BIOL-230 Anatomy and Physiology w/ Lab
Thomas J. Owen, D.C.
FORT HAYS TECH NORTH CENTRAL

# COURSE INFORMATION

## Course Description

This course provides an in-depth study of human anatomy and physiology. Anatomy focuses on the structure of the human body, from cells to organ systems, while physiology examines the body's mechanical and biochemical functions.
Lecture concepts will be reinforced through laboratory exercises that help students apply course material in a hands-on setting.

## Credits and Prerequisites

- Credits: 5
- Pre/Corequisite: Grade of C or better in BIOL 121 or qualifying examination score.

## Class Information

- Section Number: BIOL 230
- Term: Fall 2026
- Start Date: August 17, 2026
- End Date: December 11, 2026

# INSTRUCTOR

## Instructor Contact

- Instructor: Thomas J. Owen, DC
- Email: towen@fhtechnc.edu
- Office Hours: This is an online class. Please contact the instructor through Blackboard message or email.

## Textbooks and Courseware

- OpenStax. 2019. *Anatomy and Physiology*. https://openstax.org/details/books/anatomy-and-physiology
- Visible Body Courseware requires a $49 annual subscription. Join the course at: https://courseware.visiblebody.com/courses/155216/join?join_course_token=JaJGMXb3ZXVnxvkk4XZsd97T&site_license=false

## Supplies

- Computer device with online capabilities
- Notebook paper
- Colored pencils or crayons
- Lab supplies as described in course handouts

Friday, August 16, 2024 11:54 AM

# COURSE COMPETENCIES

## Course Competencies

1. Use medical terminology appropriately to describe the organization of cells, tissues, and organ systems.
2. Identify structures and explain the functions of body systems that provide coverage and support for the body or process nutrients.
3. Identify structures and explain the functions of body systems that process and respond to stimuli and enable movement.
4. Identify structures and explain the functions of body systems that form blood and its components, support circulation, and provide immunologic protection.

5. Identify structures and explain the functions of body systems involved in chemically and hormonally mediated respiratory, excretory, and reproductive activities.
6. Demonstrate measurable understanding of descriptive anatomical and directional terminology.
7. Demonstrate measurable understanding of homeostasis and how homeostatic mechanisms apply to body systems.
8. Demonstrate measurable understanding of basic chemistry, cellular structures, and cellular functions.
9. Demonstrate measurable understanding of the basic tissues of the body, including their locations and functions.
10. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the integumentary system and describe its functions.
11. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the skeletal system and explain their roles in osteogenesis, repair, and body movement.
12. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the muscular system and explain their roles in body movement, posture maintenance, and heat production.
13. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the nervous system and explain their roles in communication, control, and integration.
14. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the eye and ear and explain their roles in vision, hearing, and equilibrium. Students should also be able to identify and locate the receptors responsible for olfaction and gustation and briefly describe the physiology of smell and taste.
15. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the endocrine system and explain the roles of their hormones in communication, control, and integration.
16. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the cardiovascular system and explain their roles in transport and hemodynamics.
17. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the lymphatic system and explain its role in fluid dynamics and immunity.
18. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the respiratory system and explain their roles in breathing, respiration, and external and internal respiration.
19. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the digestive system and explain their roles in digestion, absorption, excretion, and elimination.
20. Demonstrate measurable understanding of the relationships among cellular, tissue, and organ-level metabolism; the role nutrition plays in metabolism; and the mechanisms that regulate metabolic rate in the body.
21. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the urinary system and explain their functional roles.
22. Demonstrate measurable understanding of the homeostatic mechanisms that control fluid, electrolyte, and acid-base balance.

23. Demonstrate measurable understanding of the major gross and microscopic anatomical components of the reproductive system and explain their roles in reproduction and inheritance.

# GRADING INFORMATION

## Grading Overview

Course grades are based on labs, quizzes, unit exams, Visible Body Courseware activities, and the final exam.

## Assessment Categories

- **Labs:** Labs involve hands-on experiments and the collection of empirical data. Lab grades are based on submitted written work and participation.
- **Quizzes:** Quizzes are given after each topic and may include practical and non-practical questions covering both lecture and lab material.
- **Unit Exams:** Unit exams cover material from lectures and labs. The final exam includes the last unit, cumulative material from previous chapters, and questions that may ask students to apply course concepts to real-world scenarios.
- **Visible Body Courseware:** Visible Body Courseware activities account for approximately 300 participation points.

## Point Breakdown

| Category | Calculation | Points |
|---|---|---|
| **Labs** | 15 labs × 15 points each | 225 |
| **Quizzes** | 15 quizzes × 15 points each | 225 |
| **Unit Tests** | 4 tests × 30 points each | 120 |
| **Visible Body Courseware** | 15 chapters | 300 |
| **Final Exam** | 1 final exam | 150 |
| **Total** | **Approximate total points possible** | **1,020** |

# GRADING SCALE

| Grade | Range |
|---|---|
| | **After your numerical grade has been calculated, your letter grade will be determined as follows:** |
| **A** | **100%** |
| **B** | **89%** |
| **C** | **79%** |
| **D** | **69%** |
| **F** | **59 %** |

# Classroom Policies

## Respect

Class discussions should be approached scientifically, objectively, and without bias or judgment. Students and the instructor are expected to show respect for everyone in the classroom, regardless of background or viewpoint.

## Plagiarism, Cheating, and AI Use

Plagiarism and cheating are unacceptable and will result in an automatic zero on the assignment.

Use of generative AI or similar tools is not permitted for assignments in this class. All submitted work, including papers, discussion boards, and case studies, is expected to be generated by the student.
Using AI tools in this course is considered a violation of the Fort Hays Tech | North Central Academic Honesty Policy. Violations may result in failure of the assignment or failure of the course.

## Late Work

Assignments are expected to be submitted on time. Late work will not be accepted.

## Quiz and Exam Make-Up Policy

Make-up quizzes and exams may be allowed at the instructor's discretion. Personal travel, vacations, work conflicts, and similar circumstances are not considered permissible reasons for a make-up quiz or exam.
If a make-up quiz or exam is approved, it may be more rigorous than the version given during the assigned class period. It may also differ in format and will be worth 75% of the original point value.
If an exam or quiz has already started when a student arrives, 25 points will be deducted from the final quiz or exam grade.

## Participation

Participation includes active involvement in class discussions, activities, labs, and other course experiences.

## Lab Attendance and Participation

If a student misses a scheduled lab during assigned class time, the lab cannot be made up and any related lab assignments cannot be submitted for credit.
As a result, missing a lab will result in a zero for the lab work assigned during the student's absence.
Because of this policy, each student's lowest lab score will be dropped at the end of the semester.
Participation is required to earn a passing grade in the course, and all assignments must be submitted.

## Electronics Use

Technology will be required for many classroom activities. However, cell phones should not be used during class unless the instructor gives permission.
If a cell phone is used at an undesignated time, the instructor may confiscate it until the end of the class period, at which time it will be returned to the student.
Laptops may be used for class work only. If a laptop is being used for shopping, games, social media, or other non-course activities, the student will be asked to put it away.

## Recording

Students may not make audio or video recordings of course activities, including lectures, class discussions, meetings, or related course events.
Recordings can affect the rights of the people captured in them. For example, the instructor and the College may have intellectual property rights in course materials, and students who appear or speak in a recording have privacy rights.

## Time Commitment

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Course expectations are measured in credit hours. Each credit hour requires approximately 45 hours of student work.

## Academic Honesty

Membership in the Fort Hays Tech | North Central learning community carries commitments, obligations, and responsibilities. The College may impose sanctions on students who misrepresent their academic work.
Classroom instructors or other designated personnel will determine sanctions based on the seriousness of the violation and other relevant considerations.

## Examples of Academic Dishonesty

- **Plagiarism:** Taking another person's intellectual work and presenting it as one's own. Each department sets standards for attribution, and faculty may include discipline- or class-specific definitions in course syllabi.
- **Cheating:** Using unauthorized materials, observing another student's test, accessing another student's answers, submitting falsified data, altering exams or other academic exercises, or collaborating on projects when collaboration is prohibited.
- **Falsification or forgery:** Falsifying, forging, or altering documents related to assignments or examinations.
- **AI-generated work:** Use of AI-generated content from tools such as ChatGPT, DALL-E, Copilot, or similar tools is determined by faculty discretion for each course. Submitting AI-generated work as one's own without attribution is considered academic dishonesty.

## AI Use and Course Expectations

In courses where AI tools are not permitted, 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.

### Possible Sanctions

Classroom instructors and/or administrators will assess sanctions for violations of this policy. The seriousness of the violation will determine the severity of the sanction.

*Academic Sanctions*

1. Verbal or written warning
2. Lowering of the grade for an assignment
3. Lowering of the term grade

*Administrative Sanctions*

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

# Institutional Statements and Policies

## 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

## Nondiscrimination Policy

Fort Hays Tech | North Central is committed to nondiscrimination in admission, access, treatment, and employment in its programs and activities. This commitment applies regardless of race, color, gender, ethnic or national origin, sex, sexual orientation, gender identity, marital status, religion, age, ancestry, disability, military status, or veteran status.

The College also prohibits harassment, including sexual harassment and sexual violence, of students and employees.

Questions about compliance with Title VI, Title VII, Title IX, Section 504, or the Americans with Disabilities Act Amendments Act should be directed to the VP of Student and Instructional Services, who serves as the Section 504/ADA Compliance Officer and Title VI, Title VII, and Title IX Compliance Officer.

- Phone: (785) 738-9055
- Email: cisbell@ncktc.edu
- Mailing Address: PO Box 507, 3033 US Hwy 24, Beloit, KS 67420

## Tobacco Use Policy

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

## Weapons Policy

Fort Hays Tech | North Central prohibits the possession and use of firearms, explosives, and other weapons on College property, except for limited exceptions allowed by applicable Kansas Board of Regents policy and state law.

### Definition of Weapons

For purposes of this policy, weapons include:

- Any object or device designed to expel a bullet, shot, or shell by explosive or other propellant action, or that may readily be converted to do so.
- Any handgun, pistol, revolver, rifle, shotgun, or other firearm.
- Any BB gun, pellet gun, air/CO2 gun, stun gun, or blowgun.
- Explosive, incendiary, or poison gas devices, including bombs, mines, grenades, and rockets with a propellant charge of more than ¼ ounce.
- Incendiary or explosive materials equipped with a fuse, wick, or other detonating device.
- Tear gas bombs or smoke bombs. Personal self-defense items containing mace or pepper spray are not considered weapons under this policy.

- Any knife commonly referred to as a switchblade that opens automatically by hand pressure applied to a button, spring, or other device.

## Inclement Weather

College campus dismissals and cancellations will be announced through the College Alert system. Local media will also be notified.

## Students with Disabilities

Fort Hays Tech | North Central is committed to providing equal access and opportunity for students with disabilities in all campus programs and services. The College provides reasonable accommodations in accordance with applicable state and federal laws, including Section 504 and Section 508 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act Amendments Act of 2008.
The College strives to create a safe, respectful, and inclusive environment that promotes awareness, knowledge, and self-advocacy.

### Accommodation Process

Traditional methods, programs, or services may not always be appropriate or sufficient for qualified students with disabilities. When a disability prevents a student from fulfilling a course requirement through conventional procedures, alternatives may be considered while maintaining academic standards.

### Student Accessibility Services

Student Accessibility Services staff are available through the Student Success Center on the Beloit Campus and through Student Services on the Hays Campus.

- The Director of Learning Services may be reached by phone at 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 are responsible for registering with Student Accessibility Services, self-disclosing their needs, and completing the Student Accessibility Services Intake and Consent Form.
Students should provide available documentation, explain how the disability affects academic performance, suggest possible accommodations, and communicate with the Director of Learning Services as part of the interactive process. Approved accommodations, services, or auxiliary aids will be documented in an Educational Accommodation Plan and shared with instructors.
Students are encouraged to request accommodations at least two weeks before the course, program, or activity begins, or as soon as realistically possible, so services can be arranged.

### Accommodations, Academic Support Services, and Auxiliary Aids

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

#### *Testing Accommodations*

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

#### *Academic Support Services and Auxiliary Aids*

- Note-taking assistance, such as a second set of notes, PowerPoint slides, or other visual aids
- Sign language interpreter
- Preferential classroom seating
- Large-print exams, handouts, signs, and related materials
- Telecommunications devices
- Assistive technology

#### *Limits on Accommodations*

Accommodations may not fundamentally alter the nature of a program or activity, lower academic standards, create an undue financial or administrative burden for the College, or pose a threat to others or public safety. Some accommodations and services cannot be provided, including personal devices or assistance with personal services.

#### *Outside Resources*

Auxiliary aids may be available through outside resources. Students may request help obtaining specialized support services from resources such as Vocational Rehabilitation Services, Recordings for the Blind, or the Kansas Talking Book Service.

For example, Vocational Rehabilitation may help fund transportation to the institution, tuition, textbooks, hearing aids, and other individually prescribed medical devices.

### *Accommodation Concerns*

If agreed-upon accommodations are not being followed, or if alternate accommodations may be needed, students should notify Student Accessibility Services staff.

Fort Hays Tech | North Central is committed to student success; however, students are not required to use approved accommodations. The decision about when to use approved accommodations or services belongs to the student.

Integration, self-advocacy, and individual responsibility are promoted and expected.

## Grievance Procedure

Students who believe they have experienced disability-based discrimination or have been denied access or accommodations may use the College grievance procedure.

Students are encouraged to first discuss concerns with Student Accessibility Services. SAS will attempt to help resolve the issue by supporting communication with the person or people involved.

If the concern is not resolved through this process, the student should contact the Vice President of Student and Instructional Services.

- Phone: 1-800-658-4655
- Mailing Address: PO Box 507, 3033 US Hwy 24, Beloit, KS 67420

If the complaint is not resolved at the College level, the student may file a complaint with the Office for Civil Rights.

- Phone: 1-816-268-0550
- Mailing Address: U.S. Department of Education, One Petticoat Lane, 1010 Walnut Street, Suite 320, Kansas City, MO 64106

## Confidentiality

Information about a student's disability is confidential. Documentation is kept separate from academic records and will not be released outside Fort Hays Tech | North Central without the student's written consent.

To provide effective services, limited disability-related information may be shared with Fort Hays Tech | North Central faculty or staff on a need-to-know basis.

## Reasonable Suspicion

If reasonable suspicion of substance abuse exists for an employee or student, based on objective criteria such as behavior, appearance, demeanor, or the detection of alcohol or a controlled substance, the individual may be asked to consent to drug testing by the College's contract vendor at the College's expense.

A. A College administrator or designee will drive the employee or student to the vendor's testing site and will return the individual to their residence or arrange transportation after testing.
B. Test results will be sent directly to the College administrator, with a copy also sent to the employee or student. Results are confidential and access is limited to institutional personnel with a legitimate need to know.
C. If the result is positive, the employee or student may request a retest of the sample at their own expense. The request must be submitted within 24 hours.
D. Positive results for illegal drugs, prescription drugs not prescribed to the individual or above the prescribed dosage, or a blood alcohol level of 0.04 or higher may result in disciplinary action, up to and including termination or expulsion.
E. Refusing to provide a specimen will be treated as a positive drug test result.
F. Altered test results or specimens may result in disciplinary action, up to and including termination or expulsion.
G. If the individual tests positive for an authorized prescription drug that may impair performance or judgment, they may not participate in College activities until they provide a doctor's release.

## Right to Modify the Syllabus

The instructor reserves the right to modify the syllabus during the semester. Students will receive advance notice if changes are made.

# TENTATIVE COURSE SCHEDULE

## Tentative Anatomy and Physiology Schedule

This tentative schedule outlines the weekly topics and major assessments for Anatomy and Physiology. In accelerated terms, two chapters may be combined in a single week.

- Italicized items indicate holidays or Fort Hays Tech | North Central events.
- This schedule is tentative and may change. Students will be notified of any changes.

| Week | Topic | Notable Assessments |
|---|---|---|
| **1** | Introduction to Human Anatomy and Physiology | |
| **2** | Cells | |
| **3** | Tissues | |
| **4** | Skin and the Integumentary System | |
| **5** | Skeletal System | Unit 1 Quiz: Weeks 1–4 |
| **6** | Muscular System | |
| **7** | Nervous System | |
| **8** | Endocrine System | |
| **9** | Cardiovascular System | Unit 2 Quiz: Weeks 5–8 |
| **10** | Lymphatic System and Immunity | |
| **11** | Respiratory System | |
| **12** | Digestion | Unit 3 Quiz: Weeks 9–11 |
| **13** | Urinary System | |
| **14** | Reproductive Systems | |
| **15** | Pregnancy, Growth, and Development | Unit 4 Quiz: Weeks 12–15 |
| **16** | Final Exam | End of Semester |