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**FACULTY OF SCIENCE COURSE SYLLABUS**  
**DEPARTMENT OF EARTH SCIENCES**

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**ERTH 2420.03 DINOSAURS, WINTER 2019- SUBJECT TO CHANGE**

<b>Lectures</b>	<b>M, W, 05:35 PM–06:55 PM Dunn 304</b>
<b>Instructor</b>	<b>Saad Mohamed.</b> LSC, Room 2636. Email: <a href="mailto:saaddabbous@dal.ca">saaddabbous@dal.ca</a>
<b>Office hours</b>	W, 4-5:20 <b>OR</b> by appointment
<b>Textbook</b>	<b>Dinosaurs, The Textbook</b> , Spencer Lucas, Columbia University Press, 6 <sup>th</sup> Edition
<b>Access to Materials</b>	<b>Brightspace</b>
<b>Prerequisites</b>	ERTH 1080.03 or any two of ERTH 1010, ERTH 1020, ERTH 1030, ERTH 1040, ERTH 1041, ERTH 1050, ERTH 1060, ERTH 1090, ERTH 1091, or SCIE 1515, SCIE 1515 or SCIE 1530.

**Notes:**

- Please, avoid sending emails and try your best to get your questions addressed within the lecture periods. If you need to send an email, always put ERTH2420 in the subject line so that your message does not accidentally go into a spam folder and to ensure that you receive a timely response to your question or request.

**❖ COURSE DESCRIPTION**

- This class will consider the origin, evolution and extinction of non-avian dinosaurs. What are dinosaurs? Why were some dinosaurs so big? What did dinosaurs eat? How fast could dinosaurs run? Were dinosaurs warm-blooded? Did dinosaurs have feathers? Were dinosaurs good parents? In attempting to answer these apparently simple questions, we will investigate the methods for gathering evidence from bones and surrounding rocks to reconstruct not only the physiology of these surprisingly modern organisms but also less tangible characteristics such as behavior.

**❖ LEARNING OUTCOMES**

- Empowerment to follow developments in dinosaur science in the scientific literature. Students will be able to follow their curiosity to successfully retrieve relevant papers and comprehend their major findings and scientifically evaluate popular press and popular culture references to dinosaurs
- Appreciation of the importance of museum collections, preparation, and curation in our growing global knowledge of dinosaurs and to be a knowledgeable visitor to dinosaur museum galleries
- Appreciation of the role dinosaur science and natural history to the development of macroevolution
- Distinguish speculation from deduction and to recognize primary evidence hopefully beyond direct application to the science of dinosaurs

❖ KNOWLEDGE

- Knowledge of the origin, evolution, diversification, and extinction of non-avian dinosaurs
- Knowledge of the main clades of dinosaurs and their place within the 3 main dinosaur lineages
- Knowledge of sufficient dinosaur anatomy, modern macroevolution and its application to dinosaurs

❖ SKILLS

- Ability to find, read, extract and explain the main scientific importance in the dinosaur literature
- Ability to summarize and present a brief oral account of something found in the scientific literature
- Ability to use cladograms to illustrate the relationships between clades of organisms and the importance of geological time in constraining their utility in tracking evolutionary trends

❖ METHOD OF ASSESSMENT

Quizzes	Assignments	Term Paper	Midterm Exam	Final Exam
15%	15%	20%	20%	30%

1. Quizzes (15 points):

- There will be a variable number of ONLINE weekly quizzes that will cover the lecture materials of the week. These quizzes are usually posted over the weekend and expected to be done before the due date.

2. Assignments (15 points):

- There will be several assignments that are done completely in class or started in class to be finished outside of class. Some assignments will be done in small work groups. Assignments will be worth 2 through 3 points roughly reflecting the amount of effort required to complete the assignment.

3. Field trip:

- Field exercises are very important and integral components for geology students. Geology is best seen, learned, and taught outdoors. If there is enough interest, and if the weather cooperates, we will consider offering one field trip to local area that is known for its dinosaur fossil content. This field trip will be visiting the Fundy Geological Museum and Wasson Bluff outcrop, Parrsboro, NS. The outcrop in this area is very recognizable because of the dinosaur fossil content. You will receive no points for going on a field trip, but each trip is fun and interesting, and you will get some exercise and a chance to be outside.

**4. Term Paper (20 points):**

- Each **two-student group** will be assigned a dinosaurs-related topic or a dinosaur taxon. The students are responsible for learning about their topic from the primary scientific literature and presenting what they have learned to the class. The findings should be summarized in the form of 6-9 pages report accompanied with primary literature (**10 points**). A short (**15-20 minutes**) oral presentation will be made to the class supported by presentation slides (**10 points**). All projects should be submitted (electronically) before the presentation date. Both abstracts and presentations may be included in the midterm and/or final exams. The topics and required format will be posted on Brightspace within the first week. A late penalty of 20% per day will be assessed for two days only and no submission will be accepted after these two days. A *plagiarism software will be used for the term paper and any written material in the course.*

**5. Mid-term Test- Feb. 25<sup>th</sup> (20 points):**

- There will a written mid-term test roughly half way through the term.

**6. Final Exam (30 points):**

- There will be a formal final examination that will be scheduled by the Registrar Office. Final exam will be a **2-hour cumulative** exam. Until the final exam timetable is set, assume your exam will be on the last night of exams and PLEASE PLAN ON BEING AROUND UNTIL THE END OF THE SCHEDULED EXAM PERIOD.

**❖ GRADE SCALE AND DEFINITIONS**

- The following scale will be used (See academic calendar-section 17.1)

Grade		Definition	Grade		Definition
A+	90+	Excellent	C+	65-69.9	Satisfactory
A	85-89.9		C	60-64.9	
A-	80-84.9		C-	55-59.9	
B+	77-79.9	Good	D	50-54.9	Pass
B	73-76.9		F	<50	Failure
B-	70-72.9				

**COURSE SCHEDULE- TENTATIVE**

<b>WEEK</b>	<b>Day/Date</b>	<b>Topic</b>	<b>Text Ch.</b>
<b>1</b>	M 1/07	Introduction; Fossils	1
	W 1/9	Sedimentary Environments and Geological Time	3
<b>2</b>	M 1/14	Origin of Dinosaurs I	4
	W 1/16	Origin of Dinosaurs II	4
<b>3</b>	M 1/21	Theropods I	5
	W 1/23	Theropods II	5
<b>4</b>	M 1/28	Sauropodomorphs I	6
	W 1/30	Sauropodomorphs II	6
<b>5</b>	M 2/04	<i>Student Presentations</i>	
	W 2/06	Ornithopods	7
<b>6</b>	M 2/11	<i>Student Presentations</i>	
	W 2/13	Stegosaurs	8
<b>FEB 18-22</b>		<b>University Study Break</b>	
<b>7</b>	M 2/25	<b>MIDTERM EXAM</b>	<b>1-8</b>
	W 2/27	Ankylosaurs	8
<b>8</b>	M 3/04	Ceratopsians	9
	W 3/06	Pachycephalosaurs	9
<b>9</b>	M 3/11	<i>Student Presentations</i>	
	W 3/13	Dinosaur trace fossils I	12
<b>10</b>	M 3/18	<i>Student Presentations</i>	
	W 3/20	Dinosaur trace fossils II	12
<b>March 23<sup>th</sup>/24<sup>th</sup> (To Be confirmed)- Field Trip</b>			
<b>11</b>	M 3/25	<i>Student Presentations</i>	
	W 3/27	Dinosaur Extinction	16
<b>12</b>	M 4/01	<i>Student Presentations</i>	
	W 4/03	Dinosaurian History	10
<b>Apr 12-26</b>		<b>Final Exam (to be scheduled)</b>	<b>Cumulative</b>

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**❖ SOME SIMPLE RULES:**

- There will be no make-up quizzes
- A late penalty of 20% per day may be assessed for late assignments, and no submissions will be accepted after the 2<sup>nd</sup> day.
- Cell phones must be turned off while class is in session.
- Use of laptops is permitted in class as long as they are used for note taking. If laptop use becomes disrespectful or overly distracting, you will be asked to shut it down.
- Raise your hand, come see me, or send me an email with any questions or concerns.

**❖ UNIVERSITY POLICIES AND STATEMENTS**

- This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

**❖ ACCESSIBILITY**

- The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).
- **Information:** [https://www.dal.ca/campus\\_life/academic-support/accessibility.html](https://www.dal.ca/campus_life/academic-support/accessibility.html)

**❖ ACADEMIC INTEGRITY**

- At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.
- **Information:** [https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

**❖ STUDENT CODE OF CONDUCT**

- Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.
- **Code:** [https://www.dal.ca/dept/university\\_secretariat/policies/student-life/code-of-student-conduct.html](https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html)

**❖ DIVERSITY AND INCLUSION – CULTURE OF RESPECT**

- Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where

everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness.

- **Statement:** <http://www.dal.ca/cultureofrespect.html>

#### ❖ RECOGNITION OF MI'KMAQ TERRITORY

- Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit or e-mail the Indigenous Student Centre (1321 Edward St) ([elders@dal.ca](mailto:elders@dal.ca)).
- **Information:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

#### ❖ SOME OTHER INFORMATION

- **Important Dates:** in the Academic Year (including add/drop dates): [https://www.dal.ca/academics/important\\_dates.html](https://www.dal.ca/academics/important_dates.html)
- **University Grading Practices:** [https://www.dal.ca/dept/university\\_secretariat/policies/academic/grading-practices-policy.html](https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html)
- **Missed or Late Academic Requirements due to Student Absence (policy)** [https://www.dal.ca/dept/university\\_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.html](https://www.dal.ca/dept/university_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.html)

#### ❖ STUDENT RESOURCES AND SUPPORT

- **Advising**
  - **General Advising:** [https://www.dal.ca/campus\\_life/academic-support/advising.html](https://www.dal.ca/campus_life/academic-support/advising.html)
  - **Science Program Advisors:** <https://www.dal.ca/faculty/science/current-students/academic-advising.html>
  - **Indigenous Student Centre:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)
  - **Black Students Advising Centre:** [https://www.dal.ca/campus\\_life/communities/black-student-advising.html](https://www.dal.ca/campus_life/communities/black-student-advising.html)
  - **International Centre:** [https://www.dal.ca/campus\\_life/international-centre/current-students.html](https://www.dal.ca/campus_life/international-centre/current-students.html)
- **Academic supports**
  - **Library:** <https://libraries.dal.ca/>
  - **Writing Centre:** [https://www.dal.ca/campus\\_life/academic-support/writing-and-study-skills.html](https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html)
  - **Studying for Success:** [https://www.dal.ca/campus\\_life/academic-support/study-skills-and-tutoring.html](https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html)
  - **Copyright Office:** <https://libraries.dal.ca/services/copyright-office.html>
  - **Fair Dealing Guidelines** <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

#### ❖ OTHER SUPPORTS AND SERVICES

- **Student Health & Wellness Centre:** [https://www.dal.ca/campus\\_life/health-and-wellness/services-support/student-health-and-wellness.html](https://www.dal.ca/campus_life/health-and-wellness/services-support/student-health-and-wellness.html)
- **Student Advocacy:** <https://dsu.ca/dsas>
- **Ombudsperson:** [https://www.dal.ca/campus\\_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html](https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html)
- **Safety**
  - **Biosafety:** <https://www.dal.ca/dept/safety/programs-services/biosafety.html>
  - **Chemical Safety:** <https://www.dal.ca/dept/safety/programs-services/chemical-safety.html>
  - **Radiation Safety:** <https://www.dal.ca/dept/safety/programs-services/radiation-safety.html>
  - **Scent-Free Program:** <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>