Dakota College at Bottineau Course Syllabus

Course Prefix/Number/Title: BIOL 202 – Microbiology_Online_Summer

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: N/A

Office Hours: N/A

Phone: (701)-228-5463

Email: Shubham.datta@dakotacollege.edu

Lecture Schedule: Online

Lab Schedule: Online

Lab Manual: Hands on Labs- student ordered through http://holscience.com/

General Education Competency/Goal # 1: Identifies the interrelationships between humans and their environment.
LO 2: Demonstrates an understanding of the natural environment.
LO 3: Applies scientific information in everyday life.

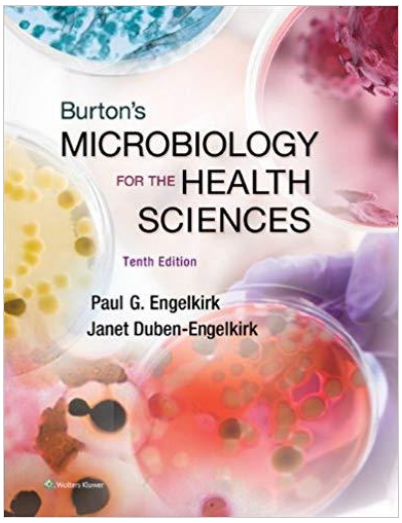
Course Requirements: Grading is based on a standard college curve, where students earn a grade based upon the percent of total possible points they obtain. Although subject to slight modification based on the discretion of the instructor, this course will consist of 1000 points (14

quizzes worth 10-20 points each, 1 mid-term, and 1 final exam worth 100 points each). Laboratory and assignment points are worth approximately 360 points and discussions 225 points to obtain the total points possible for the course (approximately 1000). There is a **three-day grace period to make up any missed exam or assignment with a 10% deduction for each day it is late.** Any missed exam/work not made up within the allotted time will be given a **zero.** It is the responsibility of the student to schedule make-up work within an acceptable period of time due to extenuating circumstances. Final letter grades are assigned based on the following criteria:

A = 89.5-100% of the total points
B = 79.5 - <89.5% of the total points
C = 69.5 - <79.5% of the total points
D = 59.5 - <69.5% of the total points
F = <59.5% of the total points

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 SUMMER 2020

Best,

Timeline	Topic	Text
Week 1	Introduction to Microbiology and Viewing the Microbial World	Ch 1, 2
	Cell Structure and Taxonomy	Ch 3
Week 1 Lab Due 06/20	**Getting Started, Laboratory Safety, Introduction – Rules for success and Microorganism Aseptic Technique, Cultures**	
Week 2	Microbial Diversity: Acellular and Prokaryotes	Ch 4
	Microbial Diversity: Eukaryotic Microbes	Ch 5
Week 2 Lab Due 6/27	**Bacteria Morphology and staining, Enumeration, Dilution and Plate Counts**	
Week 3	Biochemical Basis of Life	Ch 6
	Microbial Physiology and Genetics	Ch 7
Week 3 Lab Due 07/04	**Kirby-Bauer Diffusion for Antibiotic Effectiveness, Hand Washing and Normal Flora**	
Week 4	Controlling Microbial Growth In Vitro	Ch 8
	Inhibiting the Growth of Pathogens In Vivo using Antimicrobial Agents	Ch 9
Week 4 Labs Due 07/11	**Environmental Influences on Microbial Growth – Salinity Testing**	
Week 5	Microbial Ecology and Microbial Biotechnology and Epidemiology and Public Health	Ch 10, 11
	Pathogenesis of Infectious Diseases	Ch 14
Week 5 Labs Due 07/18	**Food Safety**	
Week 6	Nonspecific Host Defense Mechanisms	Ch 15
	Specific Host Defense Mechanisms: An Introduction to Immunology	Ch 16
Week 6 and 7 Labs Due 07/25	**Microorganisms as Vector of Disease and Antibiotic Resistance Lab Assignment – Not on HOL**	
Week 7	Overview of Human Infectious Diseases and Viral Infections of Humans	Ch 17 & 18
	Bacterial Infections of Humans	Ch 19
Week 8 And Finals	Fungal Infections of Humans	Ch 20
	Parasitic Infections of Humans	Ch 21
	Finals	

Tentative Course and Lab Outline:

Week 1: Jun 07 -13

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

Week 2: Jun 14 - 20

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

Week 3: Jun 21- 27

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

Week 4: Jun 28 – Jul 4

- 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
- 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 5: Jul 5 – 11

- 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)
- Reading: Pathogenesis of Infectious Diseases (Ch.14)
- Lab (30 pts): Hand-washing and Normal Flora

- Discussion (15 pts)
- Quiz (20 pts): Ch. 14

Week 6: Jul 12 – 18

- Reading: Nonspecific Host Defense Mechanisms (Ch.15)
- Begin Lab: Food Safety
- Discussion (15 pts)
- Quiz (20 pts): Ch. 15
- 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 7: Jul 19 – 25

- 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
- 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 8: Jul 26 – 29

- Reading: Fungal Infections of Humans (Ch.20)
- Lab (30 pts): Microorganisms as Vector of Diseases
- Antibiotic Resistance Lab Assignment (50 points)
- Discussion (15 pts)
- Quiz (20 pts): Ch. 20
- Reading: Parasitic Infections of Humans (Ch.21)
- Assignment (40 pts): TBD
- Discussion (15 pts)
- Quiz (20 pts): Ch. 21
- Final (100 pts):
- Discussion: Course Wrap-up