BIOL 1406 – General Biology I

Course Syllabus: Fall 2022

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

Professor James Ward

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	Monday	Tuesday	Wednesday	Thursday	Friday	Online
Office Hours	3:00-4:30 Online	9:00-9:30 4:30-5:00	8:00-9:30 11:00-12:30 3:00-4:30 Online	9:00-9:30 4:30-5:00	Any Time By Appointment	Any Time By Appointment

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:

4 credit hours. Lecture/Lab: Three hours of lecture and three hours of lab each week.

A study of the biological sciences for students who plan to major or minor in biology or pre-professional studies or to fulfill the laboratory science requirement of other majors. This course utilizes an integrated approach and emphasizes the molecular basis of life, cell biology, and bioenergetics. Other topics for discussion include Mendelian and molecular genetics.

Note: Additional course fee(s) required.

Prerequisite(s): None

Student Learning Outcomes:

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, scientific problem-solving, and teamwork to make informed decisions in the laboratory.
3. Communicate effectively the results of scientific investigations.
4. Describe the characteristics of life.
5. Explain the methods of inquiry used by scientist.
6. Identify the basic properties of substances needed for life.
7. Compare and contrast viruses, prokaryotic cells, and eukaryotic cells.
8. Describe the structure of cell membranes and the movement of molecules across a membrane.
9. Identify the substrates, products, and important chemical pathways in metabolism.
10. Identify the principles of inheritance and solve classical genetic problems.
11. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
12. Describe the unity and diversity of life and the evidence for evolution through natural selection.

Evaluation/Grading Policy:

A = 90 – 100%
B = 80 – 89%
C = 70 – 79%
D = 60 – 69%
F = 0 – 59%

Grades will be determined based on the 10 components of the Biology Student Portfolio!

Lectures & Discussions:

CH 1 – The Science of Biology and Evolution

UNIT 1

CH 2 – The Nature of Molecules and the Properties of Water
CH 3 – The Chemical Building Blocks of Life

UNIT 2

CH 4 – Cell Structure
CH 5 – Membranes (Diffusion/Osmosis)

UNIT 3

CH 6 – Energy and Metabolism (Enzymes)
CH 7 – How Cells Harvest Energy (Respiration)
CH 8 – Photosynthesis

UNIT 4

CH 10 – How Cells Divide (Cell Cycle and Mitosis)
CH 11 – Sexual Reproduction and Meiosis
CH 12 – Patterns of Inheritance (Mendelian Genetics)
CH 13 – Chromosomal Basis of Inheritance (Human Genetics)

UNIT 5

CH 14 – DNA: The Genetic Material
CH 15 – Genes and How They Work (Transcription and Translation)

Laboratory Schedule:

Introduction to Scientific Method
Lab Topic 1 – Metric System
Lab Topic 2 – Biochemistry
Lab Topic 3 – Microscopy
Lab Topic 4 – Cytology & Cell Membranes
Lab Topic 5 – Passive Transport
Lab Topic 6 – Enzymes
LAB PRACTICAL 1
Lab Topic 7 – Respiration
Lab Topic 8 – Photosynthesis
Lab Topic 9 – Cell Division
Lab Topic 10 – Genetics
Lab Topic 11 – DNA & Biotechnology (CRISPR)
LAB PRACTICAL 2

Biology Student Portfolio	**SLO 3 – Communicate Scientifically**
1) Lab Scientific Paper	**SLO 1 – Scientific Reasoning with Data Analysis**
2) Lab Manual	**SLO 2 – Critical Thinking and Problem Solving**
3) Evolution Research Project	**SLO 4/12 – Evidence for Evolution; Unity & Diversity**
4) COVID Research Project	**SLO 5 – Scientific Inquiry**
5) Unit 1 Biochemistry Project	**SLO 6 – Basic Properties for Life**
6) Unit 2 Cells & Membranes Project	**SLO 7/8 – Diversity of Cell Types and Membranes**
7) Unit 3 Energy & Metabolism Project	**SLO 9 – Chemical Pathways of Metabolism**
8) Unit 4 Genetics Project	**SLO 10 – Patterns of Inheritance and Genetics**
9) Unit 5 DNA to Protein Project	**SLO 11 – Nucleic Acid to Protein Synthesis**
10) Lab Practicals and Final Exam Post-Test	

Lab Scientific Paper
Students will write a Scientific Paper over one lab experiment. This paper will be in scientific format with an abstract, introduction, hypothesis, methods, results, and conclusion sections. A rough draft will be submitted the week prior to the due date. The final draft is due prior to lab on the due date. Guidelines, requirements, and grading rubric are found in the scientific paper folder in blackboard.

Lab Manual Portfolio
Weekly pre-labs are to be completed prior to the lab session. Weekly lab reports from the lab manual are to be completed during lab. When data is collected, proper data tables and graphs will be developed. The weekly labs are designed to help you prepare for the Lab Practical Exams.

Lab Practicals (2)
A lab practical will be given twice during the semester. It is a live exam with stations. Students will rotate through and answer questions associated with visuals from lab. Visuals may include images, specimens, lab equipment, data tables, graphs, experimental results, etc. Scantrons are required for the lab practicals.

Research & Unit Projects
Students will develop two research projects and five Biology unit projects for several topics throughout the semester. Project portfolios will include a combination of papers, power point presentations, research posters, videos, visual art, and other modalities as approved by the instructor. Project portfolios will include a combination of individual and partner-based projects. Guidelines, requirements, and grading rubrics for all projects are found in the portfolio project folder in blackboard.

Final Exam Post-Test
Students will complete a Pre-Test at the beginning of the semester and a Post-Test during final exam week to determine both the students overall understanding of Biology and the students improved understanding of Biology within the semester.

Required Instructional Materials:

Raven: Biology 13th ed with Connect Inclusive Access
Publisher: McGraw Hill **ISBN Number:** Available through NTCC Bookstore

Hearron & Ward: Exploring Biology 1 Lab Manual
Publisher: NTCC **ISBN Number:** Available through NTCC Bookstore

Optional Instructional Materials:

Notebook, Laptop

Minimum Technology Requirements:

- Internet capable desktop, laptop, or chromebook (Tablets/ipads//Phones not recommended
- Microsoft Office or Google Suite
- Video conferencing capability with webcam using Teams/Zoom
- Access to printer if hard copies of assignments are desired

Required Computer Literacy Skills:

- Ability to use Blackboard for access to course information and assignments
- Web browsing skills for research
- Functional use of Microsoft Office or Google Suite for project development
- Functional use of Teams/Zoom for meetings/collaboration
- Competent and professional email communication skills

Communications:

- **NTCC email is the official form of communication used by the college**.
- Do NOT email from personal email accounts.
- Turnaround time for email responses is 24 hours during work week.
- Emails should have the following format in subject line: Last Name, First Name - Course ID
    - Example: Ward, James - BIOL 1406.001

Student Expectations:

- Adhere to Classroom Etiquette including Zoom Virtual Classroom (see addendum in Blackboard)
- Adhere to Proctored Exam Etiquette (see addendum in Blackboard)
    - Proctored exams are monitored by McGraw Hill through Connect with Proctorio
        - Students will be recorded in the following ways during proctored exams:
            - Video, Audio, Screen, and Environment
        - Testing Violations from all recordings will be reported by Proctorio

Institutional/Course Policy: Withdraw Date

The last day to withdraw from the course in **Tuesday, November 15th**. Discontinuing with the course without officially dropping the course by this date will result in a grade earned, in most instances an "F". A stoppage in attendance does not equate to dropping the course.

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.

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.

COVID Statement
Students, science majors in particular, are expected to exhibit personal responsibility in response to COVID related illnesses and the statistical COVID data at the time. Students are not allowed to attend class if experiencing COVID symptoms, have tested positive, or have recently been exposed to someone who was symptomatic or tested positive. If this occurs, email your instructor for timetable to return to class.

Students should adhere to current CDC guidelines in regards to social distancing and mask usage when indoors to prevent transmission. If gathering indoors, students should be vaccinated to prevent serious reactions if infected. If viral infection rates are above 1.0 and if viral positivity rates are above 5%, students should exercise extreme caution and following CDC mask guidelines at all times when indoors. Visit **covidactnow.org** for current statistical data and risk levels for Titus County and the NTCC service area.

Telehealth Virtual Care
All NTCC students have access to Telehealth Virtual Care for medical needs, mental health needs, and life coaching. This is an invaluable service provided to students for no cost. Enroll at thevirtualcaregroup.com/ntcc