



Course Syllabus

Course Information

COURSE PREFIX: BIO-313

COURSE TITLE: Microbiology for Health Professionals

CREDIT HOURS: 4 Credit Hours

Preliminary Class Plan and Topics

Please see the schedule provided in the course.

Communicating With the Instructor

This course uses a “three before me” policy in regards to student to faculty communications. When questions arise during the course of this class, please remember to check these three sources for an answer before asking me to reply to your individual questions:

1. Course syllabus
2. Announcements in Canvas
3. The Canvas Inbox and Conversations

This policy will help you in potentially identifying answers before I can get back to you and it also helps your instructor from answering similar questions or concerns multiple times.

If you cannot find an answer to your question, please first post your question to the Canvas Inbox and Conversations. Here your question can be answered to the benefit of all students by either your fellow students who know the answer to your question or the instructor. You are encouraged to answer questions from other students in the discussion forum when you know the answer to a question in order to help provide timely assistance.

Response Time

If you need to contact me directly, my preference is that you will email me. **Please allow 24 hours for me to respond to emails Monday-Friday and 48 hours on the weekend.**

Technology Help

If you have a question about the technology being used in the course, please contact the Doane University Help Desk help@doane.edu for assistance (contact information is listed below).

Course Catalog Description

This course is designed to meet the requirements of students interested in careers in allied health and nursing. Microbiology for Health Professions is a one semester course that emphasizes the interaction of microorganisms with humans and the diseases they cause. The primary focus of the course is the role of microbes in disease. Topics include fundamentals of microbiology, factors that modulate the growth and survival of microbes, microbial pathogens, virulence factors and pathogenicity, antibiotic resistance, the immune system, epidemiology, and practical means of controlling the spread of disease.

Some weeks have labs that cover the Fermentation, Hand washing efficacy, Bacterial identification, ELISA and the Transmission of disease

Course Prerequisites

For successful completion of this course, it is recommended that students are familiar with Biology I and II or their equivalents

Course Textbook and Materials

In addition to the textbooks listed below, you must have access to the internet.

Required

Microbiology with Diseases by Body System, 5th edition, By Robert W. Bauman
ISBN 9780134618449.

Lab supplies: details will be in the Canvas course.

Required Technology

*Course books and reading materials will be integrated into your Canvas portal

Computer

Stable internet connection

Course Lab

As this is a 4-credit course, you can expect to complete lab most weeks to fulfill the course requirements.

Topic for each weekly lab:

1. **Week1: No Lab**
2. **Week2: Lactic Acid Fermentation Start.**
3. **Week 3: Hand Washing Lab**
4. **Week 4: Lactic Acid Fermentation Report**
5. **Week 5: HHMI: Bacterial Identification Lab**
6. **Week 6: HHMI virtual ELISA lab**
7. **Week 7: Environmental Influences on Microbial Growth-Salinity Testing**
8. **Week 8: No Lab**

Estimated time per lab

Week2 through 4: Lactic Acid Fermentation: 11-12 days

Week 3: Hand Washing Lab: 1-2 hours

Week 5: HHMI: Bacterial Identification Lab:2-3 hours

Week 6: HHMI virtual ELISA lab:2 hours

Week 7: Transmission of communicable diseases: 1-2 hours

Learning Objectives

At the completion of this course students will be able to:

1. The student will articulate how the process of science as we know it (scientific method) evolved with the development of the science of microbiology, using the 200 years it took to disprove spontaneous generation as a model.
2. The student will appreciate the diversity of microbial organisms on earth.
3. The student will become familiar with the principles of safety in the microbiology lab.
4. The student will grasp the basics of the use of the microscope for viewing bacterial samples.
5. The student will be able to describe and compare prokaryotic and eukaryotic cell structures and be able to compare and contrast basic microbial genetics with that of eukaryotic genomes).
6. By studying microbial metabolism, the student will differentiate between metabolic activities common to microbes and differentiate between diverse microbial and human (eukaryotic) processes.
7. The student will be able to employ knowledge of microbial structure to explain why/how chemical means of control can be used safely in or on a human, including antibiotics.
8. The student will practice the concepts of microbial identification and appreciate the importance of this procedure to the medical situation.
9. The student will be able to critically evaluate the risks of the use of antibiotics with regards to the development of resistance.
10. The student will be able to discuss the nature of as well as the importance of the human microbiome.
11. The student will be able to explain the nature of the relationship of the host with the ubiquitous milieu of microbes all around them.
12. The student will be able to appraise the validity of a proposed method of control.
13. The student will be able to discuss and explain the main functions and structures of the human immune system.
14. The student will be understand the replication of viruses and the fundamental aspects of structure and control of viruses.
15. The student will be familiar with common diseases of bacterial and viral origin associated with different body systems.
16. The student will be able to explain the main types of vaccines (killed, attenuated, subunit) and describe the criteria for the usage of each type; the student will be able to discuss and logically defend/deny the use of vaccines in children.

Module	Topic	Assessments & Activities	Aligned Objectives
1	Fundamentals of microbiology	<p><i>Assignments</i></p> <ul style="list-style-type: none"> ● Brief History of Microbiology ● Cell Structure and Function review ● Microscopy and staining review <p><i>Assessments</i></p> <ul style="list-style-type: none"> ● Theory of abiogenesis mini essay ● Module 1 quiz <i>Assessment</i> 	<ol style="list-style-type: none"> 1. Describe the historical perspectives in the development of microbiology 2. Describe the relevance of cell structure and function in microbial diseases 3. Demonstrate an understanding of the general principles of microscopy
2	Microbial growth, metabolism, and genetics	<p><i>Assignments</i></p> <ul style="list-style-type: none"> ● Microbial Nutrition and Growth ● Microbial genetics review ● Match the words ● Crossword ● Week 2 Discussion Board ● Reflective Journal ● Lab: Lactic Acid Fermentation Start <p><i>Assessments</i></p> <ul style="list-style-type: none"> ● Week 2 Quiz, proctored 	<ol style="list-style-type: none"> 1. Describe the basics of microbial growth 2. Describe the metabolic processes in microbes 3. Describe key features of microbial genetics
3	Control of microbes	<p><i>Assignments</i></p> <ul style="list-style-type: none"> ● Controlling Microbial growth ● Crossword ● Week 3 Discussion board: Selective Toxicity ● Reflective Journal ● Antibiotic mini essay ● Hand Washing Lab <p><i>Assessment</i></p> <ul style="list-style-type: none"> ● Module 3 Quiz 	<ol style="list-style-type: none"> 1. Define the control measures to limit microbial growth 2. Define the main goal of antimicrobial treatment, targets of antimicrobial, mode of action of, how microbes acquire antimicrobial resistance
4	Survey of microbes	<p><i>Assignments</i></p> <ul style="list-style-type: none"> ● Prokaryote Review ● Virus review ● Match the words ● Discussion board: Lysogenic Conversion ● Lab:Lactic Acid Fermentation report <p><i>Assessments</i></p> <ul style="list-style-type: none"> ● Zika virus mini-essay 	<ol style="list-style-type: none"> 1. Compare and contrast the major features of archaea, bacteria, and eukaryotes 2. List the basic characteristics of protozoans 3. Describe viral structure and multiplication 4. Describe microbial growth and metabolic processes

Module	Topic	Assessments & Activities	Aligned Objectives
		<ul style="list-style-type: none"> Module 4 Quiz 	
5	Infection, epidemiology, and innate host defenses	<ul style="list-style-type: none"> Infections, Infectious disease, and epidemiology review Innate Immunity review Crossword puzzle Discussion board: Student Directed Topic Bacterial Identification Lab <p><i>Assessments</i></p> <ul style="list-style-type: none"> Mini essay Module 5 Quiz 	<ol style="list-style-type: none"> Describe pathogenicity of microbes, and how microbes and host interact The Nature and Epidemiology of Infectious Disease and modes of transmission An Overview of the Body's Defenses and the first and second lines of defense Explain how bacteria can be identified and sequenced
6	Host defenses	<p><i>Assignments</i></p> <ul style="list-style-type: none"> Immunity Assignment Immune Response flow chart Immune Laboratory diagnosis review Case study Discussion board: B and T Cell Deficiencies Immunology virtual lab <p><i>Assessments</i></p> <ul style="list-style-type: none"> Mini essay vaccine production (MO1) Module 6 Quiz 	<ol style="list-style-type: none"> Discuss and explain the main functions and structures of the human immune system Explain common method of Immunology based assays are used in diagnosis.
7	Infectious disease of gastrointestinal tract, genitourinary tracts of both genders, and skin	<p><i>Assignments</i></p> <ul style="list-style-type: none"> Skin diseases Assignment review Digestive diseases assignment Genitourinary diseases assignment review Case Study Discussion Board: Helminth Infections Lab : Transmission of communicable diseases <p><i>Assessments</i></p> <ul style="list-style-type: none"> Urinary Tract Infection Mini Essay Module 7 Quiz 	<ol style="list-style-type: none"> List and define the types of normal biota and host defenses associated with the gastrointestinal tract, genitourinary tracts of both genders and Skin Identify the pathogens commonly associated with infections of the systems covered in this module, as well as their modes of pathogenesis associated with each type of disease List the diagnostic techniques, and therapeutic approaches to

Module	Topic	Assessments & Activities	Aligned Objectives
			the infections associated with these systems
8	Infectious disease of cardiovascular and lymphatic systems, eye and nervous system and Respiratory System	<p><i>Assignments</i></p> <ul style="list-style-type: none"> ● Nervous system and eye diseases Assignment ● Cardiovascular and systemic diseases assignment ● Respiratory diseases assignment ● Case Study ● Discussion Board: Meningitis <p><i>Assessments</i></p> <ul style="list-style-type: none"> ● Module 8 Quiz 	<ol style="list-style-type: none"> 1. The student will be able to list the types of normal biota presently known to occupy cardiovascular and lymphatic systems, eye and nervous system and Respiratory System 2. Describe the important features associated with the transmission, virulence, of the causative agents, that produce infections in the systems covered in this module 3. List the diagnostic techniques, and therapeutic approaches to the infections associated with these systems 4. Identify types of pathogenic microorganisms, modes of transmission and diseases associated with them.

Course Requirements

Online Course

This is an online course and there **will not be any face-to-face class sessions**. All communications, submissions of assignments, course interactions, and posting of grades will utilize Canvas LMS (<https://doane.instructure.com>). You **must have a reliable internet connection** throughout the duration of the course.

Attendance/Participation

Attendance in an online course means logging into Canvas daily, during the duration of the course, and participating in all of the activities that are posted in the course. In addition, check your Doane University email account regularly, as I may send important information about the course.

Doane University expects active participation by a student in a course, whether the course is on-ground or online. A student is expected to be prompt and regularly attend on-ground classes in their entirety. Regular engagement is expected for online courses.

You are required to have an active Doane University e-mail account. All communication from the instructor will be to your Doane University e-mail account or via canvas messaging

(accessed at doane.instructure.com). Please, check your Doane University e-mail account daily, as your instructor may send important information via email.

Discussion Board Participation

Regarding attendance/participation in Discussion Board assignments: each Discussion board has two parts. Part 1 is when you submit your portion of an assignment, and Part 2 is your peer feedback. Please note that discussion board submissions and comments posted after the due date will not count toward your grade; after the Part 2 due date the discussion board will close. This assignment is analogous to a face-to-face classroom discussion, you must be engaged or "in attendance" to conduct a discussion with your peers. The discussion assignments cannot be accepted retroactively.

Class Preparation

Preparation for class means reading the assigned readings and reviewing all information required for that week. You should plan to work on this course every day. This is a condensed, fast-paced, course. Expect to spend approximately 24 hours a week preparing for and actively participating in this 8-week course. We strongly advise that you do not take any vacations during the duration of the course. Regular engagement is expected for online courses.

Netiquette Guidelines

At heart, Netiquette (etiquette for the Internet) is simple, good manners and business courtesy. Some of it may seem basic, but some infringements can result in major problems for others or can create an unintended insult to another user. The guidelines are adapted from The Core Rules of Netiquette by Virginia Shea (1994). For more information, please review the Netiquette Guidelines in the Student Resource Center.

Computer Requirements

For the successful use of Canvas please refer to Doane University's [minimum computer requirements](#). This also includes:

- Reliable computer and internet connection
- A web browser (Chrome or Mozilla Firefox)
- Adobe Acrobat Reader (free)
- Word processing software—Microsoft Word or Google Docs
- Webcam and mic

For privacy purposes, use of a webcam is only optional during video conferencing and recording.

You are expected to have a reliable computer and internet connection throughout the course. You are also required to have a computer with a camera and/access to a camera that will enable you to do video assignments.

End of Module Assessment Quizzes will not be reset for technology issues arising from student computer or internet malfunctions.

Campus Network or Canvas Outage

When access to Canvas is not available for an extended period of time (greater than one entire evening - 6pm till 11pm) you can reasonably expect that the due date for assignments will be changed to the next day (assignment still due by midnight).

Drop and Add Dates

If you feel it is necessary to withdraw from the course, please contact your University Advisor or the Open Learning Academy at ola@doane.edu or (402) 467-9008 for full details on the types of withdrawals that are available and their procedures. You can also review important refund and withdrawal dates via the [Academic Calendar for OPENING LEARNING ACADEMY](#).

Academic Integrity

Fundamental to our mission, our core values, and our reputation, Doane University adheres to high academic standards. Students of Doane University are expected to conduct themselves in a manner reflecting personal and professional integrity. Disciplinary actions may be taken against students whose academic behavior is not congruent with the expectations of the University. Students are responsible for adhering to the standards detailed in this policy. Not being familiar with these standards does not mean that the students will not be accountable for adherence to them. Additional details on the Academic Integrity policy for violating academic integrity are published in the undergraduate and graduate catalogs.

2022-2023 Academic Catalog:

<https://catalog.doane.edu/content.php?catoid=27&navoid=2780>

Course Grading

Submitting Assignments

All assignments, unless otherwise announced by the instructor, must be submitted via Canvas. Each assignment will have a designated place to submit the assignment. It is your responsibility to submit all the assignments in accordance with the format instructed in the prompt. All material, assignments, and deadlines are subject to change with prior notice. It is your responsibility to stay in touch with your instructor and review the course site regularly to learn about changes to assignments or due dates. Once the course ends no more assignments will be accepted.

All assignments and due dates are reflective of Central Standard Time.

Grading Scale

Assignment of letter grades is based on a percentage of points earned. The letter grade will correspond with the following percentages achieved. All course requirements must be completed before a grade is assigned.

- A+ 97-100
- A 93-96
- A- 90-92
- B+ 87-89
- B 83-86
- B- 80-82

- C+ 77-79
- C 73-76
- C- 70-72
- D+ 67-69
- D 63-66
- D- 60-62
- F <60

Grading Scheme

Your final percentage will be assessed with the following criteria:

Laboratory Reports - 20%

Discussion Board w/ Response - 15%

Mini Essays - 20%

Chapter review shorts answers, reflective journal, crossword puzzles, case studies - 15%

Quizzes - 30%

TOTAL 100%

The assignments are weighted so the final grades will not be rounded up to the next grade.

Late or Missed Assignments

All assignments must be completed by the due date and turned in to finish the course.

Unless you discuss a late assignment with your instructor **PRIOR** to the assignment due date, your assignment will lose 20% (of the designated assignment grade) each day it is late. Unapproved late assignments will not be accepted for credit, and extensions will not be applied retroactively. Assignments submitted through email will not be accepted for grading and credit.

Any late or missing assignments related to an illness must be accompanied by a valid and verifiable document from your medical provider before any accommodation can be made.

Feedback

Please allow 3-7 days for feedback on assignments once all participating students have submitted a response to a specific assignment. When an assignment falls short of what is required for a full grade I provide thorough feedback, and this interval enables me to review an assignment more than once, prior to issuing a fair grade. Please review the instructor feedback for assignments and assessments, as this will help you reflect on what you have learned while receiving suggestions for improvement. **There is no extra credit offered in this course.**

Grade Appeals

Students who believe that their grade was miscalculated due to a mathematical error should contact the instructor within ten (10) days of the grade posting. A student is encouraged to talk with their advisor to offer an assessment of the concern and to clarify the steps of the appeal process. More information is published in the [Undergraduate and Graduate Catalogs](#).

Tutor Me

Students will have access to a free tutor me service within their Canvas account. You can connect with a live free tutor or submit a paper to get feedback before submitting.

Technical Support

If you are in need of technical assistance, please access the [Self Service Portal](#). You may reach the help desk at 402-826-8411 or by email at help@doane.edu.

Accessibility Statement

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, professional disability specialists and support staff at Doane University facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities. Doane University staff coordinate student transitions from high schools and community colleges, conduct in-service training for faculty and staff, enable the resolution of accessibility issues, conduct community outreach, and facilitate collaboration among Doane University staff on disability policies, procedures, and accommodations.

Accommodations & Disability Services

[Doane University's Disability Services Office](#) will provide guidance on accommodations and universal access. To request accommodations please complete the [Self-Identification Form](#) and visit the website for additional information.

Title IX Requirements: Mandatory Reporting

At Doane, all university employees, including faculty, are considered Mandatory Reporters. As a Mandatory Reporter, I am required to report incidents of sexual misconduct and relationship violence to the Title IX Coordinator and, thus, cannot guarantee confidentiality. This means that if you tell me about an incident of sexual harassment, sexual assault, domestic violence, dating violence, stalking and/or other forms of prohibited discrimination, I have to share the information with the University's Title IX Coordinator. My report does not mean that you are officially reporting the incident. This process is in place to ensure you have access to and are able to receive the support and resources you need. For additional information, including confidential resources, please visit the [Campus Advocacy, Prevention, and Education \(CAPE\) Project](#).

Anti-Harassment Policy

Doane University, referred to as the "University", is committed to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community. This policy addresses the University's responsibilities under Title IX, the Violence Against Women Reauthorization Act of 2013, and the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act ("Clery Act"). More information is published in the [Student Handbooks](#).

Instructional Technology Accessibility and Privacy Policies

If your course uses additional technology tools, information on the [Technology Policies & Guidelines](#)

Syllabus Disclaimer

I (the instructor) view the course syllabus as an educational contract between myself and each student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. I reserve the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes via email or in the course site Announcements. Please remember to check your Doane University email and the course site Announcements often.

Syllabus Changes

The instructor and Doane University reserve the right to make changes as necessary to this course syllabus. All students will be notified of any changes.

Doane Syllabus Addendum

Each student is responsible for being aware of the policies, resources, and expectations as specified in the Doane Syllabus Addendum located at:

<https://www.doane.edu/Syllabus>

Please review these items before your course begins.