



# BIOL-225 F01 Microbiology w/Lab

Kathleen Albert

FORT HAYS TECH | NORTH CENTRAL

## COURSE INFORMATION

---

This class is an in-depth study of the microbial organisms that affect human health. Lecture will cover the cellular and molecular biology of microbes, as well as providing historical perspective on microbiology. Bacterial genetics will be discussed in detail as a background for examination of microbial resistance, bioengineering and biotechnology. The student will learn practical techniques and applications of microscopy, aseptic technique and microbial identification through multiple laboratory exercises. Illustrations of the interactions between nurses, physicians, laboratorians, other health professionals and the patient will be provided to introduce the student to their respective roles in the diagnosis and management of human infectious disease

Credits: 5

Pre/Corequisites:

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

## CLASS INFORMATION

---

Section Number:

Term: Fall      Year: 2025      Start Date: 8/18/2025      End Date: 12/12/2025

## INSTRUCTOR

---

Kathleen Albert

Email: [kalbert@fhtechnnc.edu](mailto:kalbert@fhtechnnc.edu)

Office Phone: 785-623-6165

Office Location: HSB-043

Office Hours:

MWF (9:00-10:00 AM), T (8:30-9:00 AM & 12:00-12:30 PM), TH (8:30-9:00 AM & 12:30-1:00 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), 10<sup>th</sup> Ed. McGraw Hill ISBN13: 9781264341962

Kruif. 2002. Microbe Hunters. 1st edition. ISBN 9780156027779.

## 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	24 assignments x 5 pts per assignment	120 pts
Labs	24 labs x 10 pts per lab	240 pts
Weekly Quizzes	24 quizzes x 10 pts per quiz	240 pts
Reading Assignments	4 assignments x 10 pts per assignment	40 pts
Discussions	14 discussions x 10 pts per discussion	140 pts
<b><i>Total points possible for the course: 780 pts</i></b>		

**Smartbook/Assignments:** These activities are to enhance your reading experience and cement the learning objectives we cover each week. Smartbook assignments are not worth points but may be beneficial to complete. Assignments are worth 5 points.

**Labs:** Labs will be conducted using an online simulation website.

**Quizzes:** Quizzes are 20 questions each worth 10 points. 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 or just consist of telling the poster "good job". The response posts must show you actually read the initial post and have something worthwhile to add.

**Exams:** Exams/Quizzes may be proctored and the student must make sure that they are fully visible during the test. Hands, arms, upper chest and head should be shown in the screen. No outside materials should be used including notes, cell phones, other computers, and people assisting you. Any student found to be cheating on a quiz/exam will receive a score of 0 for that exam, and possibly be given an F in the class.

**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 (10 pts per summary).

### **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.

**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 Fort Hays Tech | North Central 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:**

A course is measured in credit hours. Each credit hour requires about 45 hours of work. 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.

## CELL PHONE POLICY

---

Use of cellular phones or any other electronic communication devices for any purpose during a class or exam session is prohibited unless expressly permitted by the instructor.

## CLASSROOM DECORUM

---

Netiquette is online etiquette. It is important that all participants in online courses be aware of the proper online behavior and respect each other. Use appropriate language for an educational environment:

- Use complete sentences
- Use proper spelling and grammar
- Avoid slang and uncommon abbreviations
- Do not use obscene or threatening language

Remember that the College values diversity and encourages discourse. Be respectful of differences while engaging in online discussions. For more information about Netiquette, see *The Core Rules for*

*Netiquette* (<http://www.albion.com/netiquette/corerules.html> (Links to an external site.)Links to an external site.) by Virginia Shea.

## ATTENDANCE

---

### GUIDELINES:

Online attendance is highly encouraged to be successful in this class. Attendance online is defined as a learner who logs into the classroom and completes at least two activities in the course each week. Students are required to complete an assignment the first week of the class to maintain their enrollment in the course.

## ACADEMIC HONESTY

---

Membership in the Fort Hays Tech | North Central learning community imposes upon the student a variety of commitments, obligations, and responsibilities. It is the policy of this College to impose sanctions on students who misrepresent their academic work. Appropriate classroom instructors or other designated persons will select these sanctions consistent with the seriousness of the violation and related considerations.

Examples of academic dishonesty include but are not limited to:

- Plagiarism: i.e. taking someone else's intellectual work and presenting it as one's own. Each department set standards of attribution. Faculty will include disciplinary or class-specific definitions in course syllabi.
- Cheating is unacceptable in any form. Examples include consultation of books, library materials, notes or intentional observation of another student's test on paper or a computer screen; accessing another student's answers from an exam to be given or in progress; submission of falsified data; alteration of exams or other academic exercises; and collaboration on projects where collaboration is forbidden.
- Falsification, forgery or alteration of any documents pertaining to assignments and examinations.
- The use of AI generated content from AI tools such as, but not limited to, ChatGPT, Dall-E, Co-Pilot, etc., is up to faculty discretion per course as stipulated within the course syllabus. Submitting AI generated work as your own, without attribution, will be considered academic dishonesty.
- In courses where the use of AI tools are not permitted as stipulated within the course syllabus, work submitted using AI will be considered academic dishonesty.
- Students who participate in, or assist with, cheating or plagiarism will also be in violation of this policy.

Classroom instructors and/or administrators will assess sanctions for violations of this policy. The seriousness of the violation will dictate the severity of the sanction imposed. Academic sanctions may include but are not limited to any of the following:

1. verbal or written warning
2. lowering of grade for an assignment
3. lowering of term grade

Administrative sanctions may include but are not limited to either of the following

1. Suspension from the course, program, or College
2. Dismissal from the course, program, or College

## **FORT HAYS TECH | NORTH CENTRAL MISSION STATEMENT**

---

Fort Hays Tech | North Central delivers applied, innovative and personalized education to empower learners, enrich lives, develop skilled professionals and strengthen economic systems.

### **Vision Statement**

Fort Hays Tech | North Central 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

## **FORT HAYS TECH | NORTH CENTRAL NON-DISCRIMINATION POLICY**

---

Fort Hays Tech | North Central 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 the VP of Student and Instructional Services (Section 504/ADA Compliance Officer and Title VI, Title VII, & Title IX Compliance Officer) at [\(785\)738-9055](tel:7857389055), [cisbell@fhtechnnc.edu](mailto:cisbell@fhtechnnc.edu), or PO Box 507, 3033 US Hwy 24, Beloit, KS 67420.

## **FORT HAYS TECH | NORTH CENTRAL TOBACCO USE POLICY**

---

The use of tobacco products in any form and/or electronic cigarettes is prohibited in, or within ten (10) feet of any building owned, leased, or rented by the College.

## FORT HAYS TECH | NORTH CENTRAL WEAPONS POLICY

---

Fort Hays Tech | North Central prohibits the possession and use of firearms, explosives, and other weapons on Fort Hays Tech | North Central property, with certain limited exceptions, as provided below. This policy is in accordance with the Kansas Board of Regents ("Board") Policy and state law, K.S.A. 75-7c01, et seq. Definitions For purposes of this policy:

1. The term "weapons" includes:

- a. Any object or device which will, is designed to, or may be readily converted to expel bullet, shot or shell by the action of an explosive or other propellant;
- b. Any handgun, pistol, revolver, rifle, shotgun, or other firearm of any nature
- c. Any BB gun, pellet gun, air/CO2 gun, stun gun or blowgun;
- d. Any explosive, incendiary or poison gas (A) bomb, (B) mine, (C) grenade, (D) rocket having a propellant charge of more than ¼ ounce;
- e. Any incendiary or explosive material, liquid, solid, or mixture equipped with a fuse, wick or other detonating device;
- f. Any tear gas bomb or smoke bomb; however, personal self-defense items containing mace or pepper spray shall not be deemed to be a weapon for the purposes of this policy;
- g. Any knife, commonly referred to as a switch-blade, which has a blade that opens automatically by hand pressure applied to a button, spring or other device.

## INCLEMENT WEATHER

---

College campus dismissals and cancelations will be announced using the College Alert system. Local media will also be notified.

## OVERVIEW FOR STUDENTS WITH DISABILITIES

---

Fort Hays Tech | North Central 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.

Fort Hays Tech | North Central 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 [Fort Hays Tech | North Central, 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 pose 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. Fort Hays Tech | North Central 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 Fort Hays Tech | North Central 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 Fort Hays Tech | North Central faculty and/or staff.

## **Reasonable Suspicion**

If reasonable suspicion of substance abuse exists regarding an employee or student based on objective criteria (including, but not limited to, behavior, appearance, demeanor, detection of the odor of alcohol or any controlled substance), the employee or student will be requested to consent to drug testing performed by Fort Hays Tech | North Central's contract vendor at the expense of the college.

- A. A college administrator (or their designee) shall drive the employee or student to the vendor's site for drug testing and shall return the employee or student to his/her residence (or arrange for transportation) following the testing.
- B. Test results shall be sent directly to the college administrator, with a copy also sent to the employee or student. All test results will be considered confidential, access to the results will be limited to institutional personnel who have a legitimate need-to-know.
- C. In the event of a positive test result, the employee or student may request a retest of the sample at the employee or student's expense. The request must be submitted within 24 hours.
- D. Positive results for any illegal drugs, or prescription drugs (either not prescribed for the employee or student, or at levels above the prescribed dosage), or blood alcohol level of 0.04 or greater shall be grounds for disciplinary action, up to and including termination or expulsion.
- E. Refusal to provide a specimen for this testing shall be treated as a positive drug test result.
- F. Test results or specimens that have been determined to be altered by the employee or student shall be grounds for disciplinary action, up to and including termination or expulsion.
- G. If the employee or student tests positive for an authorized prescription drug which may impair his/her performance or judgment, the employee or student may not be permitted to participate in college activities until he/she provides a doctor's release.



## RIGHT TO MODIFY THE SYLLABUS

The instructor reserves the right to modify the syllabus during the semester.  
Students will be notified if a change is made.

### Principles of Microbiology Tentative Schedule, Spring 2025

		<b>Chapter Readings</b>	<b>Assignments &amp; Exams</b>
1	Aug 18	Chapter 3 Microscopy and Cell Structure	Assignments Ch. 3 Discussion Quiz Lab
2	Aug 25	Chapter 4 Dynamics of Microbial Growth Chapter 5 Control of Microbial Growth	Assignment Ch. 4 & 5 Discussion Quizzes Labs
3	Sept 1	Chapter 6 Metabolism: Fueling the Growth Chapter 7 Blueprint of Life	Assignments Ch. 6 & 7 Discussion Quizzes Labs Reading Assignment I
4	Sept 08	Chapter 8 Bacterial Genetics	Assignments Ch. 8 Discussion Quizzes Labs
5	Sept 15	Chapter 10 ID and Classification of Microorganisms	Assignments Ch. 10 Discussion Quizzes Labs Reading Assignment II
6	Sept 22	Chapter 12 Eukaryotic Members of the Microbial World Chapter 13 Viruses, Prions and Viroids	Assignments Ch. 12 & 13 Discussion Quizzes Labs
7	Sept 29	Chapter 14 Innate Immune Response Chapter 15 Adaptive Immune Response	Assignments Ch. 14 & 15 Discussion Quizzes Labs
8	Oct 06	Chapter 16 Host-Microbe Interactions Chapter 17 Immunologic Disorders	Assignments Ch. 16 & 17 Discussion Quizzes Labs
9	Oct 13	Chapter 18 Applications of Immune Responses Chapter 19 Epidemiology	Assignments Ch. 18 & 19 Quizzes Labs Reading Assignment III
10	Oct 20	Chapter 20 Antimicrobial Medications Chapter 21 Respiratory System Infections	Assignments Ch. 20 & 21 Discussion Quizzes Labs
11	Oct 27	Chapter 22 Skin Infections Chapter 23 Wound Infections	Assignments Ch. 22 & 23 Discussion

			Quizzes Labs
12	Nov 03	Chapter 24 Digestive System Infections Chapter 25 Blood & Lymphatic Infections	Assignments Ch. 24 & 25 Discussion Quizzes Labs Reading Assignment IV
13	Nov 10	Chapter 26 Nervous System Infections	Assignment 26 Discussion Quiz Labs
14	Nov 17	Chapter 27 Genitourinary Tract Infections	Assignments 27 Discussion Quizzes Labs
	Nov 24	<b>THANKSGIVING BREAK</b>	
15	Dec 1	Chapter 30 Food Microbiology	Assignment Ch. 30 Discussion Quizzes Labs