

**NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY  
BIO 254 – CAPSTONE SEMINAR IN BIOTECHNOLOGY (2 CR.)**

**Course Description**

Integrates principles, theories, and methods learned in prior courses in biotechnology. Promotes exposure to real-world experience through completion of group project(s) having a professional focus. Emphasizes collaboration, literature research, proposal development, and communication and presentation skills. Lecture 2 hours per week.

**General Course Purpose**

This course is designed to be the capstone experience for students enrolled in either the A.A.S. in Biotechnology or the Careers Studies Certificate in Biotechnology. Because both of these programs are specifically designed to enhance the student's chances for employment and advancement in this career field, this capstone seminar will emphasize the performing of "real-world" projects that incorporate the scientific, ethical, regulatory, and business aspects of biotechnology. Examples of projects include but are not limited to: a) the creation of a comprehensive product development plan for a "new" biotechnology product; b) the development of a sales and marketing plan for a potential product; c) investigations into the biotech industry via review and presentation of company's annual reports; d) debates on the benefits, risks, and ethics of current biotechnology topics (i.e. stem cells, genetically modified organisms, animal testing, DNA sequencing, etc.), and e) the writing and reviewing of scientific proposals by a "mock" federal agency comprised of fellow students, followed by ranking and decisions on which ones merit funding. In all projects, students will be expected to collaborate in groups, synthesize recent research findings published in the primary literature, consider and discuss scientific concepts/data in a larger societal context, and effectively communicate their positions with a peer group. This multi-faceted emphasis on interdisciplinary work, critical thinking and communication skills is designed to provide students with a solid science foundation who can be successful in a complex technical field having many different career opportunities.

**Course Prerequisites/Corequisites**

Prerequisites: Students must have completed 75% of their program requirements including, BIO 147, BIO 165, BIO 180, BIO 250, and BIO 253 with a "C" or better, or biotechnology program head permission

**Course Objectives**

Upon completing the course, the student will be able to:

- Obtain information on the different aspects of biotechnology from varied resources (library databases, newspapers and magazines, company websites, trade publications, congressional reports, primary literature, etc).
- How to read articles from the primary literature
- Evaluate information/data for scientific integrity, timeliness, bias, and appropriateness in different contexts
- Synthesize several pieces of information into a comprehensive summary and/or position piece
- Consider and discuss scientific data and innovation in a regulatory, political, and ethical context
- Understand the different factors affecting success in the biotechnology marketplace
- Propose areas of new research in biotechnology
- Work as a team-member in a group setting, employing conflict-resolution strategies as needed
- Present research proposals and/or position pieces to a peer group
- Develop and employ criteria for evaluating data and making political, ethical, or business decisions

**Major Topics to be Included**

- Navigating the information super-highway: how to obtain and evaluate sources of information/data
- Strategies for reading and understanding different kinds of information: primary literature, business information, regulations
- Survey and discussion of current "hot" biotechnology topics
- Introduction to the real-world of biotech: science in a larger societal context
- How to succeed in the workplace – the "soft-skills" of biotech
- The process of developing a research or product plan
- Effective strategies for written and oral communication
- The decision-making process: The factors involved in developing, completing, and funding a successful project