



Intro to Biology I (for Non-Science Majors)

BIOL 1408 DC

Course Syllabus: Fall 2026

"Northeast Texas Community College exists to provide personal, dynamic learning experiences empowering students to succeed."

Instructor: Morgan Thurman

Office: MPHS Room B236

Email: mthurman@mpisd.net

Office Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Online
	4 th period conference, before & after school					By email/appt.

This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities. Information relative to the delivery of the content contained in this syllabus is subject to change. Should that happen, the student will be notified.

Course Description: Four Credit Hours. Provides a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function and reproduction.

Prerequisite(s): None

Student Learning Outcomes: Upon successful completion of this course, students will:

1. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem solving to make informed decisions in the laboratory.
3. Communicate effectively the results of scientific investigations.
4. Distinguish between prokaryotic, eukaryotic, plant and animal cells, and identify major cell structures.
5. Identify stages of the cell cycle, mitosis (plant and animal), and meiosis.
6. Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.
7. Apply genetic principles to predict the outcome of genetic crosses and statistically analyze results.
8. Identify the importance of karyotypes, pedigrees, and biotechnology and provide an example of the uses of each.
9. Identify parts of a DNA molecule, and describe replication, transcription, and translation.
10. Analyze evidence of evolution and natural selection.

Evaluation/Grading Policy:

Daily Assignments/Homework/Connect Assignments = 30%

Unit Exams = 30%

Laboratory Experiments/Activities = 30%

Final Exam = 10%

Required Instructional Materials: Essentials of Biology *E-text with Connect Plus*, Mader, 7th Edition

Publisher: McGraw-Hill

ISBN Number: N/A

Inclusive Access: We have negotiated with the Publisher to obtain a discounted price for your lecture course materials. Your ebook and Connect Access Code are included with your tuition and will be available through Blackboard on the first-class day. The materials are required for your class and essential to your success. If you also determine that you would like a print copy of your text in addition to your exclusive access loose-leaf copies will be available in the College Store at a discounted price. You may opt out of purchasing materials from the College Store through the Census Date for the course. If you choose to opt out, you will be responsible for purchasing your Connect Access Code from another website. You will receive a refund for the Exclusive Access if you opt out.

Minimum Technology Requirements: Students will need access to high-speed daily internet in order to complete their assignments.

Required Computer Literacy Skills: Student must know how to access Blackboard and how to access and submit assignments in Blackboard. Students must also know how to join a Google Classroom, as well access assignments in Google Classroom via Google

Forms, Docs, and Slides.

Course Structure and Overview: This course covers Chapters 1 through 16 in the textbook, Essentials of Biology. The following is a general time frame for each Unit. Also listed are the readings, assignments, labs, activities, quizzes, and exams that correlate with each unit.

Communications: Between the hours of 7:00 am and 10:00 pm is the only time that I can/will respond to you whether it is email or StudentSquare message. Email is the preferred method for contacting me. I will typically respond within the hour to your email.

Institutional/Course Policy: Students will be required to follow all rules and guidelines as listed in the Mt. Pleasant High School Student Handbook and Code of Conduct.

Alternate Operations During Campus Closure and/or Alternate Course Delivery Requirements

In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Northeast Texas Community College to move to altered operations. During this time, Northeast Texas Community College may opt to continue delivery of instruction through methods that include, but are not limited to, online through the Blackboard Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor NTCC's website (<http://www.ntcc.edu/>) for instructions about continuing courses remotely, Blackboard for each class for course-specific communication, and NTCC email for important general information. Additionally, there may be instances where a course may not be able to be continued in the same delivery format as it originates (face-to-face, fully online, live remote, or hybrid). Should this be the case, every effort will be made to continue instruction in an alternative delivery format. Students will be informed of any changes of this nature through email messaging and/or the Blackboard course site.

Statement Regarding the Use of Artificial Intelligence (AI) Technology:

Absent a clear statement from a course instructor, use of or consultation with generative AI shall be treated analogously to assistance from another person (collusion). Generative AI is a subset of AI that utilizes machine learning models to create new, original content, such as images, text, or music, based on patterns and structures learned from existing data (Cornell, Center for Teaching Innovation). Unauthorized use of generative AI tools to complete an assignment or exam is not permitted. Students should acknowledge the use of generative AI and default to disclosing such assistance when in doubt. Individual course instructors may set their own policies regulating the use of generative AI tools in their courses, including allowing or disallowing some or all uses of such tools. Students who are unsure of policies regarding generative AI tools are encouraged to ask their instructors for clarification. **(Adapted from the Stanford University Office of Community Standards-- accessed August 31, 2023)**

NTCC Academic Honesty/Ethics Statement:

NTCC upholds the highest standards of academic integrity. The college expects all students to engage in their academic pursuits in an honest manner that is beyond reproach using their intellect and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. This course will follow the NTCC Academic Honesty and Academic Ethics policies stated in the Student Handbook. Refer to the student handbook for more information on these subjects.

ADA Statement:

It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to request accommodations. An appointment can be made with the Academic Advisor/Coordinator of Special Populations located in Student Services and can be reached at 903-434-8264. For more information and to obtain a copy of the Request for Accommodations, please refer to the special populations page on the NTCC website.

Family Educational Rights and Privacy Act (FERPA):

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be

released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

Fall 2026 Units of Study/Instruction **Please note, the dates, readings, assignments, activities/labs, quizzes, and tests contained on this course outline are subject to change. However, the content/material covered in this course and the detail or depth at which it is covered will not change. Students will be notified of any changes.*

- **Unit 1: Introduction and Biochemistry (August 24th – September 4th)**
 - Topics for Notes and Lecture
 - Introduction to Themes of Biology
 - What is Biology?
 - What is Life? (Characteristics of Living Things)
 - Unifying Themes of Biology
 - Levels of Organization
 - Scientific Method
 - Scientific Theory
 - Chemistry of Life
 - Chemistry Review
 - Elements and Compounds
 - Atomic Structure/Function
 - The Periodic Table
 - Energy Levels & Electrons
 - Chemical Bonding
 - Properties of Water
 - Polarity and Its Effects
 - Water is a Solvent
 - Cohesion & Adhesion
 - Specific Heat
 - Evaporative Cooling
 - High Heat of Vaporization
 - Water is the Solvent of Life
 - Hydrophobic and Hydrophilic Substances
 - Dissociation of Water Molecules
 - pH Scale
 - Buffers
 - Acidification
 - Organic Compounds Found in Living Organisms
 - Carbon
 - Organic Chemistry
 - Carbon Bonds
 - Carbon Skeleton Variation
 - Isomers
 - Macromolecules
 - Organic vs Inorganic
 - Dehydration Synthesis & Hydrolysis
 - Carbohydrates
 - Lipids
 - Proteins
 - Protein Configuration/Protein Folding
 - Denaturation
 - Enzymatic Activity
 - Nucleic Acids
 - Readings
 - Chapter 1: Biology: The Science of Life
 - Chapter 2: The Chemical Basis of Life

- Chapter 3: The Organic Molecules of Life
 - Activities and Labs
 - Unifying Themes in Biology Assignment
 - Covalent vs. Ionic Bonding Card Sort
 - Cabbage Juice Indicator Lab
 - Dehydration & Hydrolysis Activity
 - Identifying Macromolecules
 - Macromolecule Structure Sort
 - Protein Structure Sort
 - Assignments/Homework
 - Chps. 1, 2 & 3 SmartBooks
 - Chps. 1, 2 & 3 Connect Assignments
 - Chps. 1, 2 & 3 Animation Questions
 - Chp. 1 Relevancy Module
 - Quizzes and Tests
 - Unit 1 Test
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- **Unit 2: Cellular Structures and Functions (September 7th – September 21st)**
 - Topics for Notes and Lecture
 - The Cell Theory
 - Prokaryotic vs. Eukaryotic cells
 - Surface Area to Volume Ratio
 - Cell Organelles and Their functions
 - Evolutionary Origins of Mitochondria and Chloroplasts
 - The Cytoskeleton
 - Specializations of the Plasma Membrane
 - Cell to Cell Recognition
 - Cell to Cell Communication
 - Apoptosis
 - Cellular Transport
 - Passive and Active Transport
 - Readings
 - Chapter 4: Inside the Cell
 - Chapter 5: The Dynamic Cell
 - Activities and Labs
 - Cell Size Comparison Lab
 - Viewing Cells Lab (Comparison of Cell Types Using Prepared and Wet Mount Slides)
 - Osmosis & Diffusion Lab
 - Types of Passive Transport Card Sort
 - View Inner Life of a Cell Video
 - Assignments and Homework
 - Chps. 4 & 5 SmartBooks
 - Chps. 4 & 5 Connect Assignments
 - Chps. 4 & 5 Animation Questions
 - Quizzes and Tests
 - Unit 2 Test
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- **Unit 3: Cellular Energetics/Cellular Energy (September 21st – October 5th)**
 - Topics for Notes and Lecture
 - Introduction to Metabolism
 - The Laws of Energy Transformation
 - Laws of Thermodynamics
 - Free Energy Change (ΔG)
 - ATP: The Energy for Cells
 - Metabolic Pathways and Enzymes
 - Enzymes and Their Active Sites

- Activation Energy
- Cellular Respiration
 - Phases of Glucose Breakdown
 - Structure of Mitochondrion
- Fermentation
 - Two Forms of Fermentation
- Photosynthesis
 - Site of Photosynthesis
 - Structure of Chloroplasts
 - Overview of Photosynthesis
 - Photosynthetic Pigments
 - Photorespiration
- Readings
 - Chapter 6: Energy for Life
 - Chapter 7: Energy for Cells
- Activities and Labs
 - Cellular Respiration Lab
 - Photosynthesis Lab
- Assignments and Homework
 - Chps. 6 & 7 SmartBooks
 - Chps. 6 & 7 Connect Assignments
 - Chps. 6 & 7 Animation Questions
 - Chp. 7 Relevancy Module
- Quizzes and Tests
 - Unit 3 Test

• **Unit 4: Cellular Reproduction (October 5th – October 19th)**

- Topics for Notes and Lecture
 - The Cell Cycle
 - Regulation of the Cell Cycle
 - Mitosis
 - Meiosis
 - Asexual Reproduction
- Readings
 - Chapter 8: Cellular Reproduction
 - Chapter 9: Meiosis and the Genetic Basis of Sexual Reproduction
- Activities and Labs
 - Mitosis in Onion Root Tip Lab
 - Inside Cancer Activity
 - Karyotyping Activity
- Assignments and Homework
 - Chps. 8 & 9 SmartBooks
 - Chps. 8 & 9 Connect Assignments
 - Chps. 8 & 9 Animation Questions
 - Chp. 8 Relevancy Module
- Quizzes and Tests
 - Unit 4 Test

• **Unit 5: Molecular Genetics and Biotechnology (October 19th – November 2nd)**

- Topics for Notes and Lecture
 - Early Contributions of Scientists that Helped Develop Knowledge of DNA Structure and Function
 - DNA Structure and Function
 - DNA Replication
 - Protein synthesis/Transcription and Translation
 - Viruses, Viral Replication and how they cause disease

- Mutations and their significance
 - Biotechnology
 - Bacteria's use in genetic engineering, cloning, PCR, principles of electrophoresis RFLP analysis
- Readings
 - Chapter 11: The Instructions for Life: DNA and RNA
 - Chapter 12: Biotechnology and Genomics
 - Chapter 13: Mutations and Genetic Testing
- Activities and Labs
 - DNA Replication Modeling
 - Transcription and Translation Practice (Or Codon Bingo)
 - DNA Electrophoresis Lab
 - Recombinant DNA Simulation
- Assignments and Homework
 - Chps. 11, 12 & 13 SmartBooks
 - Chps. 11, 12 & 13 Connect Assignments
 - Chps. 11, 12 & 13 Animation Questions
 - Chps. 11, 12 & 13 NewsFlash
- Quizzes and Tests
 - Unit 5 Test
- **Unit 6: Genetics and Heredity (November 2nd – November 16th)**
 - Topics for Notes and Lecture
 - Mendel and the Gene Idea
 - Probability
 - Chi-square
 - Non-Mendelian Genetics including: Codominance, Incomplete Dominance, Polygeny, Pleiotropy
 - Human Genetics and Pedigree analysis
 - Chromosomal Basis of Inheritance
 - Control of Gene Expression
 - Readings
 - Chapter 10: Patterns of Inheritance
 - Activities and Labs
 - Chi-Square Analysis
 - Drosophila Simulation
 - Genetic Disorders Research Project
 - Assignments and Homework
 - Ch. 10 SmartBook
 - Ch. 10 Connect Assignment
 - Ch. 10 Animation Questions
 - Quizzes and Tests
 - Unit 6 Test
- **Unit 7: Evolution, Natural Selection, Population Genetics and Microevolution (November 16th – December 4th)**
 - Topics for Notes and Lecture
 - Definition of Theory
 - Evolution
 - Ideas that Influenced Darwin
 - Darwin's Theory of Evolution
 - Natural Selection
 - Evidence of Evolution
 - Evolution of Populations
 - Hardy-Weinberg Principle and Equation
 - Genetic Drift
 - Types of Selection
 - Speciation
 - Readings
 - Chapter 14: Darwin and Evolution
 - Chapter 15: Evolution on a Small Scale

- Chapter 16: Evolution on a Large Scale
- Activities and Labs
 - Comparing Homologous Structures
 - Genetic Drift Simulation
 - Hardy-Weinberg Activity
 - Mathematical Modeling: Hardy-Weinberg
 - Peppered Moth Activity
 - Genetic Drift Lab
 - Bird Beak/Speciation Lab
- Assignments and Homework
 - Chps. 14, 15 & 16 SmartBooks
 - Chps. 14, 15 & 16 Connect Assignments
 - Ch. 14 Animation Questions
- Quizzes and Tests
 - Unit 7 Test

***Semester Exam/Final Comprehensive Exam is currently scheduled for December 10th