

COURSE SYLLABUS

YEAR COURSE OFFERED: **TBD**

SEMESTER COURSE OFFERED: **TBD**

DEPARTMENT: **BIOLOGY**

COURSE NUMBER: **1309**

NAME OF COURSE: **Biology for Non-Science Majors II**

NAME OF INSTRUCTOR: **TBD**

The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

Learning Objectives

Upon successful completion of this course, students will be able to

1. Identify parts of a DNA molecule, and describe replication, transcription, and translation.
2. Describe basic animal physiology and homeostasis as maintained by organ systems.
3. Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.
4. Apply genetic principles to predict the outcome of genetic crosses and statistically analyze results.
5. Describe karyotyping, pedigrees, and biotechnology and provide an example of the uses of each.

Core Objectives (CO)

General Biology I addresses the following core objectives to ensure students develop the essential knowledge and skills they need to be successful in college, in a career, in their communities, and in their lives.

- Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- Communication Skills - to include effective development, interpretation and expression of ideas through written, oral and visual communication
- Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- Team Work - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Major Assignments/Exams

The course components below are designed to meet the course objectives.

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- **Exams:** there will be three in-class exams during the semester. Exams will consist of multiple choice, short answer and essay questions covering material presented in lectures. There will also be a cumulative final given during finals week.
- **Homework assignments:** there will be periodic problem assignments that will support the material being presented in class.

Learning Outcomes	CO	Assessment Methods	Criteria/Targets
1. Identify parts of a DNA molecule, and describe replication, transcription, and translation.	CT COM	Pre- and post-course instruments will be used to track student success in mastering the learning outcomes.	≥75% of students will demonstrate >20% improvement between pre-test scores at beginning of course and post-test scores at the end.
2. Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.	CT COM	Quizzes and exams, with questions directed toward specific topics embedded within each exercise to evaluate specific sub-objectives.	≥70% of students will answer the target questions correctly.
3. Apply genetic principles to predict the outcome of genetic crosses and statistically analyze results.	CT EQS	Assignments and embedded exam questions that test the student's ability to work genetics problems and basic statistics dealing with genetics.	≥70% of students will answer the target questions correctly.
4. Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.	COM TW	Students will work in groups to examine case studies and primary literature dealing with physiology.	≥75% of student groups will complete assigned case studies and assessments of primary literature, and get a minimum of 70% of the material correct.
5. Describe karyotyping, pedigrees, and biotechnology and provide an example of the uses of each.	COM CT	Assignments and embedded exam questions that test the student's ability to determine and evaluate the impact of biotechnology on the human experience.	≥70% of students will answer the target questions correctly.

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Required Reading

“Biology” by OpenStax College (Rice University).

Recommended Reading

N/A

List of discussion/lecture topics

- DNA as genetic material
- Central dogma and genetic expression
- Basic plant and animal physiology
- Structure and function of organ systems
- Comparative physiology of metabolism, respiration, and photosynthesis
- Genetic crosses and extensions of Mendelian genetics
- Statistical genetics
- Methods of biotechnology