Northern Marianas College
CURRICULUM ACTION REQUEST

Effective Semester / Session: Fall 2018

Type of Action:

__ New
X Modification
__ Move to Inactive (Stop Out)
__ Cancellation

Course Alpha and Number: BI225

Course Title: Basic Microbiology

Reason for initiating, revising, or canceling:
This course guide is being modified for regular updating and to implement current SLO evaluation techniques.

Denise J. Myers — 5/4/18
Proposer — Date

Velma C. Deleon-Guerrero — 5/4/2018
Department Chair — Date

Adam Walsh — 5.4.18
Language & Format Review Specialist — Date

Ajani Burrell — 5/7/18
Academic Council Chair — Date

Amanda Angel-Diaz — 5/8/2018
Acting Dean of Learning & Support Services — Date

1. **Department**
   Science, Math, Health, and Athletics

2. **Purpose**
   This course will provide information on the importance of microorganisms to humankind, the importance of microbiology to society, and a concern towards good hygiene, sanitary food preparation, and a clean environment. The principles learned in this course are relevant in understanding the disease process and control of microorganisms.

3. **Description**

   A. **Required/Recommended Textbook(s) and Related Materials**
   Required:
   Nester, E., Anderson, D., Roberts, E. Jr., & Nester, M. (2009). *Microbiology: A human perspective* (6th ed.). New York: McGraw-Hill Companies, Inc.

   Kleyn, J., Bicknell, M. (2007). *Microbiology Experiments: A Health Science Perspective* (6th ed.). New York: McGraw-Hill Companies, Inc.

   Readability level: Grade 13

   Recommended: N/A

   B. **Contact Hours**
   1. **Lecture:** 3 per week / 45 per semester
   2. **Lab:** 3 hours per week / 45 hours per semester
   3. **Other:** N/A

   C. **Credits**
   1. **Number:** 4
   2. **Type:** Regular degree credits

   D. **Catalogue Course Description**
   This is a survey course covering the major groups of microorganisms in relation to their classification, characteristics, and medical importance. Microbiology introduces students to related topics in immunology and epidemiology. It is intended for students entering the fields of professional health care, although other students may wish to enroll in the course. Laboratory and field trips are required. Offered: Fall and Spring This course will be offered in the Spring and Fall semesters. BI101. English Placement Level: EN 101. Math Placement Level: MA132.

E. Degree or Certificate Requirements Met by Course
This course serves as a required course for the Nursing Degree Program or may serve as an elective course for non-nursing students.

F. Course Activities and Design
This course includes lectures, group-work, discussions, laboratory activities, homework, web-based assignments, audio-visual materials, powerpoint presentations, periodic quizzes, pretests, posttests, comprehensive final exam, field trips, and research projects that require presentations.

4. Course Prerequisite(s); Concurrent Course Enrollment
Prerequisites: BI101 with a "C" or better
Concurrent Course Enrollment: None

Required English/Mathematics Proficiency Level(s)
English Placement Level: EN101
Mathematics Placement Level: MA132

5. Estimated Cost of Course; Instructional Resources Needed
Cost to the Student: Tuition for a 4-credit hour course, textbooks, research activities, and instructional materials fee.

Cost to the College: Instructor's salary

Instructional resources needed for this course include classroom and laboratory space; whiteboard and pen; audio-visual programs/software; and various laboratory materials, chemicals, equipment, and facilities.

6. Method of Evaluation
Student grades will be based on assignments, periodic quizzes, tests, comprehensive final exam, laboratory exercise reports, field-trip reports, and research projects. NMC's grading and attendance policies will be followed.

7. Course Outline

This is a topical outline and does not necessarily indicate the sequence in which the material will be presented.

1.0 Life and Death of Microorganisms
- 1.1 Humans and the microbial world
- 1.2. Microscopy and cell structure
- 1.3 Dynamics and prokaryotic growth
- 1.4 Control of microbial growth

2.0 The Microbial World
- 2.1 Identification and classification of prokaryotic organisms
- 2.2 The diversity of prokaryotic organisms
- 2.3 The eukaryotic members of the microbial world
- 2.4 Viruses, prions, and viroids: infectious agents of animals and plants

3.0 Microorganisms and Humans
- 3.1 The innate immune response
- 3.2 The adaptive immune response
- 3.3 Epidemiology

4.0 Infectious Diseases
- 4.1 Respiratory system infections
- 4.2 Skin infections
- 4.3 Wound infections
- 4.4 Digestive system infections
- 4.5 Genitourinary tract infections
- 4.6 Nervous sytem infections
- 4.7 Blood and lymphatic infections

8. Instructional Goals

The course will introduce students to:

1.0 Selected laboratory techniques in the study and identification of microbes;

2.0 The human perspective of the microbial world;

3.0 Different types of microscopes used in the observation of microorganisms;

4.0 Dynamics and control of microorganism growth;

5.0 Organism identification and classification;

6.0 Diversity of prokaryotic organisms and eukaryotic members in the microbial world;

7.0 The infectious agents of animals and plants such as viruses, prions, and viroids;

8.0 The innate and adaptive immune responses and their applications;

9.0 Concepts in Epidemiology;

10.0 Types of infectious diseases in the human body; and

11.0 Applications of microbiology in the field of ecology, in the study of food, and in various environmental conditions.

9. Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1.0 Summarize the history of microbiology and theories that explain the origins of microorganisms;

2.0 Compare the different methods in identification and classification of prokaryotes and the features that characterize viruses, prokaryotes, and eukaryotes;

3.0 Use the proper materials and method in the sampling, culture, isolation, observation, and identification of microorganisms;

4.0 Illustrate the structures of prokaryotic and eukaryotic cells to describe their functions;

5.0 Classify microbes according to their nutritional patterns;

6.0 Understand physical and chemical control of microbial growth;

7.0 Describe the development of microbe drug resistance;

8.0 Explain vaccine production, the benefits of immunization, and its hazards;

9.0 Outline the epidemiological principles that may be used in tracking the transmission and spread of a disease;

10.0 Identify important pathogens and diseases, how they spread, and how to prevent transmission;

11.0 Describe methods in preventing contamination of water and food; and

12.0 Describe the importance of microbes in agriculture, food production, industry, and the ecosystem;

10. Assessment Measures of Student Learning Outcomes

Assessment of student learning may include, but not be limited to, the following:

1.0 Assignments;

2.0 Quizzes;

3.0 Tests;

4.0 Comprehensive final exam;

5.0 Laboratory exercises;

6.0 Laboratory reports;

7.0 Field-trip reports; and

8.0 Research project paper to demonstrate the student's ability to choose a useful microbiological issue and to apply the scientific method.