

Biology 11A – Biology for Science Majors I

Course Information

Semester: Fall 2019

Section: 51279

Class Meetings: Lecture – Mon/Wed/Fri 9:00 – 9:50 AM, LFS 6

Lab – Mon/Wed 10:00AM – 12:50 PM, LFS 6

Instructor: Karen Marks

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- Office: LFS 14
- Office Phone: (559) 638 – 0300 ext. 3715
- Office Hours: W 2:30-3:30
Th 1:00-3:00
F 10:00-12:00

Course Description

Biology 11A is a 5-unit biology course with 3 lecture hours and 6 lab hours per week. Students will study the chemistry of life, the cell, cellular structure, metabolism, photosynthesis, aerobic and anaerobic respiration, mitosis, meiosis, genetics, molecular biology, and evolution. Genetics will include Mendelian Genetics, Human Genetics, and Biotechnology. This course is intended for Science Majors and for pre-medical, pre-veterinarian, pre-dental, pre-optometry, and pre-pharmacy majors.

Student Learning Outcomes

Upon completion of this course, students will be able to

- analyze the process of meiosis as it relates to biological diversity.
- apply Darwin's theory of natural selection to genetic variation and its effects on environmental adaptation.
- apply the scientific method to design an experiment to test a hypothesis using appropriate controls based on current theories in biology.
- demonstrate how living organisms utilize ATP.
- describe the cell's structural components and their function.
- Understand how the Hardy-Weinberg equation measures genetic change within a population.

Course Objectives

In the process of completing this course, students will

- Use their textbook, laboratory manual, and scientific literature along with the scientific method to design laboratory experiments to test a hypothesis.
- Understand the structure of elements and how elements are bonded to make molecules.
- Understand how the structure of water affects its polarity, cohesion, pH.
- Understand the function and structure of the molecular basis of life; carbohydrates, lipids, proteins, and nucleic acids.
- Identify prokaryotic and eukaryotic cells, organelles, and tissues.
- Diagram the plasma membrane of a cell and list their functions and structural components.
- Describe transport across a membrane in diffusion, osmosis, and active transport.

- List, in order, the parts of glycolysis, Krebs, and the Electron Transport Chain.
- Define the structure and function of a cell-signaling pathway.
- State the cell cycle, mitosis, and its controls.
- Demonstrate proficiency in pedigree analysis
- Calculate phenotypic and genotypic ratios
- Acquire and apply basic DNA technological laboratory skills.
- Understand microbial genetics and nutrition using prokaryote microorganisms and viruses.
- Examine the concepts and techniques associated with embryological development.
- Use critical thinking skills to perform and analyze laboratory experiments.
- Set up an evolutionary chart of representative organisms.
- Cite examples of evolutionary adaptations.
- Use the Hardy-Weinberg theorem in frequency of alleles in a population.
- Examine macroevolution.
- Compare and contrast mass extinctions in evolutionary history.
- Draw out the branches of new phylogenies.
- Compare eukaryotes to prokaryotes and the diversity of organisms on earth.

Course Requirements and Policies

Prerequisites

Chemistry 1A and Math 103

Required Course Materials

- Textbook: Biology w/Connect Access, 11th Ed. Raven; McGraw-Hill ISBN: 978-1-2599-6822-8
- Lab Manual: Bio 11A/11B Lab Manual, Custom Ed. Vodopich; McGraw-Hill ISBN: 978-1-3088-0072-1
- Scantrons: 882-E (6x)

Technology Requirements

- Check Canvas and your Reedley College email accounts regularly (multiple times per week) for announcements.
- All lecture and lab PowerPoints, handouts, notes, schedules, grades, ect. will be posted on Canvas.

Class Policies

Attendance and Drop Policy

- Students are expected to attend all class sessions.
 - *If you miss 15 hours or more of this class throughout the semester, it will result in the lowering of your final course letter grade by one letter grade.*
- Excessive tardies (5 min late) will NOT be tolerated (three tardies equals one absence).
- Students will be dropped from this course if they do not attend the first lecture and/or first lab without prior notification to the instructor.
- Students will be dropped from this course if they have excessive absences of 8 hours or more of lab and/or lecture by the end of the third week of instruction.
- The final drop date for this course is October 11th, 2019.
 - It is the student's responsibility to drop this course if he/she feels necessary. The instructor will NOT drop any students after the third week of instruction.

Late Work Policy

Exams

Lecture Exams may only be made up due to extreme circumstances, at the discretion of the instructor, if arranged with the instructor *before the scheduled exam period (at least 3 hrs prior)*.

Online Assignments/In-class Activities

No late work for any assignments/activities in-person or online, including but not limited to quizzes and lab reports, will be accepted for any reason. No exceptions.

Communication Policy

Email/Messaging

The best and most effective way of communicating with me is to email me at karen.marks@reedleycollege.edu or by sending me a message in Canvas.

- Please allow a 24hr response time! I will always respond to emails and messages within 24 hours, but please allow up to 24 hours. If I don't respond within 24 hours, please double check the email address and resend your message then, chances are I didn't receive it!
- Emailing and messaging can be used 24 hours a day, 7 days a week!

Office Hours

I hold on-campus office hours. If you would like to come by my office, I am always guaranteed to be in my office during these hours. You can drop by anytime during this time frame, no appointment needed. If you are unable to make these office hours, but would like to meet with me in person, please email me and we will arrange an appointment to meet in my office.

College Policies

ACADEMIC DISHONESTY: Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it includes any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Cheating includes, but is not limited to, copying others' work, knowingly and willfully allowing someone to copy your work, plagiarism, giving false excuses for deadline extensions/exemptions, and using/possessing test or question banks. Any student caught cheating or plagiarizing will be given a zero on the assignment and may be subject to disciplinary action by the dean. Electronics of any kind are not permitted during exams and will result in an automatic zero for that exam.

ADA/DSP&S: If you have a verified need for an academic accommodation or materials in alternate media (e.g. Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact the instructor as soon as possible.

Grading Policy

Final letter grade scale: A = 90% +, B = 89 - 80%, C = 79 - 70%, D = 69 - 60%, F = 59% or less.

| TASK | Points | % of Grade | Breakdown |
|--------------------|--------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Exams | 500 | 50% | 5 exams @ 100 points each |
| Final Exam | 200 | 20% | 1 cumulative final |
| Quizzes | 50 | 5% | 10 quizzes @ 5 points each |
| Lab Reports | 100 | 10% | 20 lab reports @ 5 points each |
| LearnSmart Reading | 50* | 5% | 5 units @ 15 points/unit = 75 pts (# of Ch. will vary by unit) *a total of 75 points will be offered, but score will be out of 50. 25 points extra credit available |
| Writing Assignment | 50 | 5% | 1 writing assignment |
| Presentation | 50 | 5% | 1 presentation |
| Totals | 1000 | 100% | |

Grades will be posted on Canvas and will be updated regularly throughout the semester.

Course Exams and Major Assignments

Lecture Exams

Exams may only be made up due to extreme circumstances, at the discretion of the instructor, if arranged with the instructor before the scheduled exam period (at least 3 hrs. prior). There will be 5 midterms and a comprehensive final exam. See the Tentative Schedule for exam dates. Each exam will include new material covered in the corresponding unit, **including lecture and lab material**, and will also build on concepts covered in previous units. Exams will consist of multiple-choice, matching, fill in the blank, and short-answer/essay questions. Forming study groups is highly recommended. All exams will be given in class. **Final Exam** is cumulative.

Quizzes

Quizzes will be given on Canvas/Connect about once per week. I will not remind you to complete these, so please stay on top of them! Because of their online nature, there are no late quizzes accepted for any reason. Be sure to read/study prior to opening the quiz, as they are timed.

Lab Reports

Each lab session will have an associated lab report. Lab reports must be submitted on the lab report forms found in the lab manual. Lab reports are due at the end of their scheduled class session. No late lab reports will be accepted. You cannot turn in a lab report for a lab that you were not in attendance of.

LearnSmart Reading

Every lecture will have associated LearnSmart Reading through your McGraw-Hill Connect account. These assignments (and the eBook) can be accessed through Canvas. LearnSmart Reading assignments will be due at the end of each unit. See Canvas for exact due dates. It is **HIGHLY RECOMMENDED** that you complete the assigned reading **BEFORE** the associated lecture.

- Extra credit.** Extra credit can be earned by completing all LearnSmart Reading assignments. Throughout the semester, there will be a total of 75 points offered, but will only be graded out of 50 points. This allows up to 25 extra credit points (or 2.5%). *There will be no other extra credit offered in this course.*

Writing Assignments

You are required to complete one writing assignment in this course to fulfill the writing requirement of this GE course; the word count of this assignment must be over 1000 words to pass this class. Detailed instructions (including topics, formatting requirements, rubrics, due dates, etc.) for the assignment are available on Canvas. You will submit a draft of your report for peer feedback. The instructor will grade the final version of your assignment. Note: All drafts and final reports must be submitted to TurnItIn (on Canvas) for the peer feedback and grading process. *If you do not fulfill the requirements of this writing assignment in its entirety, you cannot pass Biol 11A.*

- **Plagiarism Detection:** The campus subscribes to TurnItIn plagiarism prevention service through Canvas, and you will need to submit written assignments to TurnItIn. Your work will be used for plagiarism detection and for no other purpose. TurnItIn Originality Reports will be available for your viewing.

Presentations

Each student will be responsible for putting together and giving an oral presentation in class based on the topic of their writing assignment. Detailed instructions (including topics, formatting requirements, rubrics, due dates, etc.) for the assignment are available on Canvas. *If you do not fulfill the requirements of this presentation in its entirety and complete your oral presentation in class, you cannot pass Biol 11A.*

Participation Standards

Study Expectations. Consider the following statement as a general guideline for participation for this class: “It is usually expected that students will spend approximately 2-3 hours of study time outside of class for every one hour in class. Since this is a 5-unit class (9 hrs./week), you should expect to study an average of at least 18 hours outside of class each week. Some students may need more outside study time and some less. “

Subject to Change Statement

This syllabus and tentative schedule are subject to change with notification. If you are absent from class, it is your responsibility to check on announcements made while you were absent.

Tentative Course Schedule*

| DATES | | Lecture (M/W/F) | Lab (M/W only) | LearnSmart | Other |
|---------|-------------|------------------------------------------------------|----------------------------------------|------------|------------------------------------|
| Week 1 | 8/12-8/16 | Intro & Science of Biology Chemistry | Safety, 1 - Sci Method | Ch 1 | |
| | | | 2 - Metric System; 3 - Microscope | Ch 2 | |
| Week 2 | 8/19-8/23 | Biological Molecules | 6 - Biological Molecules | Ch 3 | |
| | | | 8 - Spectrophotometry | Ch 3 | |
| Week 3 | 8/26-8/30 | Cell structure Membranes | 4 - Cells | Ch 4 | |
| | | | 9 - Diffusion | Ch 5 | |
| Week 4 | 9/2 | No Class - Labor Day | | | |
| | 9/4-9/6 | Exam #1 Energy & Enzymes | | | |
| Week 5 | 9/9-9/13 | Energy & Enzymes Bioenergetics/Anaerobic Respiration | 11 - Enzymes | Ch 6 | |
| | | | 12 - Respiration (Anaerobic) | Ch 6 & 7 | |
| Week 6 | 9/16-9/20 | Aerobic Respiration Photosynthesis | 12 - Respiration (Aerobic) | Ch 7 | |
| | | | 13 - Photosynthesis | Ch 8 | |
| Week 7 | 9/23-9/27 | Exam #2 Cell Communication | | | |
| | | | 10 - Membranes | Ch 9 | |
| Week 8 | 9/30-10/4 | Cell Division Meiosis | 14 - Mitosis | Ch 10 | |
| | | | 15 - Meiosis | Ch 11 | |
| Week 9 | 10/7-10/11 | Genetics | 17 - Genetics | Ch 12 | |
| | | | 17 - Genetics Problems | Ch 12 | |
| Week 10 | 10/14-10/18 | Exam #3 DNA | | | |
| | | | 7.3 - Electrophoresis | Ch 14 | |
| Week 11 | 10/21-10/25 | Mol Bio of Genes | Genotyping (PV92) | Ch 15 | |
| | | | Genotyping (PV92) | Ch 15 | |
| Week 12 | 10/28-11/1 | Gene Expression Biotechnology | DNA Isolation & transformation | Ch 16 | |
| | | | DNA Isolation & transformation | Ch 17 | |
| Week 13 | 11/4-11/8 | Exam #4 Development | | | Pick Paper Topic |
| | | | Student Research | Ch 19 | |
| Week 14 | 11/11 | No Class – Veteran’s Day | | | |
| | 11/13-11/15 | Population Genetics | 18 & 19 - Evolution | Ch 20 | |
| Week 15 | 11/18-11/22 | Evidence for Evolution Speciation | Evolution Movie | Ch 21 | Rough Drafts due for Peer Feedback |
| | | | Evolution Board Game | Ch 22 | |
| Week 16 | 11/25-11/27 | Systematics Exam #5 | Exam Review | Ch 23 | Peer Feedback Due |
| | | | No Class – Thanksgiving Holiday | | |
| Week 17 | 12/3-12/5 | Student Presentations Final Exam Review | Student Presentations | | Final Paper Due |
| | | | Final Exam Review | | |
| Week 18 | 12/12 | Final Exam - Cumulative | | | |

* This schedule is subject to change with notification

Other Important Dates: **Final Drop Date to avoid “W”:** September 2nd
Final Drop Date (with “W”): October 11th