

**GRANDE PRAIRIE REGIONAL COLLEGE**  
**DEPARTMENT OF SCIENCE**  
**ES 2070--MASS EXTINCTIONS AND DINOSAURS**  
***COURSE OUTLINE***  
**WINTER SEMESTER- 2007-08**

**Lecture**          Section A3                          W 6:00 - 8:50 pm                          Room J204

**INSTRUCTOR:**                          **Dr. Desh Mitra**  
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**TRANSFER CREDIT:**                  U. of Alberta                          EAS 207                          3 credits  
U. of Calgary                          GLGY 307                          3 credits  
U. of Lethbridge                          GEOL 2XXX                          3 credits

**COURSE OBJECTIVES:**          The course has been designed to discuss and describe the progression of life through time, with emphasis on important radiations and mass extinctions of life, and the theories on why they occur. Evolution, radiation, morphology and life habits of dinosaurs are considered in detail. The evidence for asteroid impacts in the geologic record, their frequency and effect on history of organisms through time. Origin and evolution of humans and their impact on the biosphere.

**Text Book :**                          *Introduction to the Study of Dinosaurs*, by Anthony J. Martin, Blackwell Science.

**Reference Books:**                  *Dinosaurs, The textbook*, by Spencer G. Lucas  
*Dinosaur, Systematic Approaches and perspectives*, Edited by Ken Carpenter and Phil Currie  
*The Handy Dinosaur Answer Book* by Thomas E. Svarney

**ES 2070 - Lecture Schedule (Tentative).**

- 1) **Jan 02:** Introduction to course. Geological Column. Principles of Stratigraphy. History of Geology. Definition of Dinosaur. (Ch.1)
- 2) **Jan 9: Overview of Scientific methods:** Facts, datum, qualitative and quantitative methods, hypothesis, theory and opinions. Field observations. **Paleontology and Geology as Science:** Maps-geologic and topographic, Basic principles of Geology, Relative and absolute age. Plate tectonics-convergent, divergent and transform boundaries, hot spots, folds and faults. (Ch. 2, 3)
- 3) **Jan 16: History of Dinosaur Studies.** Early recognition of dinosaurs. European discoverers, North American Studies. Study of dinosaurs in the 20<sup>th</sup> century. (Ch. 4)
- 4) **Jan 23:** Dinosaur bones: Fossilization. Axial Bones, the Cranium, Legs and Feet. Dinosaur Skin. Phylogenetic classification. Major Clades. Preservation of different body parts of the dinosaurs. (Ch. 5, 6)
- 5) **Jan 30: Dinosaur Tracks:** Stride and pace. Trackways and their Taphonomy. Behaviour analysis from tracks. Usefulness of tracks. **Dinosaur eggs and Nests:** Reproduction, eggs and their shapes, embryos. Dinosaur Nests. (Ch. 7, 8)

6) **Feb 6: Dinosaur evolution.** Theory of evolution, Darwin's concept, micro and macro evolution, Cope's Rule. Genetic drift, adaptive radiation. Evolutionary Origin of Dinosaurs. Dinosaur Feeding habits. Dinosaur Teeth. Herbivorous and Carnivorous Teeth. Tooth-marks. Dinosaur Gastroliths. Stomach remains and Digestion. Coprolites. (Ch. 9, 10)

7) **Feb 13: Mid-Term Exam.1. The Theropods** Characteristics of Theropods, species of Theropoda, Evolutionary history of Theropoda. (Ch. 11)

8) **Feb 20: Reading Week (no classes)**

9) **Feb. 27: The Sauropodomorpha,** Definition and characteristics, species. History of Sauropodomorpha, Reproduction, Growth, Locomotion, Feeding, Social life, Health and extinction. (Ch. 12)

10) **March 5: The Ornithopoda:** Definition and characteristics, species, reproduction, growth, Locomotion, Feeding, social life, Health and extinction. (Ch. 13)

11) **March 12: The Thyreophora:** Definition and characteristics of Thyreophora, Species. Clade Stegosauria. Reproduction and growth, Locomotion, Feeding, Social Life and Health. (Ch. 14)

12) **March 19: The Marginocephalia:** Definition and characteristics, Species. Clade Ceratopsia. History of Marginocephalia, Reproduction and growth, Locomotion, Feeding, Health and extinction. (Ch. 15)

13) **March 26:** Dinosaurs, Birds and Extinctions. K-T Boundary, Bird Lineage. Origin of Flight. Thecodont Hypothesis. Birds in the Cenozoic. Relation between Birds and Dinosaurs. Dinosaur Extinctions. (Ch. 16)

14) **April 02:** Quaternary/Holocene Mass extinction

15) **April 9:** Review

**Date for the FINAL exam will be announced in the class.**

**Note:**

**Individuals will pick a topic from the list provided to give a presentation in the class. Students along with the instructor will grade it. Presentations could be in Power Point, Slide-show, chalk-board, video etc.**

**Topic for the term paper will be given with consultation and should be submitted on the last day of our lecture class.**

#### **MARKS DISTRIBUTION**

Mid-Term 1	25%
Class Presentation	15%
Term paper	20%
FINAL	40%