

# Bemidji State University

## BIOL 4470: Introduction to Vaccinology

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: \*.\*

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course will introduce students to the field of vaccinology and aspects of the bioscience industry related to vaccine discovery, production, and testing. Students will learn about the history of vaccines; the production of vaccines in a regulated environment; the benefits and concerns with vaccine use. The course will include a discussion of vaccine types, delivery, efficacy, and safety. Students will learn about the mechanism of action of different vaccines; traditional versus modern vaccine production methods, the process of clinical trials and approval for new vaccines; and discuss ethical concerns related to vaccine use. Prerequisite(s): BIOL 2360.

**B. COURSE EFFECTIVE DATES:** 08/27/2018 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Biochemistry
2. Cell Biology
3. Immunology
4. Vaccines

### D. LEARNING OUTCOMES (General)

1. discuss a broad range of vaccine preventable diseases and apply the basic principles of vaccinology to disease prevention.
2. summarize the overall principles and key steps of the pharmaceutical clinical development process, from bench to product and provide specific examples.
3. describe how various types of vaccines evoke an immune response and provide protective immunity.
4. explain appropriate techniques for administration of vaccines by intramuscular, subcutaneous, and intranasal routes as well as describe the possible immunological benefits of each method.
5. appraise traditional versus modern vaccine production methods.
6. develop an in-depth, thorough understanding of vaccinology and vaccine-induced immunity.
7. discuss the ethical concerns regarding the vaccine debate and apply these concerns to debates regarding costs, benefits, and risks of vaccination.
8. evaluate the mechanism of action of different vaccines.
9. list the various regulatory steps for clinical trials and approval for new vaccines.

### E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

### F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted