

ADELPHI

UNIVERSITY

BIO 585: Dinosaurs & National Parks

July 22-31, 2018



Course Instructor

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Credits

3 undergraduate or graduate credits

Description

Travel to Wyoming and Montana to participate in research involving excavation and study of dinosaur bones. Students will experience wilderness, acquire technical skills relating to excavation, survey, mapping, anatomical identification, biological interpretation, and geologic observation. We will partner with the Bighorn Basin Paleontological Institute (<http://www.bbpalear.org>) to excavate dinosaurs near Bridger, Montana. Students will visit local

National Parks to understand the geologic and evolutionary history of the region.

Course Notes

This Course satisfies the Adelphi University Gen Ed Learning Goal for Quantitative Reasoning. Expect this course to be somewhat physically challenging with hiking, high temperatures, and working in the dirt with shovels and other tools.

Prerequisites and other Requirements

This course is appropriate for students with no prior paleontological experience. **BIO 111 (Biological Concepts and Methods I) and BIO 112 (Biological Concepts and Methods II) or equivalent courses at another institution are prerequisites, but can be waived with the consent of your academic advisor or Dr. D’Emic.** This course is open to non-majors. A minimum GPA of 2.7 is required. A maximum of 9 of students will be accepted each season based on a comprehensive application and review process.

Required Readings

Readings and assignments will be assigned via Moodle in the months leading up to the course.

Grading

Participation 100

Exercises (both on Moodle in May/June and during course) 100

Field Notebook 100

Final Research Paper (1 page) 100

Total Points Possible 400. The total number of points will be divided by 400 to give your percentage grade.

Percentage grades will be assigned as follows:

A/A+ = 94-100

A- = 90-93

B+ = 87-89

B = 84-86

B- = 80-83

C+ = 77-79

C = 74-76

C- = 70-73

D+ = 67-69

D = 64-66

D- = 60-63

F = >=59

Participation

Student participation will be assessed based on the following grading scale:

Work during excavations 25%

Seminar Discussion 25%

Chores 25%

Inquisitiveness and Engagement 25%

Total: 100%

For each participation category, point levels are determined as:

No participation: 0

Slight participation: 10

Moderate participation: 15
Good participation: 20
Excellent participation: 25

Work during Excavations

Field research includes the excavation of known sites and the search for new paleontological sites through prospecting. Your work ethic will determine your grade for this category. Your objectives and the correct techniques will be very clearly outlined at the start of each day. We will also carry out rare survey/ & prospecting hikes that will also serve as forays to interesting geological features in the area.

Chores

Participation in camp chores is an integral part of life in a research base camp. The professor assists and observes the level of participation of each individual and notes the days and chores that individual students take part. The objective of this assignment is to build collegiality, teamwork skills, and to ensure the base camp functions are met through communal participation.

Engagement & Inquisitiveness

Students are strongly encouraged to ask questions and participate in conversations pertinent to the ongoing research objectives of the professor. We will be traveling to a relatively unexplored, unmapped part of the United States. Therefore your questions may be ones at the frontier of science, for which no one has an answer. Students that ask questions during and following lectures and engage in discussions with the other participants in the work are recognized as being particularly inquisitive.

Exercises

Students will complete a series of exercises involving mapping, paleobiological interpretation, geological inference, and fossil preparation. Some of the exercises will be due before the start of class. Each student must independently visit the 4th floor of the American Museum of Natural History (on the Upper West Side of Manhattan) before the start of class and complete one exercise based on the exhibits there. Details will be provided at our in-class meetings.

Field Notebook

Student assessments will also include field note-taking skills and landscape and mapping sketches as demonstrated by the submission of an organized field notebook documenting observations, excavations, and site mapping activities. You do not have to be a good artist to do well in this section, but you do have to be organized and detailed. Your artistic and observational skills will be improved through this section.

Final Research Presentation

Students will present their final paper in the form of a 10-minute presentation.

Final Research Paper

Students will have to submit a one-page, hand-written final research paper.

Attendance and Schedule

Students must be feeling well and in good general health upon departure for Wyoming and Montana. In the event of illness, the course instructor will make every effort to accommodate individual needs. If a student is unable to participate in the field project due to illness, they will be extracted from the field and taken to a clinic or emergency room for treatment by health care professionals and may be sent home early if necessary. Adelphi University is not liable for early extractions arranged for non-emergency or emergency situations. A student who leaves the field early will be required to pay for the logistical expenses associated with an early departure. Students are not permitted to stay at camp alone due to intermittent illness. Because of the remote nature of this project, proof of health insurance coverage is required.

Instructional Technology and Learning Outcomes

Learning outcomes will include paleontological and geological excavation and mapping techniques as well as paleobiological and anatomical study. Writing, oral communication, and critical thinking skills will be developed. Students can anticipate learning both new and traditional research methodologies during this project.

Landscape, Environment, Weather

The northern Wyoming/southern Montana region is defined by contrast: there are low, flat deserts, high mountain peaks that may be snow-capped even in summer, canyons, and badlands scattered across the area. Only a few highways cross the region, but many dirt roads provide access to remote geological and paleontological features. Wyoming and Montana have variable summer weather conditions. Some years have mild summers, others have extreme heat. Average temperature in Wyoming and Montana in early summer has highs in the 80s and 90s and lows in the 50s and 60s. Weather patterns can change within minutes, and snow and hail are possible even in summer. Luckily all of the areas we will be working in are open and have visibility for many miles, so we will be able to see any storms approaching and seek shelter with plenty of time.

Anticipated Results

Each student will find dinosaur bones at the quarry, and will learn how to properly excavate and preserve the bones for transport back to the lab. Part of the excitement of paleontological work is that once the science of finding a good site to dig is done, you can't predict what you will find. Students could find new species, young juveniles, or other finds new to science. At the footprint site and in prospecting in that area we will refine our understanding of these track-makers and their environment, and try to better understand the reality of the putative sauropod extinction around 100 million years ago.

Travel to and from Cody, Wyoming or Billings, Montana

Students are responsible for flying to either Cody, Wyoming or Billings, Montana on **July 22** and must arrive before the specified time (to be announced) when the course instructor will pick them up. There, the course director will pick up the students and we will drive to the Yellowstone-Bighorn Research Association (YBRA) lodging. Alternately, students can drive to the YBRA. Students should book flights in advance of the summer travel season (no later than the end of April). Do not book travel arrangements prior to acceptance into the program.

Field Logistics

The cost of travel to and from the airport and all travel during the course is covered by your course fees, as are meals. While this is a remote part of the world, there are convenience stores that we can visit occasionally. Vegetarian and vegan diets can be accommodated. Any food allergies must be disclosed prior to joining the project and individuals with allergies are solely responsible for understanding what they consume in meals. Always clean up after yourself and keep a clean base camp. Students will be able to subsist in the course without spending additional money. The Wyoming/Montana weather varies, so our schedule will vary accordingly.

Lodging

Lodging will be at the Yellowstone-Bighorn Research Association field station (<http://www.ybra.org>). Lodging costs are covered in your course fee, as are meals. Nights can get cold even in the summer, so bring warm clothes, socks, a hat, and a good sleeping bag. Small fire pits are available for campfires at night, and without the light pollution we are used to in Long Island, the night sky is incredible.

Wildlife

We will be working in a wild area with little human development. Bears, bison, and mountain lions are apparently present but extremely rare in the area and we should not encounter any of them. Birds are diverse and common in the area. You will see lizards often – these are harmless. Less common but more harmful are snakes – though we should not see any snakes in the area, this is a possibility and we will go over appropriate safety measures before going into the field.

What to Bring (REQUIRED items)

- sleeping bag
- small pillow
- backpack (should be big enough to carry a large watermelon)
- water bottles and/or camelback pack that hold at least 2 Liters total
- any medications you need
- cell phone charger (car charger if you have it)
- soap/toiletries (travel size works fine, also remember there are convenience stores in Hanksville).
- small towel for showering
- sturdy shoes for hiking – these do not have to be expensive hiking boots, but they have to be sturdy shoes (no sandals – you can bring sandals to wear around camp, but not

during work).

- sunscreen
- bug repellent
- a hat
- sunglasses
- pencils and pens
- rain jacket or emergency poncho
- pair of work gloves
- headlamp
- EACH DAY you will need to bring 3 liters of water, a rain jacket, and a winter hat.
- a field notebook that is waterproof (e.g. [“Rite in the Rain” style](#))
- You are limited to two bags: one large (checked) bag and one smaller (carry on) bag. Follow the size and weight restrictions of the airline. Feel free to contact Dr. D’Emic with questions.

Clothing

Avoid bringing too many clothes. A few sets of each item (shirts, pants, etc.) should suffice. Cotton socks are not ideal—cotton in general should be avoided. Shorts or pants are fine options. Avoid thick clothing for work because it will likely be hot in the afternoons. Dress in layers than can be added or removed throughout the day.

What Not to Bring

Do not bring firearms or large knives. A small Swiss-army style tool with a knife (blade less than 4” long) is acceptable. Do not bring pets. Adelphi policy strictly regulates alcohol consumption on its campus and sponsored activities. Alcohol and illegal drugs are prohibited for the duration of the course.

Code of Conduct & Early Dismissals

Project investigators require students to be mature and respectful to others, and all participants must follow a basic camp etiquette to ensure the safety and an overall rewarding experience. These pertain primarily to food supplies, storage, cooking preparation, and waste disposal but also to behavior. Our few rules will be outlined in the beginning of our expedition and students are asked to actively participate in keeping the camp in order. Students are responsible for following all laws and regulations of the state of Wyoming or Montana during their entire stay. Alcohol and illicit drug consumption are prohibited for the duration of the project. As a restricted smoking campus, cigarette smoking is permitted only in specifically designated locations away from non-smoking areas. Irresponsible, disruptive, or potentially dangerous behavior in any regard will be grounds for immediate dismissal from the field school and/or failure in the course. Students must be in good health at the time of departure, as well as physically capable of participating in outdoor activities such as hiking, excavating, and associated tasks. This project is designed for independent discovery and personal experience so students, who need constant supervision, do not enjoy camping, animals, insects, outdoors, or dirt need not apply. Student dismissal from the project will be at the discretion of the principal investigators and the student or parents are solely responsible for arranging, supervising,

and covering the expense of any students dismissed from the project early. No guests or visitors are permitted for the duration of the field course.

Program Changes

Understand that Adelphi reserves the right to make cancellations, substitutions or changes to the Program in its sole discretion, with or without notice, and Adelphi shall not be liable for any loss to Participants by reason of any such cancellation or change except in the event the entire program is canceled for any reason. A complete or partial tuition refund will be given in the event the course is canceled. However, Adelphi is not responsible for penalties assessed by air carriers that may result due to operational and/or itinerary changes, regardless of whether the Participant or Adelphi makes a flight arrangement. The Participant will pay any additional expense resulting from the above. Adelphi reserves the right to substitute hotels or accommodations or housing of a similar category at any time. If a student becomes detached from the Program group, fail to meet a departure vehicle, airplane, boat, or train, or become sick or injured, the student will at their own expense seek out, contact, and reach the Program group at its next available destination.

Student Course Evaluations

During the last two weeks of the class, you will receive notification, via email and eCampus, that the course evaluation is available for your input electronically. Availability will end at the start of the final examination period. Your feedback is valuable and I encourage you to respond. Please be assured that your responses are anonymous, the results will not be available to the instructor until after the end of the semester, and therefore after course grades have been submitted.

Equal Opportunity

This project is set in the Wyoming and Montana wilderness and thus will not be held in a facility compliant with the Americans with Disabilities Act. Students with disabilities, which may affect their ability to complete assignments or exams, are advised to contact the Student Access Office at sao@adelphi.edu or 516.877.3806 as well as the instructors prior to applying for this program. For more visit <http://access-office.adelphi.edu/>

Honor Code Statement

Students enrolled in this course are expected to abide by the Adelphi University Honor Code. The purpose of the Honor Code is to protect the academic integrity of the University by encouraging consistent ethical behavior in assigned coursework by students. Following is excerpted from the Student Honor Code:

The Code of Academic Honesty prohibits behavior that can broadly be described as lying, cheating, or stealing. Violations of the Code of Academic Honesty will include, but not be limited to, the following:

1. Fabricating data or citations
2. Collaborating in areas not approved by the professor
3. Unauthorized multiple submission of one's own work
4. Sabotage of others' work, including library vandalism or manipulation

5. Plagiarism
6. The creation of unfair advantage
7. The facilitation of dishonesty
8. Tampering with or falsifying records
9. Cheating
10. Other forms of academic dishonesty

Financial Aid

Tuition for this course is already discounted 25% from the normal Adelphi rate. You may wish to apply for the following scholarship; please contact Dr. D'Emic for help with your application: http://nagt.org/nagt/students/field_scholarships.html

Schedule

ONLINE COMPONENT (THROUGH MOODLE/EMAIL)

DATE	TOPIC	Activity	ASSIGNMENT
May/June	Introduction to Paleontology	various	assigned online; TBA

FIELD COURSE SCHEDULE (subject to change)

July 22	Geologic History of the West	Arrive at the Field Station; regional overview trip	Geographic and Geologic Maps
July 23	Dinosaur Anatomy	Excavation in Morrison Formation	Functional Anatomy
July 24	Dinosaur Evolution I	Excavation in Morrison Formation	Quarry and Geologic Mapping
July 25	Dinosaur Evolution II	Excavation in the Cloverly Formation	Completeness of the Fossil Record
July 26	Yellowstone History	Visit Yellowstone National Park	Paleobiogeography
July 27	Paleoecology	Excavation in the Cloverly Formation	Paleoecology
July 28	Mass Extinctions	Prospecting the Eocene	Extinction
July 29	Body size and Climate	Prospecting the Eocene	Paleohistology & growth
July 30	Finish Final Projects	Heart Mountain or Bighorn Canyon	Final Paper and Presentations
July 31	Course wrap-up	Depart	—