

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: BIO 299

Credits: 4

Course Title: Supervised Study in Biology: Advanced Microbiology

Course Description: Assigns problems for independent study incorporating previous instruction and supervised by the instructor. Provides students the opportunity to research scientific literature on their selected topic, design, and conduct a lab study, assemble and analyze observed lab data, and complete a final report on this research. Prerequisites: One year of college biology (BIO 101 and 102) and one semester of college chemistry (CHM 111 or CHM 101) or faculty approval. Prerequisite or Co-requisite: BIO 205. Lecture 4 hours per week.

General Course Purpose: The purpose of this course is to introduce the student to the process of scientific research conducted in a systemic fashion utilizing the scientific method and concluding with the presentation of a scholarly journal article.

Course Prerequisites and Co-requisites:

Prerequisites: One year of college biology (BIO 101 and 102) and one semester of college chemistry (CHM 111 or CHM 101) or faculty approval

Prerequisite or Co-requisite: BIO 205

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Understand and implement the scientific method to study biological problems;
- b. Complete a thorough scientific literature search;
- c. Utilize experimental design to develop research protocols;
- d. Collect, analyze, and statistically evaluate data;
- e. Explain data and trends and correlate the data to what is currently known in the field; and
- f. Present the research by writing a journal-level article for possible publication.

Major Topics to Be Included:

- a. General microbiology concepts
- b. Bacterial culture and aseptic technique
- c. Microbial metabolism
- d. Microbial genetics
- e. Immunology
- f. Microbes and disease
- g. Microbial ecology

Date Created/Updated (Month, Day, Year): February 20, 2019