



BIOL-225 Microbiology w/Lab

Dr. Kathy Albert
NORTH CENTRAL KANSAS TECHNICAL COLLEGE

COURSE INFORMATION

Principles of Microbiology will focus on the general characteristics of bacteria, viruses, fungi, and parasites as well as those microbes that influence human health. Additionally, laboratory diagnosis of disease, the human microbiome, and human immunology will be explored.

Credits: 5

Pre/Corequisites:

- Pre/Corequisite: Grade of C or better in BIOL 121 or BIOL 230. Students are not permitted to enroll in Anatomy & Physiology and Microbiology within the same term.

CLASS INFORMATION

Term: Spring Year: 2023 Start Date: 01/09/2023 End Date: 5/12/2023

INSTRUCTOR

Dr. Kathy Albert

Email: kalbert@ncktc.edu

Office Phone: (785) 623-6165 Office Location: HSB-043

Office Hours: MWF (9:30-10:30 AM), T (12:00-1:00 PM), TH (12:30-1:00 & 4:00-4:30 PM)

Email me with any questions or concerns you have. Please include your full name and the course you are enrolled in.

TEXTBOOKS

Microbiology: A Human Perspective (with connect access card), 10th Ed. McGraw Hill ISBN13: 9781264341979
Kruif. 2002. Microbe Hunters. 1st edition. ISBN 978-0156027779.

COURSE COMPETENCIES

1. Explain major landmarks in microscopy and cell biology and their medical and/or commercial applications in understanding and controlling microbial growth.
2. Identify and explain the major metabolic pathways of microorganisms.
3. Identify and explain major concepts in bacterial genetics including genetic engineering and biotechnology.
4. Explain the similarities and contrasts between eukaryotic cells, prokaryotes and infectious agents.
5. Explain the roles of the innate and adaptive immune systems and host-microbe interactions.
6. Explain immunologic disorders, antimicrobial therapy and basic epidemiological principles.
7. Describe the role of microbes in the production of skin/wound infections, CNS infections and diseases of the upper/lower respiratory tract.
8. Explain the roles of foodborne, waterborne and sexually-transmitted pathogens in the development of gastrointestinal and genitourinary tract infections.

GRADING INFORMATION

- There will be a variety of assessments during this course which will determine your final grade. The various components are as follows:

Assignments	15 Learnsmart assignments	350 pts
Labs	15 labs x 20 pts per lab	300 pts
Exams	4 exams x 100 pts per exam	400 pts
Research Project	150 pts total	150 pts
Weekly Quizzes	11 quizzes x 15 pts per quiz	165 pts
Reading Assignments	4 assignments x 15 pts per assignment	60 pts
Discussions	15 discussions x 10 pts per discussion	150 pts
<i>Total points possible for the course: 1575 pts</i>		

Learnsmart: These are assignments you will complete using the publisher website called Connect, once you have registered for Connect you will see our class section and the assignments, we will be completing this semester. There is a link within the start here folder with a direct link to our section.

Labs: Labs will be conducted using the simulations within Connect, McGraw Hill Publisher site and materials posted within the class.

Quizzes: Quizzes are 5 questions each worth 2 points. They are true or false. You have 10 minutes to complete each quiz. You will be given a two-minute reminder when you have two minutes left to complete the quiz. When the time is over the quiz will automatically submit to prevent you from going over the time limit.

Discussions: Discussions are meant to be interactive between you and your fellow classmates. Since we cannot have classroom conversations this takes the place of that. In order to receive full points on discussions you are required to post an initial response to the questions and then comment on two other classmate's posts. These responses must be well thought out and not a simple one-word answer. The response posts must show you actually read the initial post and have something worthwhile to add.

Exams: Exams will concentrate on the lecture materials. They will consist of a variety of type of questions; multiple choice, true/false and matching. They will be online and timed. You have 75 minutes to complete the exam. You will be given a two-minute reminder when you have two minutes left to complete the exam. When the time is over the exam will automatically submit to prevent you from going over the time limit.

Research Project: The research project will integrate the four major concepts of biology (i.e., cell biology, genetics, evolution, and ecology) into one research presentation over a topic of choice. Students will discuss potential ideas with their instructor. It will be required that the research project take the approach of a case study outlining a current issue which encompasses the major concepts of biology outlined above. Overall, the capstone research project will be worth 150 pts.

Reading Assignment: Throughout the semester, students are expected to be reading a supplemental textbook (Microbe Hunters). One chapter will be assigned to correspond to the first four units of the semester, and a short summary will be written and submitted for a grade (15 pts per summary).

Course Objectives: At the completion of this course, the student should understand the basic concepts of human microbiology, cell biology and molecular genetics as well as disease control methods, disease prevention/treatment and epidemiology.

GRADING SCALE

After your numerical grade has been calculated, your letter grade will be determined as follows:

A 100% -90%

B 89% - 80%

C 79% - 70%

D 69% - 60%

F 59% and below

Due Dates for labs, quizzes and exams:

All work is due on the last day of the week they are contained within, please see the course schedule.

Late Assignment Policy:

No late work is accepted.

Extra Credit Policy:

*****There is no extra credit available for this course**

Course Objectives: At the completion of this course, the student should understand the basic concepts of human biology, cell biology and molecular genetics as well as disease control methods, disease prevention/treatment and epidemiology.

Important Dates:

Jan 09 Class starts

Mar 28 Withdraw Date

May 11 Class ends

Online Course : An online course uses computer-based technologies (i.e. Moodle) to create an online "classroom." Students are instructed in course content through online earning: tutorials, testing exercises, group collaborations, independent assignments, and long-range projects. Each individual course provides a schedule of assignments and deadlines. Students need to have adequate computer skills as they will be communicating with the instructor and classmates online. This course is an online course, and you are responsible for ensuring that you can access all course material on a regular basis either from the NCK Tech campus or from home. Additionally, certain technical abilities will be required, such as installing necessary plug-ins and uploading files. If you have a problem with a personal computer or interrupted network connection, know that you are still responsible for submitting your work on time. **Moodle Support:**

<https://ncktc.zendesk.com/hc/en-us>

Students are responsible for making sure that their assignments are uploaded correctly into Moodle.

No handwritten assignments or pictures of assignments will be accepted.

Time Commitment:

Overall, you should expect to spend approximately 2-3 hours studying for each hour of lecture time and 1-2 hours of lab time. If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let your instructor know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructor when difficulties arise during the semester so that they can help you find a solution.

NCK TECH MISSION STATEMENT

North Central Kansas Technical College delivers applied, innovative and personalized education to empower learners, enrich lives, develop skilled professionals and strengthen economic systems.

Vision Statement

North Central Kansas Technical College is dedicated to being a leader in workforce development by maximizing value for students, employers and communities through educational excellence.

Core Values

Achieving EXCELLENCE with INTEGRITY through
DEDICATION

INNOVATION

COLLABORATION

COMMUNICATION

NCK TECH NON-DISCRIMINATION POLICY

Applicants for admission and employment, students, employees, sources of referral of applicants for admission and employment, and all unions or professional organizations holding collective bargaining or professional agreements with NCK Tech are hereby notified that this college is committed to nondiscrimination on the basis of race, color, gender, ethnic or national origin, sex, sexual orientation, gender identity, marital status, religion, age, ancestry, disability, military status, or veteran status in admission or access to, or treatment or employment in, its programs and activities. Further, it is the policy of the college to prohibit harassment (including sexual harassment and sexual violence) of students and employees.

Any person having inquiries concerning the college's compliance with the regulations implementing Title VI, Title VII, Title IX, Section 504, and the Americans with Disabilities Act Amendments Act is directed to contact the person identified below who has been designated to coordinate the Institution's efforts to comply with the regulations implementing these laws.

- The Section 504/ADA Compliance Officer can be reached at section504@ncktc.edu, (785) 738-2276, or by mail at Attn: Section 504 Officer, PO BOX 507, 3033 US Hwy 24, Beloit, KS 67420 (785) 738-9055 or by mail at NCK Tech, Attn: Dean of Instructional Services, PO Box 507, 3033 US Hwy 24, Beloit, KS 67420.
- The Title IX Compliance Officer can be reached at titleix@ncktc.edu, (785) 738-2276, or by mail at Attn: Title IX Officer, PO BOX 507, 3033 US Hwy 24, Beloit, KS 67420 (785) 738-9055 or by mail at NCK Tech, Attn: Dean of Instructional Services, PO Box 507, 3033 US Hwy 24, Beloit, KS 67420.

Title VI, Title IX and Section 504 complaints may also be filed with the Regional Office for Civil Rights.

Address correspondence to: US Department of Education, Region VII
Office for Civil Rights
10220 N Executive Hills Blvd
Kansas City, MO 64153

Where discrimination is found to have occurred, NCK Tech will act to stop the discrimination, to prevent its recurrence, to remedy its effects, and to hold accountable the responsible individual(s). Additional details regarding the investigation process can be found in the Faculty/Staff Handbook and the Student Handbook as approved by the NCK Tech Board of Trustees.

For further information on notice of non-discrimination, you may contact the U.S. Department of Education, Office for Civil Rights at 1- 800-421-3481 or visit <https://www2.ed.gov/about/offices/list/ocr/index.html>.

OVERVIEW FOR STUDENTS WITH DISABILITIES

NCK Tech is dedicated to providing equal access and opportunity to all campus programs and services for students with disabilities. We are committed to providing reasonable accommodations in accordance with applicable state and federal laws including, but not limited to, Section 504 and 508 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. We strive to create a safe, respectful and inclusive environment and promote awareness, knowledge and self-advocacy.

NCK Tech acknowledges that traditional methods, programs and services are not always appropriate or sufficient to accommodate the limitations experienced by some qualified persons with disabilities. When a student's disability prevents him/her from fulfilling a course requirement through conventional procedures, consideration will be given to alternatives, **keeping in mind that academic standards must be maintained.**

Services are provided through Student Accessibility Services (SAS) staff located in the Student Success Center, on the Beloit Campus, and in Student Services, on the Hays Campus.

- Director of Learning Services, may be reached at [1-785-738-9020](tel:1-785-738-9020); or by mail at NCK Technical College, 3033 US Hwy 24, Beloit, KS 67420.

Student Responsibilities

Students requesting support services will need to register ("self-disclose" and complete Student Accessibility Services Intake and Consent Form), provide appropriate documentation (if available) including how the disability affects academic performance and suggested accommodations, and communicate with the Director of Learning Services as part of the interactive process to create an *Educational Accommodation Plan* that will notify Instructors of approved accommodations, services and/or auxiliary aids.

Students are encouraged to make timely and appropriate disclosures and requests, at least two weeks in advance of a course, program, or activity for which an accommodation is requested (or as soon as realistically possible) to allow adequate time for accommodation services to be set in place.

Accommodations, Academic Support Services, or Auxiliary Aids

Reasonable accommodations including academic support services and auxiliary aids are provided to allow students with disabilities an equal opportunity to participate in and benefit from our educational programs. Accommodations will be provided on a case-by-case basis determined by student request, documentation, intake interview, Educational Accommodation Plan team, and assessment of individual needs and course requirements.

Reasonable testing accommodations may include, but are not limited to:

- Extended testing time
- Reduced distraction testing environment
- Test reader and/or scribe
- Use of calculator

Academic support services/auxiliary aids may include, but are not limited to:

- Note-taking assistance (second set of notes, power point slides, or other visual aids provided)
- Sign Language Interpreter
- Preferential seating in the classroom
- Large print exams, handouts, signs, etc.
- Telecommunications devices
- Use of Assistive Technology

Accommodations may not fundamentally alter the nature of the program or activity, lower academic standards, present undue financial or administrative burden on the college, or post a threat to others or public safety.

Additionally, some accommodations and services cannot be provided, such as personal devices or assistance with personal services.

Auxiliary aids may be available through a variety of sources available to individual students. The student may make a request in obtaining specialized support services from other resources such as Vocational Rehabilitation Services (VR), Recordings for the Blind, Kansas Talking Book Service, etc. For example, Vocational Rehabilitation may fund such items as transportation to the institution, tuition, textbooks, hearing aids, and other individually prescribed medical devices.

If at any time throughout the academic year, a student feels that the agreed upon accommodations are not being followed or that alternate accommodations need to be provided, the student should notify Student Accessibility Services (SAS) staff. NCK Tech is committed to student success; however, we do not require students to use accommodations. The decision of when to utilize approved accommodations or services is up to the student. Integration, self-advocacy and individual responsibility are promoted and expected.

Grievance Procedure

Any student who believes he or she has been subjected to discrimination on the basis of disability or has been denied access or accommodations, shall have the right to invoke the Grievance Procedure.

Students are encouraged to first discuss their concerns with SAS. An attempt will be made to resolve the issue(s) causing concern by assisting the student in discussions with the person(s) involved. Most situations are positively resolved through this process. If the student does not feel the concern or complaint has been appropriately resolved, he or she should contact the [Vice President of Student and Instructional Services](#) at 1-800-658-4655 or [PO Box 507, 3033 US Hwy 24, Beloit, KS 67420](#), where grievance procedures are filed for all students, including students with disabilities.

If the complaint is not resolved at the College level, a student may choose to file a complaint with the [Office for Civil Rights](#) at 1-816-268-0550 or [U.S. Department of Education, One Petticoat Lane, 1010 Walnut Street, Suite 320, Kansas City, MO 64106](#).

Confidentiality

All information regarding a student's disability is confidential. All documentation will remain separate from academic records and will not be released to an individual or source external to NCK Tech without the student's written consent. In order to provide effective services, it may be necessary to communicate limited information on a need-to-know basis regarding disability-related needs to NCK Tech faculty and/or staff.

Policy Regarding Academic Dishonesty:

Academic dishonesty of any kind will not be tolerated while attending North Central Kansas Technical College. The examples of academic dishonesty are plagiarism, cheating, falsification or forgery of any assignments or examinations. Any student who participates in any form of academic dishonesty must accept the consequences of their actions. These consequences may include but are not limited to the following: (a) verbal or written warning, (b) lowering of grade for assignment/activity, (c) failure of class assignment or exam.

RIGHT TO MODIFY THE SYLLABUS

The instructor reserves the right to modify the syllabus during the semester. Students will be given advanced notice if a change would occur.

Principles of Microbiology Tentative Schedule, Spring 2023

Due Date	Chapter Readings	Assignments & Exams
Jan 09	Chapters 1 & 2 Humans and the Microbial World & Molecules of Life	Discussion: Introduction Connect Chapters 1 & 2 VL Quadrant Streak Plate Method & Pour Plating Method
Jan 16	Chapter 3 Microscopy and Cell Structure	Quiz- Chapter 1, 2, & 3 Connect Chapter 3 VL Microscopy & Cells
Jan 23	Chapter 4 Dynamics of Microbial Growth	Connect Chapter 4 VL Antimicrobial Sensitivity Testing & Effect of Antiseptics and Disinfectants
Jan 30	Chapter 5 Control of Microbial Growth	Quiz- Chapters 4 & 5 Connect Chapter 5 VL Effect of Ultraviolet Light Exam 1 (chapters 1-5)
Feb 6	Chapter 6 Metabolism: Fueling the Growth	Quiz- Chapter 6 Connect Chapter 6 VL Yeast Fermentation
Feb 13	Chapter 7 Blueprint of Life	Quiz – Chapter 7 Connect Chapter 7 VL Isolation of DNA
Feb 20	Chapter 8 Bacterial Genetics	Quiz – Chapter 8 Connect Chapter 8 VL Bacterial Genetics & Subculturing of Bacteria
Feb 27	Chapter 9 Biotechnology	Connect Chapter 9 VL PCR & Quantification by Colony Counting
Mar 06	Chapter 12 Eukaryotic Members of the Microbial World	Quiz – Chapters 9 & 12 Connect Chapter 12 VL Sampling Surfaces for Bacteria Exam 2 (chapters 6-9 & 12)
Mar 13	<i>Spring Break - No Class</i>	
Mar 20	Chapter 10 ID and Classification of Microorganisms	Connect Chapter 10 VL Unknown Bacteria #1 & #2
Mar 27	Chapter 11 Diversity of Bacteria and Archaea	Quiz – Chapters 10 & 11 Connect Chapter 11 VL Gram Staining & Acid-Fast Staining

April 3	Chapter 13 Viruses, Prions and Viroids	Quiz – Chapter 13 Connect Chapter 13
April 10	Chapters 14 & 15 Innate Immune Response & Adaptive Immune Response	Quiz – Chapters 14 & 15 Connect Chapters 14 & 15 Exam 3 (chapters 10, 11, 13-15)
April 17	Chapters 16 & 17 Host-Microbe Interactions, Immunologic Disorders	Connect Chapters 16 & 17 VL Antibiotic-resistant Bacteria
April 24	Chapter 18 Applications of Immune Responses	Quiz – Chapter 16, 17, & 18 Connect Chapter 18 VL Oxygen Requirements and Anaerobic Jar
May 1	Chapters 19 & 20 Epidemiology & Antimicrobial Medications	Quiz – Chapters 19 & 20 Connect Chapters 19 & 20
May 8	Final Exam	Exam 4 (chapters 16-20)