

**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 by the student, 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

Course Objectives:

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

Effective Date of Course Content Summary: May 20, 2013