sciences

Syllabus

To earn 3 credits		
Dates		Topic
TBD	Monthly communication	Overview of class requirements, lab safety, & development of project plan
TBD	Monthly communication	Finalize project plan; Developing mentor/supervisor relationship
TBD	Monthly communication	Mid-semester oral report; Resolving work challenges (technical and non-technical)
TBD	Semester project report	Peer Review of Rough Draft of Semester Project Report
To earn 6 credits		
Dates		Topic
TBD	Monthly communication	Conducting background and literature review
TBD	Monthly communication	Networking and informational interviews
TBD	Monthly communication	Research Writing
TBD	Semester project report	Oral report of semester project

Background on internship experience

This course will complete and complement the laboratory training students will receive in teaching lab courses, with an experience that more closely resembles a real research laboratory. For practical reasons two alternative types of experiences or formats will be available: an external professional internship in an industrial R&D or academic research lab, and a project-based course run in-house by Montgomery College and TLST faculty. In both cases, students and their sponsors will draft and submit a project plan, which will be reviewed and approved by a class coordinator or a committee composed of MC and TLST faculty. Monthly progress meetings between students

and the course instructor, and a written semester report will be used to ensure sufficient progress that is satisfactory to the TLST program and the research sponsors. It is strongly recommended that at least one poster presentation in an undergraduate research symposium, such as URCAD, will be done as well.

At any time during the two semester period, the external sponsors or the students will be allowed to terminate an internship. Students will be required to write a final progress report addressing the reasons for terminating the internship.

Work to be submitted by students

Students will keep an electronic lab notebook where they will record their progress through the course.

A passing grade for the 3 credit course will be based on satisfactory completion of the required internship hours, project plan, and semester project report (3500 words) due at the end of each semester.

A passing grade for the 6 credit course will be based on the satisfactory completion of the required internship hours, project plan, semester project report (3500 words) that includes a discussion of three relevant research papers in the background section, an abstract for an undergraduate research symposium, and an updated resume.

The semester project report should include: 1) abstract; 2) Introduction; 3) Outcome/Results of your project goals; 4) Conclusion

Grading of Internship Plan and Project Report

FOLLOWING INSTRUCTIONS (1 point)		
Level of Achievement	**General Presentation**	**Reasoning, Argumentation**
Exemplary	The written assignment contains all the required elements designated in the instructions (as above). Document is typed, single-spaced, 11 point font with 1" margins, and indicated page length. Document is organized as instructed.	The writer demonstrates that they have read the instructions and understand the assignment.
Adequate	One of the above elements is lacking.	One of the above elements is lacking.
Needs improvement	More than one of the above elements is lacking.	More than one of the above elements is lacking.
Failed to follow instructions	Did not follow any of the instructions provided.	Instructions are presented for one to follow.

WRITING STRUCTURE (2 points)		
Level of Achievement	**General Presentation**	**Reasoning, Argumentation**
Exemplary	The writer has indicated the purpose of their paper and the paper contains an appropriate introduction. Literature citations (if used) are appropriate and cited correctly using accepted standards.	The writer clearly demonstrates that they have the ability to logically organize their arguments in their writing. The writing is clear and concise. The design of the paper is logical, organized, and can be easily followed by the reader.
Adequate	One of the above elements is lacking.	One of the above elements is lacking.
Needs improvement	More than one of the above elements is lacking.	More than one of the above elements is lacking.

SYNTHESIS OF KNOWLEDGE (5 points)

Level of Achievement	General Presentation	Reasoning, Argumentation
Exemplary	Student exhibits a defined and clear understanding of the assignment. The topic is clearly defined and well-constructed to help guide the reader throughout the assignment. Student builds upon the topic of the assignment with well- documented and exceptional supporting facts and/or statements	The writer demonstrates that they fully understand the topic. The writer demonstrates that they understand how to set up and control an experiment. The writer demonstrates their ability to generate a good scientific hypothesis.
Adequate	One of the above elements is lacking.	One of the above elements is lacking.
Needs improvement	More than one of the above elements is lacking.	More than one of the above elements is lacking.
No Experiments	The writer did not state hypotheses or design experiments.	This was the focus of the entire assignment.

WRITING MECHANICS (2 points)		
Level of Achievement	**General Presentation**	**Reasoning, Argumentation**
Exemplary	Almost the entire essay contains correct grammar. Almost the entire essay contains correct spelling. Almost the entire essay contains correct punctuation.	The writer clearly demonstrates that they can structure grammatically correct sentences using proper spelling and punctuation.
Adequate	The above elements exist, but are not entirely adequate.	The writer needs to spend more time practicing their writing skills.
Needs improvement	One of the above elements is lacking and the others are inadequate.	Please go to the university writing centers for help with your writing.
No Essay	All three of these elements are highly inadequate.	Please go to the university writing centers for help with your writing.