

**BIOL 363, GSCI 263/363 (3 credit hours) – Dinosaurs - SPRING 2023**  
**2:00 - 3:15 T, R ISC 146**

**Instructors:**

Jeff Over - Office: 249 Integrated Science Center  
Sara Burch - Office: 358 Integrated Science Center

**Course Objective and Learning Outcomes:**

This course is designed to provide an introduction to the principles, processes, techniques, and interpretations in the study of dinosaurs, other Mesozoic faunas and floras, as well as the geology of the Mesozoic world. Upon completion students will be able to describe, classify, and interpret dinosaur and other fossil remains, as well as have an understanding of the significant changes in earth history. A field journal of virtual dinosaur field trips and museums will be completed.

**GLOBE Learning Outcomes:**

This class addresses several of the SUNY-Geneseo Mission for student education and experience:  
Specialized Knowledge: to develop a deep understanding of a body of specialized knowledge.  
Critical Thinking  
Informational and Digital Literacy

**Geological Sciences Program Learning Outcomes:**

This class addresses or at least touches on several of the Geological Sciences Program Learning Outcomes:  
Identify, describe, and interpret Earth materials, and evaluate the physical, geometric, and temporal relationships.  
Recognize and utilize the laws of superposition and faunal succession in deciphering Earth history.  
Use appropriate field and analytical tools for the purpose of data collection and analysis.  
Access and utilize the geological literature.  
Communicate effectively in both oral and written formats as well as be comfortable with the language of geology.

**Biology Program Learning Outcomes:**

This class addresses several of the Biology Program Learning Outcomes:  
Students will have the knowledge base and intellectual (conceptual) framework to use reasoning and problem-solving skills to: (1) read critically; (2) evaluate support for competing hypotheses; and (3) critique experimental design.  
Students will have the laboratory and inquiry skills and technical ability to formulate hypotheses, design and run experiments using instruments to test their hypotheses, and analyze and interpret the results.  
Students will be able to communicate biological ideas from literature or their own laboratory investigations to audiences of biologists and non-biologists in a variety of formats.  
Students will recognize the importance of scientific integrity and ethical research and applications of biology to science policy.  
Students will recognize evolution as the central tenet of biology which explains the unity and diversity of life and interrelatedness of levels of biological organization.

**Course Prerequisites:**

Two or more 100-level courses in Biology and/or Geology, as well as permission of the instructors.

**Course Text (optional):**

Fastovsky, D.E. and Weishampel, D.B., 2021, Dinosaurs: A Concise Natural History 4th Edition. Cambridge University Press, 540 p. (This updates the 2016 3rd Edition.)

**Supplementary Texts**

Readings for each topic from the primary literature will be posted.

**On-line Resources**

There are numerous sites and articles about dinosaurs, here are a few:

<http://www.ucmp.berkeley.edu/diapsids/dinosaur.html>

<http://www.amnh.org/apps/dinosaurs>

<http://www.tyrrellmuseum.com/>  
<https://naturalhistory.si.edu/exhibits/david-h-koch-hall-fossils-deep-time>  
<https://www.nps.gov/dino/index.htm>  
<https://nhm.org/stories/dinosaurs-china>  
<http://dinosaurpictures.org/> - see the interactive globe on this site\_  
<http://vertpaleo.org/Home.aspx>  
<http://vertpaleo.org/Publications/Journal-of-Vertebrate-Paleontology.aspx>

<b>Course Requirements:</b>	<b>263</b>	<b>363</b>
Assignments	15 %	15 %
2 Hour Examinations	50 %	40 %
Virtual Field Trip Journal	35 %	25 %
Project		20 %
<b>Total</b>	<b>100%</b>	<b>100%</b>

**Grading Policy:**

- 1) Examinations will cover lecture material, exercises, text assignments, and outside readings.
- 2) Journal will be a description and log of museum and field trip fossil materials observed and measured.
- 3) Final grades will be calculated based on a percentage of the point system outlined above: 100-93 = A, 92.9-89.5 = A-, 89.4-86.5 = B+, 86.4-83.0 = B, 82.9-79.5 = B-, 79.4-76.6 = C+, 76.5-73 = C, 72.9-69.5 = C-, 69.4-64.5 = D, <64.5 = E. There will be no additional assignments; late reports or assignments will not be accepted without written prior arrangement.

**Materials/equipment:**

College-ruled composition notebook - 6'x9' or 8.5'x11', 100 to 120 pages



## Tentative Schedule

Class will be a mix of lecture, discussion, and assignments. You are responsible for 16 virtual field trips and museum visits to see dinosaur sites and materials. A preliminary list will be provided.

24 Jan	Introduction and Scope of Paleontology (Burch and Over)	Ch. 1, 3, 4
	<i>Introduction and how to make journal entries - no assignment</i>	
26 Jan	Geology and the Mesozoic World (Over)	Ch. 2, 5
31 Jan	History of dinosaur studies (Over)	Ch. 14, 15
	<i>Strata recognition and environments - (Assignment 1)</i>	
02 Feb	Bones and anatomy (Burch)	Ch. 4, 5
07 Feb	Taphonomy (Burch)	
	<i>Phylogenetics exercise - (Assignment 2)</i>	
09 Feb	Of eggs and nests (Over)	Ch. 4, 6
14 Feb	Tracks and track ways (Over)	Ch. 8
	<i>Trackways exercise - (Assignment 3)</i>	
16 Feb	Evolution and origin of dinosaurs (Burch)	Ch. 4, 5, 13, 14
21 Feb	<i>Exam I</i>	
	<i>Plants and dinosaur food - (Assignment 4)</i>	
23 Feb	Mesozoic flora and fauna - not dinosaurs (Over)	Ch. 14
28 Feb	<i>Diversity activities - no classes</i>	
02 March	Ornithopods (Burch)	Ch. 12
07 March	Ceratopsians and Thyreomorpha (Burch)	Ch. 10, 11
	<i>Combat in dinosaurs - (Assignment 5)</i>	
09 March	Sauropods (Over)	Ch. 9
21 March	Theropods (Burch)	Ch. 6, 7
	<i>(Assignment 6)</i>	
23 March	Birds and Cretaceous extinction (Burch and Over)	Ch. 8, 16
28 March	<i>Exam II</i>	

Field trip journal is due 24 March

Project topic and bibliography (ten relevant references) are due 30 March

Project is due 20 April