Biology 4417/5417 Field Biology  
Department of Life Sciences  
Summer I - 2019

A. COURSE INFORMATION

Course number/section: BIOL 4417.001 and BIOL 4417.101  
Class meeting time: 6-3, 4-19 Pre-Trip meetings 9 AM – 12; Field Trip: 6-6-19 to 6-17-19; Post-Trip meetings: 6-19, 20, 21-19  
Class location: CI 128; Field Trip  
Course Website: [See Blackboard]

B. INSTRUCTOR INFORMATION

Instructor: Dr. Kirk Cammarata  
Office location: TH 338  
Office hours: M-R: 8-9 AM; 1-2 PM  
Telephone: 361-825-2468 (Cammarata)  
e-mail: kirk.cammarata@tamucc.edu  
Appointments: email for appointments  
Assistants: Cole Castleberry, Field Logistics  
Ethan Taulbee, Teaching Assistant

C. COURSE DESCRIPTION

Field Biology is a hands-on course designed to teach students key concepts by immersing them in nature. Topics include adaptations of plants and animals in different habitats, food web interactions, and how biotic and abiotic forces interact to structure natural communities including spatial and temporal variation in communities.

D. PREREQUISITES AND COREQUISITES

Prerequisites  
Biology 3428 Principles of Ecology; Permission of Instructor

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Assigned readings will be provided electronically by Dr. Cammarata. No textbooks are required. A field notebook/journal and photography (Cell Phone OK) will be required.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

- Students will learn how species adapt to different habitats and the biotic and abiotic conditions present in them through observation and reading
Students will develop an understanding of the current status of ecological knowledge about the food webs in different habitats and design hypothetical experiments to further this knowledge.

Students will demonstrate basic knowledge of the species present in aquatic and terrestrial habitats common to the US and be able to identify them using common names.

Students will demonstrate how to use common methods and tools for studying field biology in aquatic and terrestrial systems.

Students will measure biodiversity in multiple habitats using common methodology, analyze these findings, and create a report describing how biodiversity changes with gradients of abiotic conditions (e.g. moisture), climate, and human activity.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Hands-on, field based course. We camp, hike, and experience the course in a natural setting to learn firsthand about adaptations to abiotic/biotic conditions, and human impacts on the environment. Students will use point-centered-quarter, transect, and/or plot measurements to estimate plant diversity in desert/forest environments. At each location, students will spend time making observations and measurements, and then comparing biodiversity as a function of conditions. Topics include comparing different sampling methods, understanding appropriate experimental designs, understanding sampling limitations, understanding importance of scale (alpha, beta, gamma diversity), and differences between various calculations of diversity (e.g., Shannon vs. Simpson indices). Students will report their methodology, analysis and interpretations of the data on their final Diversity Report due at the end of the course.

H. MAJOR COURSE REQUIREMENTS AND GRADING

ATTENDANCE

Attendance is mandatory. All students are expected to attend all class sessions and the 12-day field trip. Participation is large part of the grade, and, due to the nature of the course, absences are not permitted and make-up work not allowed. Extraordinary circumstances will of course be considered.

GRADE COMPUTATION:

Undergraduate

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Comprehensive Exam</td>
<td>200</td>
</tr>
<tr>
<td>Field Journal</td>
<td>150</td>
</tr>
<tr>
<td>Photo Journal &amp; Presentation</td>
<td>150</td>
</tr>
<tr>
<td>Group Project &amp; Presentation</td>
<td>200</td>
</tr>
<tr>
<td>Biodiversity Report</td>
<td>150</td>
</tr>
<tr>
<td>Participation</td>
<td>150</td>
</tr>
<tr>
<td>Total</td>
<td>1000</td>
</tr>
</tbody>
</table>
## I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Day/Activities</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 3rd</td>
<td>Pre-Trip Class Meeting</td>
<td></td>
</tr>
<tr>
<td>June 4th</td>
<td>Pre-Trip Class Meeting</td>
<td></td>
</tr>
<tr>
<td>June 5th</td>
<td>Preparation Day – Pre-Loading</td>
<td></td>
</tr>
<tr>
<td>June 6th</td>
<td>Meet 6:30 AM; Driving to Del Rio, TX area; Short hike to canyon overlook</td>
<td>Seminole Canyon SP, TX</td>
</tr>
<tr>
<td>June 7th</td>
<td>Seminole Canyon SP, TX; Long hike to Rio Grande Overlook, Diversity Surveys</td>
<td>Seminole Canyon SP, TX</td>
</tr>
<tr>
<td>June 8th</td>
<td>Pack camp; Fate Bell Shelter Tour; Driving to Davis Mtns; High Bridge Overlook; Judge Roy Bean Museum &amp; Gardens; MacDonald Observatory Star Party</td>
<td>Davis Mountains Nature Conservancy, TX</td>
</tr>
<tr>
<td>June 9th</td>
<td>Davis Mountains Nature Conservancy, TX; Volunteer Work Party; Short hike; Diversity Surveys</td>
<td>Davis Mountains Nature Conservancy, TX</td>
</tr>
<tr>
<td>June 10th</td>
<td>Pack camp; Driving to Carlsbad N.M.; El Capitan Overlook; Carlsbad Caverns NP, NM</td>
<td>Camp Washington, NM</td>
</tr>
<tr>
<td>June 11th</td>
<td>Guadalupe Mountains NP, TX; Big Hike</td>
<td>Camp Washington, NM</td>
</tr>
<tr>
<td>June 12th</td>
<td>Pack camp; Driving to Cloudcroft NM.; Living Desert Museum/Zoo/Gardens</td>
<td>Lincoln NF, NM (Cloudcroft)</td>
</tr>
<tr>
<td>June 13th</td>
<td>White Sands NM, Diversity Survey; Laundry</td>
<td>Lincoln NF, NM</td>
</tr>
<tr>
<td>June 14th</td>
<td>Cloudcroft Area: Cove Forest hike; Alpine Meadow</td>
<td>Lincoln NF, NM</td>
</tr>
<tr>
<td>June 15th</td>
<td>Pack camp; Driving to Colorado Bend S.P., TX</td>
<td>Colorado Bend SP, TX</td>
</tr>
<tr>
<td>June 16th</td>
<td>Colorado Bend SP, TX; Hike; Swim</td>
<td>Colorado Bend SP, TX</td>
</tr>
<tr>
<td>June 17th</td>
<td>Pack camp; Driving to Corpus Christi</td>
<td>Corpus Christi, TX</td>
</tr>
<tr>
<td>June 18th</td>
<td>Recovery Day (Work on projects)</td>
<td></td>
</tr>
<tr>
<td>June 19th</td>
<td>Class Meeting: Review of trip &amp;</td>
<td></td>
</tr>
</tbody>
</table>
assignments; Diversity Report calculations

<table>
<thead>
<tr>
<th>Date</th>
<th>Class Meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 20th</td>
<td><strong>Group Presentations</strong></td>
</tr>
<tr>
<td>June 21st</td>
<td><strong>Photo Journal Presentations</strong>; Field Notebooks Due, Diversity Reports Due; and Final Exam</td>
</tr>
</tbody>
</table>

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

**J. COURSE POLICIES**

**ACADEMIC INTEGRITY**

All students are expected to conform to college level standards of ethics, academic integrity, grammar and spelling; review the appropriate pages of the TAMU-CC catalog and TAMU-CC student handbook. Failure to comply with these rules will result in dismissal from the course.

**ACADEMIC DISHONESTY (CHEATING)**

Cheating in any form will absolutely not be tolerated. This includes asking for or providing help on an exam or paper, plagiarism, or basically doing anything that substitutes one person’s work for another’s. Cases of academic dishonesty will be dealt with severely. Students caught cheating will receive a grade of ‘F’ for the course and the offense will be reported to the student affairs office. All parties involved will receive a failing grade for the course.

**K. COLLEGE AND UNIVERSITY POLICIES**

- **Academic Integrity (University)**
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit
from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must be submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that
provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

  [delete and insert any additional notes, your expectations of the students, etc.]

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.
EXPLANATION OF ASSIGNMENTS

Participation (15%) – Attitude goes a long way toward making the grade here.

Written Journal (15%) – Keep a daily journal on our trip of everything you see and do; We will provide some information to note based on activities that we do. Add this information to your journals, your final exam will come from this information. The journal is also good to recall interesting things that happen. I promise you will read it years from now and reflect. IMPORTANT: For each habitat we visit, make a food web/community structure figure. Show us what the main species are including foundation species, primary, secondary, tertiary consumers, and key interactions between them. What process(es) structure these communities? Due Friday June 21st before start of presentations.

Photo Journal (15%) – In addition, you must provide a photo journal. You will need a digital camera (cell phone camera is fine). Take at least 5 pictures per day to complement your written journal. On Friday June 21st, you will need to deliver a PPT presentation using these photos and make a 3-5 minute presentation of your journal. Be sure to include concepts relevant to ecology/field biology. Your presentation should have 5-6 slides and include the most important/interesting things you saw/learned/experienced on the trip. You can include any particularly good photos, or ones which made an impression on you. DO NOT summarize the whole trip, we were all there.

Group Presentation (20%) – Groups and topics will be assigned. You and your partners will make a presentation on Thursday June 20th. It should be created in PPT and take ~15-20 minutes to deliver. We have listed some topics below, but, you can create your own topic with our approval. Make pictures and take notes each day to describe how what we see is relative to your topic. Please do work together with other groups and help each other find things that fit with each topic. Expect to see these types of questions on the final exam.

Topics:
1. Adaptations, convergent and divergent evolution
2. Disturbance, human impacts, succession
3. Physical/Environmental factors, influence of geology and climate on biology
4. Communication in different habitats, what modes are used and how does the environment affect communication and information gathering by species
5. Symbiosis, examples from the trip, try to include parasitism, commensalism, and mutualism

For all topics pay particular attention to the distribution of organisms (patterns, causes, consequences) and be sure to consider the scale of influence (e.g., local, regional, micro, etc.)

Biodiversity Report (15%) – We will ask you to turn in a brief report on the biodiversity samples measured. The report is due Friday June 21st, along with the journal, right before the presentations. The graduate student(s) in the class will handle the organization of this report.

Final exam (20%) – You will be assigned a take home final exam the first day of class. This
is due Friday June 21st. Take notes and initiate writings for each section as time allows during the trip. It should be largely finished by the end of the trip. You can edit and polish on the “off” day, but you’ll also need to work on your group and individual presentations on that day.
MATERIALS & PACKING LIST
Things to know and bring:

All lodging is covered by the field trip fee as is entrance to parks and most meals. You will need to buy 3-4 meals out but these will not be overly expensive (think fast food, although the Mexican place in Carlsbad, NM is pretty good). We have supplies for cooking, lanterns, general camping stuff. You bring tent, sleeping bag, personal stuff which is listed below. Think of the overnight field trip from Principles of Ecology, this is like 3 of those back to back. A few important details

• The areas we will be in are remote, thus it is hard to find tent poles if you forget yours. **Pitch your tent before you leave and be sure you have all the parts.** If you forget your rain fly, plan on it raining. You can check out tents from the school, but, these often don’t work properly. Invest in a tent, you can share the cost as a good tent is < $100. I have bought new tents that lacked stakes and poles, *pitch the darn thing before you leave.* **You have been warned.** If it rains there, it will be a monsoon. A waterproof ground cloth or sheet of plastic is a good idea.

• We will be walking A LOT! Wear comfortable shoes. Hiking boots are ideal. But, please buy these now if you don’t have them and break them in. A long hike in new shoes is asking for blisters and misery. I will probably hike in boots some days and tennis shoes others. You’ll also need a daypack, water bottles and rain gear.

• It can be hot or cold and you will be sleeping on the ground for 10 nights. I recommend buying a foam pad or an inflatable mattress. They have self-inflating ones at academy that are not too expensive (~$40 as I recall). We may not have power to inflate a queen size mattress. Bring a sleeping bag. I like to put a sheet in mine so I can sleep on top of my sleeping bag and under the sheet when it is hot. In Cloudcroft, **it can get below freezing at night,** so also bring some warm clothes and perhaps an extra blanket and sock hat (**Covering the head is the most important part of staying warm, including when you are sleeping**).

• Items to bring:
  o Tent (I mean it, pitch it first!); ground cloth (I bring 2: 1 in and 1 out)
  o Reread the first item, I have seen students show up with new tents missing poles and/or rainfly
  o Sleeping bag (plus extra sheet and blanket if it’s a summer bag)
  o Air or foam mattress
  o Folding chair, light-weight (optional, I have a few stools)
  o Money for 5 meals and any snacks of souvenirs you might want ($50 should cover it, you can scrounge in the van for snacks if you don’t want to pay)
o Camera (you will make a photo journal, a digital camera is needed, a cell phone camera is fine)
o Paper, pencil, lab notebook for journaling
o Comfortable shoes, in addition to hiking boots/shoes (closed toe)
o Clothes for hot and cold weather (pack as light as possible, I promise we can visit the laundry and the campgrounds have laundry too. Think about layers that can easily be adjusted to conditions. Bring a rain jacket, preferably breathable (umbrellas are lightning rods).
o It will be both hot and cold, so I plan to bring 2 pair of pants, sweatshirt, and a jacket with sock hat for cool weather but also have shorts, t-shirts, etc. Layers are key.
o Wear a hat (wide-brimmed protects ears and neck) and bring lots of sun screen
o Water bottles, there are 2 long hikes planned (8 miles each). Thus, you need enough Nalgene bottles to carry a day’s worth of water (~1 gallon). Be green, go re-usable. You can get a bladder for water that fits in a backpack, well worth it.
o Backpack/Daypack; you need to be able to carry water and food on the hikes. A small Jansport Backpack works for me. Remember that we are in the desert and you will drink a lot more than you realize, don’t skimp on water.
o Toiletries (tooth brush, soap, shampoo, deodorant, etc.).
o Towel and washcloth for showering (I’m not the shower police but if you stink you may not have a ride back)
o I like to have some sandals or flip flops to shower in and wear at camp when the boots come off
o Swim suit. We will have opportunities to swim at some places places, including Colorado Bend SP, the best swimming hole in TX! Bandana for sweat rag, hand sanitizer, sunglasses, walking stick if you like.
o Poncho or rain suit (can be bought at Academy for ~$20 or less)