**Midwestern State University**
**Fall Semester 2022**
**Life II – BIOL-1214**

**Lecture:** Monday, Wednesday, and Friday from 11:00 to 11:50 am (BO 209)
**Lab:** Wednesday from 1:30 to 3:20 pm (BO 203)
Wednesday from 4:00 to 5:50 pm (BO 203)
Thursday from 1:30 to 3:20 pm (BO 203)

**Instructor of Record:** Dr. Antonio R. Castilla (he/his/él)
**Teaching Assistant:** Mr. Reid Armstrong (he/his/él)

**Email** (best way to contact me): **antonio.castilla@msutexas.edu** – expect an answer within 24hrs during the week and 48hrs in the weekends. Best way to get a timely answer: (1) Write the course name ('BIOL 1214') in the subject line, (2) use professional language, consider this professional correspondence, and (3) sign with your complete name. Do not expect a quick reply after 5pm, in the middle of the night or during weekends.

**Office hours:** Monday, Tuesday, Wednesday, Thursday, and Friday from 12:00 to 1 pm; or by appointment (email me to schedule a time).

## Course content and goals

Life II is the second in a three-course sequence designed for students majoring in natural sciences. This course is an introduction to the principles and mechanisms of evolution and ecology. The overarching goal of this course is to train you to become an evolutionary ecologist. You will acquire skills to evaluate and discuss the primary literature critically, develop a solid understanding of fundamental concepts in evolutionary ecology, train your quantitative reasoning, and implement the scientific method through hands-on learning. A substantial portion of the course will be activity-focused, and you will be learning not only from your instructors but also from your classmates and your own experience. To be successful, you will need to be prepared for each class, which consists of reviewing your notes, going over assigned readings and videos, and completing assignments on time. I expect you to allocate at least 9 hours of work per week outside of the lectures and lab.

Suggestions to be successful:

- Take notes, take notes of your notes, summarize, and connect the material in new ways. Reviewing is not enough!
- Prepare for the class: read your notes, read the book chapters and the discussion papers, watch videos, and participate in class activities.
- Start your assignments early: don't leave things for the last minute.
- Ask questions! Ask all the questions. Ask me, ask your peers, ask me again.

By the end of the semester, you will be able to

a) Explain the history, evidence, patterns, and mechanisms of evolution as a unifying theme of biology.
b) Use the phylogenetic approach to study the evolutionary history and relationship among and within groups of organisms.
c) Understand how genomes inform on neutral and selective processes in evolution.
d) Explain how different data can inform about the biogeographic history of living organisms.
e) Describe the major events in the evolution of life.
f) Predict the influence of environmental factors on the global distribution of biomes and biodiversity.
g) Describe the levels of organization in ecology and be able to distinguish them from one another based on the spatial scale.
h) Understand how human activities are impacting biosphere through biodiversity loss.

**Textbook, readings, materials, and resources**

- **Required textbook:** Hillis, David M., H. Craig Heller, Sally D. Hacker, David W. Hall, Marta J. Laskowski, and David E. Sadava. Life: the science of biology, 12th. Ed. Sunderland, MA: Sinauer Associates/ Macmillan. ISBN 9781319017644. Although most of the course content is based on the twelfth edition of this textbook, it is totally ok to use previous editions. Graded activities will focus on broader concepts beyond specific differences between editions.
- **Readings and lab protocols:** will be posted on D2L.
- **Additional resources:** I encourage you to look at additional sources and share them with everyone. If you are struggling with the lecture, discussions, or labs, looking at a different perspective may help. Alternatively, if you are interested in going further than is intended in this class, I will maintain a list of additional resources for each topic in D2L.

**Class structure**

This course will be in-person and consist of three portions: Lectures, Quantitative skill-building, and Labs. The instructor will set the pace of the course, including making deadlines for completing assignments. All portions are designed to complement your knowledge and practice your skills in evolutionary ecology, so topics will come up multiple times from different perspectives. You will have access to all materials via D2L. You must participate in all portions to succeed in this course. Here, I describe each portion and detail the activities, readings, and special considerations.

Lecture

- Prepare: Read the textbook chapters and watch the lecture videos provided. Slides will be provided at D2L before the lectures. ***All cell phones should be turned off before entering the classroom to prevent disturbing the class**. No texting in class once lecture begins.

- Participate: Class attendance is crucial for maximum performance. We will practice the material and work through some of the study guides together. In addition, announcements and questions about the material come up in these sessions, keeping us all on the same page.

- Study for exams: These tests will allow you to evaluate your comprehension and challenge your abilities. To succeed in these tests, it is not enough to study the night before. Instead, you should be up to date with the material and practice regularly.

Quantitative skill-building:

- Prepare: Check D2L and download the corresponding data-in-depth activity. You should go through the lecture materials and think deeply about the subject. Do not stay on the surface. We are interested in your opinion as a professional!

- Participate: Reply the questions posted for each activity and do not hesitate in sharing your thoughts with the rest of the class during our live session. You can accumulate a good number of points!!

Lab

- Prepare: Review assigned handouts before the lab session. These handouts will be available in D2L the week before the lab is conducted.

- Participate: Join your instructors and peers each week for a short lecture on the lab contents and work together to conduct lab activities.

- Study for the final exam: This test will allow you to evaluate your comprehension of the fundamental concepts underlying these practical exercises. To succeed in these tests, you must attend to the labs, keep an updated record of the activities, and review the lecture material on the topics addressed in the labs.

**Grading policies**

Final grades will be based on the percentage of points earned out of 1029 points. It is important to remember that although I assign the grades, you earn the points. Points will be earned based on the following criteria (Table 1):

| Class Portion | Number | Points/Unit | Total |
|---|---|---|---|
| **Lecture** | | | |
| Exams | 4 | 100 | 400 |
| Percentage and Total | | **39%** | **480** |
| | | | |
| Class portion | Number | Points/Unit | Total |
| **Quantitative skill-building** | | | |
| Data in depth | 10 | 30 | 300 |
| Percentage and Total | | **29%** | **300** |
| | | | |
| Class portion | Number | Points/Unit | Total |
| **Lab** | | | |
| Attendance | 14 | 1 | 14 |
| Lab exercises | 13 | 20 | 260 |
| Lab exam | 1 | 50 | 50 |
| Percentage and Total | | **32%** | **324** |
| | | | |
| Class portion (voluntary) | Number | Points/Unit | Total |
| Data in depth discussion | 10 | 10 | **100** |
| Total | | | **1124** |

The final grade will be based upon the following system:

A = 90% and above (922 points and above)

B = 80-89% (819-921 points)

C = 70-79% (717-818 points)

D = 60-69% (614-716 points)

F = Below 60% (below 614 points)

I reserve the right to move the curve downward (e.g., such that a 78% could be a B) and to use +/- grades.

Grading the items listed above will be based on the following criteria and policies:

Lecture: You are expected to participate in all activities and in general engage with the subject matter. It is natural that some people will talk more than others, but absolute silence is not an option. Don't be afraid to ask questions or provide input. This is good for you and for the rest of the class.

- Exams: Written exams will be a mix of short answers, fill-in-the-blanks, definitions, multiple-choice questions, short answers/essays and problems to be solved. While some questions will be over material explicitly covered in lectures and/or the textbooks, other questions may ask you to apply what you have learned to a new situation or take it further than we did in class. Reviewing your notes is only the beginning of your preparation, you must practice the material thoroughly. ***Make-up exams will only be available if you have a verified medical or similarly valid excuse and must be taken in a timely fashion within one (1) week of the original exam date.** Once an exam has been handed out, students are not allowed to leave the classroom and return. Please make every effort to come to the classroom prepared for the test. ***All cell phones must be silenced before the test is handed out. Do NOT pull out your cell phone at any time during the test!** All personal items must be stored under your desk so that the exam proctor may use the aisles during the exam. Attempting to cheat on an exam by looking at someone's test is a serious offense and will result in a grade of zero for that exam.

Quantitative skill-building: The primary goal of this activity is to stimulate your quantitative reasoning. Rather than just being able to just solve a mathematical equation, you will understand how quantitative is gathered, represented, and correctly interpreted using graphs, charts, tables and diagrams.

- Data in depth: We will have ten sessions where you will work on a problem or a figure/table from a scientific article. I will post the problem or the manuscript in D2L and several questions you must answer. You will have about one week to solve the questions and upload your responses to D2L. After that, we will hold a live discussion in the class. You can reach up to 20 points with your answers. And you may get another 10 points per session if you share your thoughts with the class.

Lab activities are designed to develop skills in the techniques used in evolutionary ecology, experimental design, data analysis and reporting. You are expected to participate actively in individual and group activities. During the lab session, you will start with a brief introduction by your instructors indicating each week's activities, and then you will work in groups to complete the material.

- Lab attendance: I strongly encourage attending the lab session for the support of your instructors and peers in completing these tasks. By simply attending, you will obtain up to 14 points.

- Lab exercises: Lab handouts will be available in D2L. Please, print the handout before coming to the lab session. These handouts include exercises and questions that you should reply during the session and others that will require some homework. ***Please turn your completed lab exercises at the beginning of the following lab session.**

- Lab exam: it will be a mix of short answers, fill-in-the-blanks, definitions, multiple-choice questions, short answers/essays and problems to be solved.

Additional considerations

*All apparent grading errors*, disputes, and so forth must be submitted in a formal email to Dr. Castilla ***within one week of the date when the grade is posted**. If you are disputing the scoring of an answer, you must include a written explanation of why you believe that your answer is correct.

Late work will not be considered unless there is a verified medical or similarly valid excuse and must be taken in a timely fashion within (1) week of the original date.

**Topical outline**

| **Topic** | **Textbook** |
|---|---|
| Processes of Evolution | Chapter 12.1-12.4 and Chapter 19 |
| Reconstructing and using Phylogenies | Chapter 20 |
| **EXAM 1** | |
| Evolution of Genes and Genomes | Chapter 21 |
| Speciation | Chapter 22 |
| **EXAM 2** | |
| History of Life | Chapter 23 |
| Populations | Chapter 53 |
| Species Interactions | Chapter 54 |
| **EXAM 3** | |
| Communities | Chapter 55 |

| Topic | Textbook |
|---|---|
| Ecosystems | Chapter 56 |
| A Changing Biosphere | Chapter 57 |

**EXAM 4**

**Flexibility Clause**

Circumstances may arise during the semester that may prevent the professor from fulfilling parts of this syllabus; therefore, it should be viewed as a guide and subject to change. Students will be notified of any changes.

**Communication**

- We will communicate with you about the course through the main email address as listed by MSU Texas. Ensure that you receive these emails in a timely fashion, either by checking your account regularly, or by forwarding your messages to an account that you check regularly. To ensure timely response, add BIOL 1214 to the subject line. Make sure to write emails in an organized, clear way. Use full sentences and avoid slang. Begin with a formal greeting and finish with your complete name.

- We will be using D2L regularly in this course. It is important that you check the website often during the week. I will post announcements, readings, assignments, and other materials there. Although the class schedule may change, these changes will always be updated in D2L. You should be able to log into D2L. If you have trouble, please contact the Distance Education Department at Midwestern State University: Distance Education

**Inclusivity Statement**

I encourage every student in this class to speak freely and participate. Each of us must show respect for each other because our class represents a diversity of beliefs, backgrounds, and experiences. I believe that this is what will enrich all our experiences together. I recognize that our individual differences can deepen our understanding of one another and the world around us, rather than divide us. In this class, people of all ethnicities, genders and gender identities, religions, ages, sexual orientations, disabilities, socioeconomic backgrounds, regions, and nationalities are strongly encouraged to share their rich array of perspectives and experiences. If you feel your differences may in some way isolate you from our classroom community or if you have a specific need, please talk with me so that we can work together to help you become an active and engaged member of our class and community (adapted from CSU Chico and Winona State University).

## University Policies

**MSU Texas policies, procedures and resources:** Security Policy and Procedures

**Academic Honor Policy:** You are responsible for knowing the policy regarding academic honesty. Students are expected to maintain high standards of academic integrity at all times. No forms of academic dishonesty (cheating, plagiarism, etc.) will be tolerated. I will take any violation of the University's Academic Honesty Policy very seriously. I trust you to be honest. Do not violate that trust. For further information: Student Conduct

**Students with disabilities:** If you need accommodations, please contact the disability support services as soon as possible. Some accommodations may take some time to arrange. Feel free to contact me if I can be of any help.

Debra Higginbotham

Clark Student Center, 168

disabilityservices@msutexas.edu

(940) 397-4140

(940) 397-4180

**Add/Drop policy:** October 24th, 2022, is this semester's deadline to Add or Drop classes without serious and compelling reasons. It is your responsibility for following up on these procedures. For more information: Add/Drop Policy

**Emergency and crises:** In case of emergencies and crises, I will work with you to make arrangements and accommodations. Excusable absences under this category include illness, death in the family, dependent children serious illness, and other documented crises, call to active military duty or jury duty, religious holydays, and official University activities. Absences for religious holidays require you to notify me at least 14 days in advance. Please don't agonize about your class if you are in a crisis, just let me know. Note that documentation will be necessary in all instances. This allows us to make arrangements associated with evaluation and grading. For more information: Crisis Counseling

**Tutoring at MSU Texas:** Midwestern State University provides Tutoring and Academic Support Programs. For more information: MSU Tutoring

**Emergency procedures:** Review the evacuation plan and emergency procedures for our classrooms. During an emergency, follow instructions and information provided at Emergency Procedures

**Campus carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit Campus Carry.

**Active Shooter:** The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit Safety / Emergency Procedures. Students are encouraged to watch the video entitled “Run. Hide. Fight.” which may be electronically accessed via the University police department’s webpage: "Run. Hide. Fight."