COURSE INFORMATION

Course Title
Paleobiology of Dinosaurs

Course Description (60 words max)

This course is a multidisciplinary investigation into the morphology, classification and identification of the dinosaurs; the environmental, climatic, and geographic conditions on earth during the time of the dinosaurs; and the biological principles involved in understanding the origin, evolution, and extinction of the dinosaurs.

Course Abbreviation and Number
EES 1030

Course Credit Hours
4 semester hours

Course Cross Listing(s) Abbreviation and Number

General Education Course _____ X
Writing Intensive Course ______
Service Learning Course ______
Laboratory Course _____ X
Ohio TAG (Transfer Assurance Guide) Course ___
Ohio Transfer Module Course ______
Other ____

This course is an Element 6 Core Course of the Wright State Core.

COURSE REGISTRATION

Prerequisites
None

Co-requisites
None

Restrictions
None

Other

STUDENT LEARNING OUTCOMES

Students will be able to

1) Understand the nature of scientific inquiry
2) Critically apply knowledge of scientific theory and methods of inquiry to evaluate information from a variety of sources
3) Distinguish between science and technology and recognize their roles in society
4) Demonstrate an awareness of theoretical, practical, creative and cultural dimensions of scientific inquiry
5) Discuss fundamental theories underlying modern science
6) Explain what a dinosaur is, and identify the major lineages of dinosaurs through study of their anatomy and diversity.
7) Understand how scientists use dinosaur fossils to infer ecological, physiological, and behavioral characteristics.
8) Explain basic evolutionary mechanisms that have been important in the diversification of dinosaurs.
9) Evaluate the creative and destructive consequences of mass extinctions.
10) Critique current controversies in dinosaur paleontology, including body temperature, relationship with birds, and reproduction.
11) Describe the Mesozoic worlds in which dinosaurs lived, including climate, continental arrangement, and other biological inhabitants.
12) Describe how geologic forces shaped the Mesozoic world and played a crucial role in the evolution of dinosaurs and their relatives.
13) Describe several ways in which dinosaur fossils have been interpreted throughout human history.

SUGGESTED COURSE MATERIALS

REQUIRED
Dinosaurs: A Concise Natural History, by Fastovsky and Weishampel, 2009 (readings listed below). Dinosaur Biology, by Charles N. Ciampaglio and Elizabeth Muether (readings to be assigned each class).

SUGGESTED METHOD OF INSTRUCTION

Lecture ___ X
Lab ___ X
Seminar ___
Distance Learning_____
Web-Based ______
Other ________________________________

SUGGESTED EVALUATION AND POLICY

Attendance is a very important part of this class. You must attend class and be on time if you expect to do well.
Classroom announcements will be made on changes to the syllabus, such as changes in exam and assignment dates, topics covered, and reading assignments; all changes are the responsibility of the student. Missing an in-class announcement is not an excuse to miss an exam or hand in an assignment late. Missed exams will be given a grade of zero. Make-up exams will only be given if there is a good excuse i.e., illness (doctor’s note will be necessary), court date, or a family tragedy. Make-up exams will consist of a series of in-depth essay type questions, covering the topics included in the regularly scheduled test. Makeup exams are at the discretion of the Instructor. If you miss a lab it is your responsibility to make it up.

**SUGGESTED GRADING POLICY**

The final grade for EES 1030 will be calculated in the following manner: exams 1, 2 and 3 are each worth 20%, the lab exercises are worth 20% the overall grade, and the research paper is worth 20% of the overall grade. Final grades will be assigned letter grades based on the following scale:

- 90 – 100 A
- 80 – 89 B
- 70 – 79 C
- 60 – 69 D
- Below 60 F

A grade of incomplete will be given only when prior arrangements have been made with the instructor in advance, given that there is reasonable expectation that the work will be made up within a reasonable amount of time.

**Exams**

Exams will consist of a mix of multiple choice, fill-in-the-blank, short answer, identification, and a single essay question. *While exams are not cumulative they are comprehensive, each drawing on concepts developed previously during the course.*

**SUGGESTED ASSIGNMENTS AND COURSE OUTLINE**

1. What is a dinosaur? A geological context for the dinosaurs: the Earth and Rocks. Selected Readings from *Ciampaglio and Muether.*


Exam 1, Fossils: taphonomy, body fossils, and trace fossils. Pages 4 – 17, Selected Readings from Ciampaglio and Muether.


Exam 2, Sauropodomorpha: prosauropods & sauropods, Dinosaur biomechanics: Coping with large body size, Dinosaur diets: carnivory and herbivory. Pages 162 -185.


Dinosaur physiology and body temperature, Marginocephalia: pachycephalosaurs and ceratopsians, Dinosaur sex: mating displays, nesting, and rearing juveniles. Pages 250 – 269, 110 – 133, Selected Readings from Ciampaglio and Muether.


Final Exam

Lab Activities

Lab activities are scheduled for each week. Most lab activities (i.e., mineral and rock identification, fossil identification, dinosaur systematics and phylogeny) may
involve a small written assignment that will be handed in at the end of the session, or at the time of the next session. Each lab exercise will be graded and will be worth a total of 2% of the overall grade for the course.

**Topical outline for the laboratory component.**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Earth Materials: Sedimentary Rocks.</td>
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<tr>
<td>2</td>
<td>Sedimentary Environments.</td>
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<td>3</td>
<td>Geologic Time and Stratigraphy</td>
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<td>4</td>
<td>Investigating Plate Tectonics</td>
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<td>5</td>
<td>Fossils and Taphonomy</td>
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<td>6</td>
<td>Basic Vertebrate Anatomy</td>
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<td>7</td>
<td>Dinosaur Anatomy and Systematics 1: Stem Groups</td>
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<tr>
<td>7</td>
<td>Dinosaur Anatomy and Systematics 2: Saurischians</td>
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<tr>
<td>8</td>
<td>Dinosaur Anatomy and Systematics 3: Ornithischians</td>
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<td>9</td>
<td>Dinosaur Relationships</td>
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<td>10</td>
<td>Hot or Cold? Dinosaur Metabolism</td>
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<td>11</td>
<td>How Fast is Fast? Dinosaur locomotion</td>
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<tr>
<td>12</td>
<td>Is Bigger Always Better? Scaling and Allometry</td>
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<tr>
<td>13</td>
<td>Calculating Sauropod Masses</td>
</tr>
<tr>
<td>14</td>
<td>A Look at the Relatives: Pterosaurs, Marine Reptiles, and Mammals</td>
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</tbody>
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