

Angelina College
Science and Mathematics Division
BIOL 1407: Biology for Science Majors II
General Syllabus

I. Basic Course Information

A. Course Description: Four hours credit. The diversity and classification of life will be studied, including animals, plants, protists, fungi, and prokaryotes. Special emphasis will be given to anatomy, physiology, ecology, and evolution of plants and animals. The laboratory portion of the course will reinforce study of the diversity and classification of life, including animals, plants, protists, fungi, and prokaryotes. Special emphasis will be given to anatomy, physiology, ecology, and evolution of plants and animals. Recommended Prerequisite: BIOL 1406. Three lecture and three lab hours each week. Lab fee.

B. Intended Audience: This course is intended for science and mathematics majors.

C. Instructor:

Instructor: Dr. Andrea Barrett
Office: S121
Office Hours: As posted or by appointment
Phone: (936) 633-5262
e-mail: abarrett@angelina.edu

II. Intended Student Outcomes

A. Core Competencies (Basic Intellectual Competencies)

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

B. Course Learning Outcomes for all Sections.

Upon successful completion of lecture portion of the course, students will:

1. Describe modern evolutionary synthesis, natural selection, population genetics, micro and macroevolution, and speciation.
2. Describe and distinguish between phylogenetic relationships and classification schemes.
3. Identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
4. Describe basic animal physiology and homeostasis as maintained by organ systems.
5. Compare different sexual and asexual life cycles noting their adaptive advantages.
6. Illustrate the relationship between major geologic change, extinctions, and evolutionary trends.
7. Apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
8. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
9. Communicate effectively the results of scientific investigations.

Upon successful completion of laboratory portion of the 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. Demonstrate knowledge of modern evolutionary synthesis, natural selection, population genetics, micro and macroevolution, and speciation.
5. Distinguish between phylogenetic relationships and classification schemes.
6. Identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
7. Describe basic animal physiology and homeostasis as maintained by organ systems.
8. Compare different sexual and asexual life cycles noting their adaptive advantages.
9. Illustrate the relationship between major geological change, extinctions, and evolutionary trends.

III. Assessment Measures of Student Learning Outcomes

A. Assessments for the Core Objectives

1. **Critical thinking:** Students will complete a project that assesses inquiry, synthesis, analysis, and results. Evidence of critical analysis will be evaluated using a standardized AC rubric.
2. **Communication:** Students will complete a project that assesses organization, quality of informational sources, and written communication skills. Communication skills and abilities will be evaluated using a standardized AC rubric.
3. **Empirical and quantitative Skills:** Students will complete a project that assesses representation, calculation, interpretation, and application and analysis. Empirical and quantitative skills will be evaluated using a standardized AC rubric.
4. **Teamwork:** Students will complete a project that assesses effective communication with team members, team climate, contributions to a team, and responses to team members. Team members will evaluate the performance of one another. Teamwork will be evaluated using a standardized AC rubric.

B. Assessments for the Course Learning Outcomes for all Sections

1. Students will demonstrate their ability to describe modern evolutionary synthesis, natural selection, population genetics, micro and macroevolution, and speciation by answering directed lecture questions and/or exam questions.
2. Students will demonstrate their ability to describe and distinguish between phylogenetic relationships and classification schemes by answering directed lecture questions and/or exam questions.
3. Students will demonstrate their ability to identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance by answering directed lecture questions and/or exam questions.
4. Students will demonstrate their ability to describe basic animal physiology and homeostasis as maintained by organ systems by answering directed lecture questions and/or exam questions.
5. Students will demonstrate their ability to compare different sexual and asexual life cycles noting their adaptive advantages by answering directed lecture questions and/or exam questions.
6. Students will demonstrate their ability to illustrate the relationship between major geologic change, extinctions, and evolutionary trends by answering directed lecture questions and/or exam questions.
7. Students will demonstrate their ability to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data by answering directed lecture questions and/or exam questions.
8. Students will demonstrate their ability to use critical thinking and scientific problem solving to make informed decisions in the laboratory by answering directed lecture questions and/or exam questions.
9. Students will demonstrate their ability to communicate effectively the results of scientific investigations by answering directed lecture questions and/or exam questions.

IV. Instructional Procedures

This course will be taught using a combination of lectures and laboratory exercises that complement and supplement lecture material. Audio-visual materials, models, and laboratory experiments will be employed to enhance lecture and laboratory presentations.

V. Course Requirements and Policies

A. Required Textbooks, Materials, and Equipment

1. Biology: How Life Works, Morris, Hartl, Knoll, Lue. Macmillan publishing, 2nd edition.
2. Investigations in Biology, Barrett, A. Rhaeadr Publishing, 1st edition. (Additional lab experiments will be given as a handout by instructor.)
3. Access to Launchpad
 - a. <http://www.macmillanhighered.com/launchpad/morris2e/10078180>
4. Access to Blackboard
5. Scantrons (882-E) for each exam.

B. Educational Accommodations – If you have a disability (as cited in Section 504 of the Rehabilitation Act of 1973 or Title II of the Americans with Disabilities Act of 1990) that may affect your participation in this class, you may fill out the Educational Accommodations application within your AC Portal, under the “Student Services” tab. A Student Success team member will contact you once the application is received. At a post-secondary institution, you must self-identify as a person with a disability in order to receive services; for questions regarding the application process you can visit the Office of Student Success and Inclusion in the Student Center (Room 200) or email access@angelina.edu. To report any complaints related to accommodations, you should contact Annie Allen, Director of Student Success & Inclusion, in Room 200 of the Student Center. You may also contact Ms. Allen by calling (936) 633-4509 or by emailing aallen@angelina.edu. To report discrimination of any type, contact Steve Hudman, Dean of Student Affairs, at (936) 633-5292 or shudman@angelina.edu.

C. Attendance – All students are expected to attend all scheduled classes and examinations and to be on time. Students who know they will be absent in advance should contact the instructor as soon as possible by e-mail (preferred) or telephone. The instructor will determine whether or not an absence is excused. **IT IS THE STUDENT’S RESPONSIBILITY TO DROP THE COURSE** to avoid a potentially failing grade, however any student with 3 consecutive, or 4 cumulative absences may be dropped by the instructor regardless of the potential end of semester grade. **The last day to drop the course with a “W” is April 1, 2019.**

D. Course Conduct

1. Absolutely no cell phone use is allowed during labs or class.
2. No Food, drinks, or tobacco in class.
3. Courteous and respectful behavior will be expected in class at all times.

VI. Course Outline

Class	Day	Date	Chapter	Description
1	T	15-Jan	21	Evolution: How Genotypes and Phenotypes change over Time
2	R	17-Jan	22	Species and Speciation
3	T	22-Jan	23	Evolutionary Patterns: Phylogeny and Fossils
4	R	24-Jan	24	Human Origins and Evolution
5	T	29-Jan	26	Bacteria and Archaea
6	R	31-Jan	27	Eukaryotic Cells: Origin and Diversity
7	T	5-Feb		Review
8	R	7-Feb		Exam 1
9	T	12-Feb	34	Fungi: Structure, Function, and Diversity
10	R	14-Feb	28	Being Multicellular
11	T	19-Feb	44	Animal Diversity
12	R	21-Feb	35	Animal Nervous System
13	T	26-Feb	36	Animal Sensory Systems and Brain Function
14	R	28-Feb	39	Animal Cardiovascular and Respiratory Systems
15	T	5-Mar		Review
16	R	7-Mar		Exam 2
	T	12-Mar		Spring Break
	R	14-Mar		Spring Break
17	T	19-Mar	37	Animal Movement: Muscles and Skeletons
18	R	21-Mar	40	Animal Metabolism, Nutrition, and Digestion
19	T	26-Mar	41	Animal Renal Systems
20	R	28-Mar	42	Animal Reproduction and Development
21	T	2-Apr	38	Animal Endocrine Systems
22	R	4-Apr	43	Animal Immune Systems
23	T	9-Apr		Review
24	R	11-Apr		Exam 3
25	T	16-Apr	33	Plant Diversity
26	R	18-Apr	30	Plant Reproduction: Finding Mates and Dispersing Young
27	T	23-Apr	29	Plant Structure and Function: Moving Photosynthesis onto Land
28	R	25-Apr	31	Plant Growth and Development: Building the Plant Body
29	T	30-Apr		Exam 4
30	R	2-May		Semester Review
31		9-May		Comprehensive Final Exam

Note: Schedule is subject to change

* Last day to drop with a "W" is April 1st

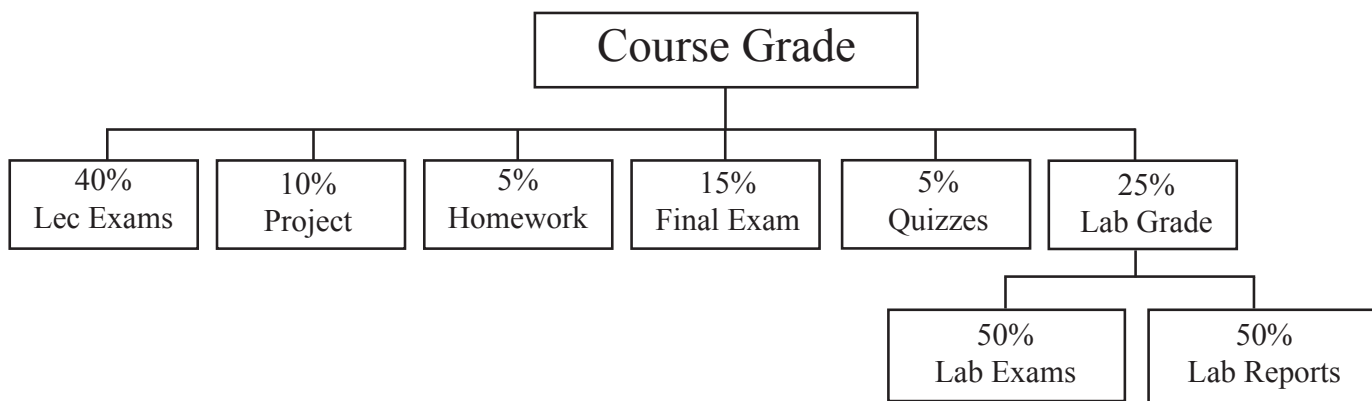
VII. Laboratory Outline

Class	Day	Date	Exp	Description
1	R	17-Jan	14	Evolution: Mechanisms
2	R	24-Jan	13	Evolution: Exploration of Evidence
3	R	31-Jan	15	Diversity of Life: Classification
4	R	7-Feb	Posted	Prokaryotes and Protists
5	R	14-Feb	Posted	Fungi Kingdom
6	R	21-Feb	Posted	Animalia Kingdom: Animal Diversity
7	R	28-Feb	Posted	Animalia Kingdom: Invertebrate Dissection
8	R	7-Mar		Lab Exam 1
	R	14-Mar		Spring Break
9	R	21-Mar	Posted	Animalia Kingdom: Vertebrate Dissection
10	R	28-Mar	Posted	Vertebrate Circulation/Anatomage Table
11	R	4-Apr	Posted	Vertebrate Nervous System/Anatomage Table
12	R	11-Apr	Posted	Ecology (Start Plant Collection Project)
13	R	18-Apr	Posted	Kingdom Plantae: Plant Diversity and Reproduction
14	R	25-Apr	Posted	Kingdom Plantae: Structure and Function
15	R	2-May		Lab Exam 2

VIII. Evaluation and Grading

- A. **Lecture Exams:** There will be four regular non-comprehensive lecture exams that will be given as shown on the class schedule. Collectively, they are worth 40% of your grade.
 - 1. **Missed Exams:** There will be NO make-up exams. The final exam grade may replace the single lowest test grade or the grade for a missed exam.
- B. **Quizzes:** Several quizzes will be given throughout the semester over chapters specified by your instructor. They will be collectively worth 5% of your grade.
- C. **Homework:** All homework assignments given on Launchpad will be worth a collective 5% of your grade.
- D. **Projects:** There will be four projects assigned throughout the semester by your instructor. Collectively, they will be worth 10% of your grade.
- E. **Final Exam:** The final exam is comprehensive and will be given during the scheduled final examination period. The score of the final exam may replace the lowest regular exam grade. The final exam is worth 15% of your grade.
- F. **Lab Grade:** The complete lab grade composed of lab exams and lab reports will be worth 25% of your grade.
 - 1. **Lab Exams:** There will be two lab exams that are comprehensive over the laboratory experiments given on the lab schedule. Collectively, they are worth a total of 50% of the lab grade.
 - 2. **Lab reports:** All lab reports (observations and results) at the end of each laboratory experiment will be graded. Collectively, they are worth a total of 50% of the lab grade.

Total Percentage	Final Grade
90+%	A
80-89%	B
70-79%	C
60-69%	D
Below 60%	F



SYLLABUS MODIFICATION: The instructor may modify the provisions of the syllabus to meet individual class needs by informing the class in advance as to the changes being made.