Dinosaur Academy SUMMER 2022

Instructors: **Angela Reddick—Field Excavation**
William R. Wahl—Lab Preparation

Phone: (307) 864-2997 **Office hours:** M – F 8am to 5pm

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Required Materials: Students must bring tennis shoes or hiking boots, a refillable water bottle, sunscreen, a backpack, and a positive attitude!

Recommended Materials: A phone and/or camera, plastic bags for additional fossil collection, a pen or pencil, a hat, sunglasses, bug spray, gloves, clothes you don't mind getting very messy (Friday activity).

Handouts, notebooks, tools, and protective gear for the lab and field will be provided.

The Wyoming Dinosaur Center
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(307) 864-2997

Course Description: This course, using the 'field as a classroom' educational method will examine the process of scientific inquiry. Through the interdisciplinary study of paleontology, students will be exposed to major concepts in evolutionary biology and geology during field excursions, quarry work, and lab activities. In addition, the topics of bone histology, survey techniques, record keeping, and fossil transportation will be addressed. Lastly, propery fossil collection practices and procedures will ensure students how and where to find and collect fossils legally and safely. This course is designed to serve high school students interested in a career in earth science.
Prerequisites: none.

Expectations: You are expected to attend all field and lab sessions and to **be on time.** Class will begin at 9:00am every day. Most of our time will be spent outside, and in more remote areas, so phones, cameras, and water bottles are highly recommended. As this course is only one week-long, students causing a disruption to others may be asked to leave the class and/or course.

Major Topics:

- Paleontology as an integrated science and a model for Scientific Method
- Process of Scientific Inquiry – how to build a scientific story.
- Geologic Time
- Relative and Absolute Dating
- Mineral and Rock Identification

- Laramide Orogeny – Mountain Building
- Mesozoic Stratigraphy
- Erosion and Deposition
- Paleoclimates, Climate Change
- Taphonomy – biases and burial
- Comparative Anatomy
- Trace Fossils
- Evolutionary History of Life on Earth
- Fossil Preparation/Excavation Techniques

Course objectives/goals:
In order to successfully complete this course with Basic Field and Lab Certifications, students will:

1. Use scientific inquiry to problem-solve, observe, and understand the scientific story of the dinosaur quarry they work in.
2. Explain the differences between relative and absolute geological time.
3. Describe the geological forces responsible for the uplift of the Rocky Mountains and why specific geological formations are always present on the flanks of these mountains.
4. Explain how paleontology is related to the study of climate change.
5. Describe how the study of taphonomy is used to better understand paleoecosystems and paleoenvironments.
6. Be able to determine what a particular bone is based on anatomical features and be able to use comparative anatomical literature to identify elements.
7. Explain how trace fossils add to the understanding of paleoecosystems and paleoenvironments.
8. Explain what the average lifespan of a species is and the implication for the fossil record.
9. Discuss the fossil record, its importance, and how it is used today.
10. Explain the function and importance of mapping techniques and how these practices are used to help scientists understand modes of preservation, taphonomy, paleoenvironments and predict where future fossil finds may occur.
11. Describe proper field excavation techniques and safety procedures.
12. Demonstrate preparation techniques and explain all safety procedures when working in the lab.
13. Be able to explain proper molding and casting techniques and safety as well as the importance of molding and casting existing fossils.
14. Complete all Lab assignments.
15. Complete all tasks presented in the Lab with patience and attention to detail.
16. Attend all field excursions and trips, with good attention and participation.
17. Pass a group exam covering all topics discussed with good participation and explanations of all questions asked.

Tentative Dinosaur Academy 2022 Course Schedule

- Sunday, June 19th
    - 6:00pm Parents and students meet at the Wyoming Dinosaur Center.
        - Dinner
        - Orientation/Meet and Greet
        - Questions and Answers
        - Done by 7:00pm

- Monday, June 20th
    - 8:50am Parents and students arrive to fill out final wavers and forms before students are dropped off at The Wyoming Dinosaur Center
    - 9:00am Introduction: Organize materials and instructions for the week
    - 9:30am Head out for a tour of all the dig sites, lecture in the filed about the Sites history, geology, and excavation practices
    - 12:00pm Break for lunch at the Museum
    - 1:00pm Lab 1: Mineral Identification
    - 2:00pm Prep Lab Lesson 1: Introduction and Basic Techniques with Bill Wahl
    - 5:00pm Parents pick up students at the Wyoming Dinosaur Center

- Tuesday, June 21st
    - 8:50am Parents drop off students at the Wyoming Dinosaur Center.
    - 9:10am Arrive at Dig Site and begin instruction on excavation
    - 12:00pm Break for lunch at the Museum
    - 1:00pm Lab 2: Wyoming Dinosaur Center Museum Scavenger Hunt
    - 2:00pm Prep Lab Lesson 2: Intermediate Techniques and Air Scribes
    - 5:00pm Parents pick up students at the Wyoming Dinosaur Center.

- Wednesday, June 22nd
    - 8:50am Parents drop off students at the Wyoming Dinosaur Center.
    - 9:10am Field Trip to Anchor Dam
    - 12:00pm Break for lunch at the Museum
    - 1:00pm Field Trip to the Cody Shale and Hot Springs State Park
    - 5:00pm Parents pick up students at the Wyoming Dinosaur Center.

- Thursday, June 23rd
    - 8:50am Parents drop off students at the Wyoming Dinosaur Center.
    - 9:10am Lesson in Mapping Techniques and Excavation
    - 12:00pm Break for lunch at the Museum
    - 1:00pm Lab 3 & 4: Relative Dating and Comparative Anatomy
    - 2:00pm Prep Lab Lesson 3: Advanced Techniques and Epoxy
    - 5:00pm Parents pick up students at the Wyoming Dinosaur Center.

- Friday, June 24th
    - 8:50am Parents drop students off at the Wyoming Dinosaur Center
    - 9:10am Plaster Jacketing and Prospecting
    - 12:00pm Break for lunch at the Museum
    - 1:00pm Prep Lab Lesson 4: Molding and Casting
    - 3:00pm Basic Field and Basic Lab Group Exams
    - 4:00pm Parents pick students up at the Wyoming Dinosaur Center and week concludes.