

Dakota College at Bottineau Course Syllabus

Course Prefix/Number/Title: BIOL 202 – Microbiology

Number of credits: 4

Course Description:

This course is a survey of microbial cell biology, microbial genetics, and virology with an emphasis on human infectious disease.

Pre-/Co-requisites: None

Course Objectives:

Students will be introduced to the world of Microbiology. They will learn about the types of microbes, microbial genetics, diversity, microbe control and defenses. Students will understand the role of microbes in the ecosystem and the scientific and medical applications of microbes.

Learning Objectives: To develop a fundamental understanding of the basic principles of microbiology. Students will develop a working understanding of the structure, growth, nutrition, metabolism, genetics and diversity of prokaryotes, microscopic eukaryotes and virus. Students will become familiar with medical, agricultural, and other applied aspects of the field of microbiology.

Instructor: Shubham Datta, PhD

Office: NSC 114

Office Hours: Scheduled office hours and by appointment

Phone: (701)-228-5463

Email: Shubham.datta@ndus.edu

Lecture Schedule: 10 – 10:50 am, MWF

Lab Schedule: TBD

Lab Manual:

Grading:	4 Hour Exams @ 100 pts. ea.	400 pts.
	Labs	200 pts
	Quizzes/assignments	<u>100 pts.</u>
	TOTAL POINTS	700 pts.

A = 100-90%

B = 89-80%

C = 79-70%

D = 69-60%
F = below 60%

Textbook(s): Burton's Microbiology for the Health Sciences (Microbiology for the Health Sciences. Paperback by Paul G. Engelkirk and Janet Duben-Engelkirk. Tenth Edition.

ISBN- 978-1-4511-8632-1

General Education Goal and Objectives

Goal:

The goal of this course is to facilitate student learning about human anatomy and physiology so students better understand and appreciate the complexities of interactions between organ systems to promote the advancement of life sciences in the professional and academic environment as well as throughout everyday life.

Objectives:

- 1) To learn and retain information essential to a broad knowledge of human anatomy and physiology.
- 2) Demonstrate knowledge of mental process within humans (Goal 6; Objective 1)
- 3) Practice sound, safe, and sensible laboratory techniques.
- 4) Show knowledge of the importance of local and global government systems within field of science (Goal 6; Objective 3)
- 5) Demonstrate an awareness of the role of science in everyday life

Relationship to Campus Theme

This course addresses the campus theme by incorporating the latest diagnostic procedures, treatments, and other technologies that are used to identify and treat human diseases and disorders.

Classroom Policies

- 1) Be respectful of other students and the instructor
- 2) Notify the instructor of any coursework that may be late prior to the due date

Student Email Policy

Dakota College at Bottineau is increasingly dependent upon email as an official form of communication. A student's campus-assigned email address will be the only one recognized by the campus for official mailings. The liability for missing or not acting upon important information conveyed via campus email rests with the student.

Academic Integrity

All students are expected to adhere to the highest standards of academic integrity. Dishonesty in the classroom or laboratory and with assignments, quizzes, and exams is a serious offense and is subject to disciplinary action by the instructor and college administration. For more information, refer to the Student Handbook.

Disabilities and Special Needs

If you have a disability for which you need accommodations, you are encouraged to contact your instructor and the Learning Center (228-5479 or 1-888-918-5623) to request disability support services as early as possible during the beginning of the semester.

Microbiology BIOL 202_SCHEDULE SPRING

Timeline	Topic	Text
Week 1 Jan 7 - 13	Introduction to Microbiology and Viewing the Microbial World	Ch 1, 2
Week 2 Jan 14 - 20	Cell Structure and Taxonomy	Ch 3
Week 3 Jan 21 - 27	Microbial Diversity: Acellular and Prokaryotes	Ch 4
Week 4 Jan 28 – Feb 3	Microbial Diversity: Eukaryotic Microbes	Ch 5
Week 5 Feb 4 - 10	Exam 1 and Biochemical Basis of Life	Ch 6
Week 6 Feb 11 - 17	Microbial Physiology and Genetics	Ch 7
Week 7 Feb 18 - 24	Controlling Microbial Growth In Vitro	Ch 8
Week 8 Feb 25 – Mar 3	Exam 2 and Inhibiting the Growth of Pathogens In Vivo using Antimicrobial Agents	Ch 9
Week 9 Mar 4 - 10	Microbial Ecology and Microbial Biotechnology and Epidemiology and Public Health	Ch 10, 11
Mar 11 - 17	Spring Break	
Week 10 Mar 18 - 24	Pathogenesis of Infectious Diseases	Ch 14
Week 11 Mar 25 - 31	Nonspecific Host Defense Mechanisms	Ch 15
Week 12 Apr 1 – 7	Exam 3 and Specific Host Defense Mechanisms: An Introduction to Immunology	Ch 16
Week 13 Apr 8 – 14	Overview of Human Infectious Diseases and Viral Infections of Humans	Ch 17 & 18
Week 14 Apr 15 - 21	Bacterial Infections of Humans	Ch 19
Week 15 Apr 22 - 28	Fungal Infections of Humans	Ch 20
Week 16 Apr 29 – May 5	Parasitic Infections of Humans	Ch 21
Finals Week	Finals	

Tentative Course and Lab Outline:

Week 1:

- Reading: Introduction to Microbiology (Ch 1) and Viewing the Microbial World (Ch 2)
- Labs (30 pts): Microbiology-Rules for Success
- Discussion (15 pts)
- Quiz (20 pts): Ch. 1 & Ch. 2

Week 2:

- Reading: Cell Structure and Taxonomy (Ch 3)
- Begin Lab: Microorganisms, Aseptic techniques, and Cultures
- Discussion (15 pts)
- Quiz (20 pts): Ch. 3

Week 3:

- Reading: Microbial Diversity: Acellular and Prokaryotes (Ch 4)
- Lab Due (30 pts): Microorganisms, Aseptic techniques, and Cultures
- Discussion (15 pts)
- Quiz (20 pts): Ch. 4

Week 4:

- Reading: Microbial Diversity: Eukaryotic Microbes (Ch 5)
- Begin Lab: Bacterial Morphology and Staining Techniques
- Discussion (15 pts)
- Quiz (20 pts): Ch. 5

Week 5:

- Reading: Tissue Biochemical Basis of Life (Ch 6)
- Lab Due (30 pts): Bacterial Morphology and Staining Techniques
- Discussion (15 pts)
- Quiz (20 pts): Ch. 6

Week 6:

- Reading: Microbial Physiology and Genetics (Ch 7)
- Begin Lab: Enumeration, Dilution, and Plate Counts
- Discussion (15 pts)
- Quiz (20 pts): Ch. 7

Week 7:

- Reading: Controlling Microbial Growth In Vitro (Ch 8)
- Lab Due (30 pts): Enumeration, Dilution, and Plate Counts
- Discussion (15 pts)
- Quiz (20 pts): Ch. 8

Week 8:

- Reading: Inhibiting the Growth of Pathogens In Vivo using Antimicrobial Agents (Ch 9)
- Lab (30 pts): Kirby-Bauer Diffusion for Antibiotic Effectiveness
- Discussion (15 pts)

Week 9:

- Reading: Microbial Ecology (Ch 10) and Microbial Biotechnology and Epidemiology and Public Health (Ch 11)
- Discussion (15 pts)

- Quiz (20 pts): Ch. 10 & Ch. 11
 - Midterm (100 pts)
- Week 10:
- Reading: Pathogenesis of Infectious Diseases (Ch.14)
 - Lab (30 pts): Hand-washing and Normal Flora
 - Discussion (15 pts)
 - Quiz (20 pts): Ch. 14
- Week 11:
- Reading: Nonspecific Host Defense Mechanisms (Ch.15)
 - Begin Lab: Food Safety
 - Discussion (15 pts)
 - Quiz (20 pts): Ch. 15
- Week 12:
- Reading: Specific Host Defense Mechanisms: An Introduction to Immunology (Ch.16)
 - Lab Due (30 pts): Food Safety
 - Discussion (15 pts)
 - Quiz (20 pts): Ch. 16
- Week 13:
- Reading: Overview of Human Infectious Diseases (Ch 17) and Viral Infections of Humans (Ch 18)
 - Begin Lab: Environmental Influences on Microbial Growth-Salinity Testing
 - Discussion (15 pts)
 - Quiz (20 pts): Ch. 17 & Ch. 18
- Week 14:
- Reading: Bacterial Infections of Humans (Ch.19)
 - Lab Due (30 pts): Environmental Influences on Microbial Growth-Salinity Testing
 - Discussion (15 pts)
 - Quiz (20 pts): Ch. 19
- Week 15:
- Reading: Fungal Infections of Humans (Ch.20)
 - Lab (30 pts): Microorganisms as Vector of Diseases
 - Discussion (15 pts)
 - Quiz (20 pts): Ch. 20
- Week 16:
- Reading: Parasitic Infections of Humans (Ch.21)
 - Assignment (40 pts): TBD
 - Discussion (15 pts)
 - Quiz (20 pts): Ch. 21
- Week 17:
- Final (100 pts):
- Discussion: Course Wrap-up