

# COURSE SYLLABUS

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**YEAR COURSE OFFERED:**                   **2015**

**SEMESTER COURSE OFFERED:**       **SPRING**

**DEPARTMENT:**                           **BIOLOGY**

**COURSE NUMBER:**                   **1307**

**NAME OF COURSE:**                   **BIOLOGY II**

**NAME OF INSTRUCTOR:**           **TBD**

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**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.**

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## **Learning Objectives**

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

1. Demonstrate mastery of the fundamental concepts of evolutionary biology: theory, mechanisms, speciation and classification
2. Explain the molecular activity involved with DNA structure and function and its role in inheritance patterns
3. Understand and define the role of mitosis and meiosis in genetics
4. Describe the methods and uses of biotechnology
5. Relate ecological principles of populations, communities and ecosystems to the conservation of biodiversity
6. Work with peers to apply content knowledge in problem solving
7. Effectively communicate solutions and reasoning to classmates and course instructor

## **Core Objectives (CO)**

General Biology II 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.

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## Major Assignments/Exams

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

- **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.
- **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. Demonstrate mastery of the fundamental concepts of evolutionary biology: theory, mechanisms, speciation and classification.	CT, COM	Pre- and post-test 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. Explain the molecular activity involved with DNA structure and function and its role in inheritance patterns.	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. Understand and define the role of mitosis and meiosis in genetics.	CT	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.
4. Describe the methods and uses of biotechnology.	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.
5. Relate ecological principles of populations, communities and ecosystems to the conservation of biodiversity.	CT, EQS	Pre- and post-test 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.

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6. Work with peers to apply content knowledge in problem solving.	EQS, TW	Problem sets related to each course module will be completed within student work groups.	≥75% of students will complete problem sets with correct solutions within their groups.
7. Effectively communicate solutions and reasoning to classmates and course instructor.	COM	Short written and oral reports pertaining to class modules	≥75% of students will complete and share written and oral reports on assigned topics with each class module.

## **Required Reading**

Reece JB, Urry LB, Cain ML, Wasserman SA, Minorsky PV, Jackson RB. 2010. *Campbell biology*, 9<sup>th</sup> ed.

Reece JB, Urry LB, Cain ML, Wasserman SA, Minorsky PV, Jackson RB, Taylor MR. 2010. *Study guide for Campbell biology*.

## **Recommended Reading**

N/A

## **List of discussion/lecture topics**

- Introduction to the science of biology
- Cell cycle, mitosis and meiosis
- Genetics and DNA
- Transcription and translation, gene regulation
- Biotechnology, genomes and evolution
- Speciation, history of life, taxonomy and phylogeny
- Introduction to ecology, history, biosphere
- Population ecology, community ecology
- Ecosystems, restoration ecology
- Conservation biology and humans