

## EARTH SCIENCES 2265: PALEOBIOLOGY AND PALEOECOLOGY 2013

**Instructor:** Nikole Bingham (nbingham@uwo.ca)

**Aim of course:** A survey of common fossils from bacteria, protists, calcareous algae, to invertebrate animals. Topics on each group of fossils include functional morphology, evolution, ancient living environments, contribution to sediment accumulation and reef-building, utility for dating and correlating rocks and for understanding long-term biodiversity change.

**Corequisite:** ES 2200a/b or permission of department.

**Antirequisite:** Former ES 361a/b.

### **University Policies:**

1) Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: <http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf>

2) Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

3) All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

4) If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see:

<http://www.uwo.ca/univsec/handbook/appeals/medical.pdf>

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here: [https://studentservices.uwo.ca/secure/medical\\_document.pdf](https://studentservices.uwo.ca/secure/medical_document.pdf)

**Accessibility:** Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x.82147 for any specific question regarding an accommodation.

**Lectures:** (Monday and Wednesday, 9:30–10:30AM, Western Science Centre rm. 240)

- Week 1 Introduction to the principles of paleontology, fossils and the geological time scale, paleoenvironments and paleobiogeography, processes of fossilization, and classification of organisms.
- Week 2 Bacteria. Origin and evolution of primitive life forms and their relationships to the early lithosphere, hydrosphere, and atmosphere. Bacteria contribution to ecosystems and deposits associated with black smokers, hot springs, microbial deposits.
- Week 3 Protists. Calcareous and siliceous forms (such as coccoliths, foraminifers, diatoms, radiolarians) and their importance to the carbon dioxide and silica balance in the ecosystems.

Week 4–11 Major invertebrate fossil groups: zoological baupläne, functional morphology, evolution, and ecology/paleoecology.

Week 12–13 Paleontological applications: biostratigraphy, paleoenvironmental reconstruction, paleobiogeographic reconstruction, major trends of biotic radiation and mass extinctions.

**Laboratory:** Session 1 Thursday, 6:00–9:00PM; Session 2 Friday, 2:30–5:30PM;  
BGS Room 1069

- Depending on class size, 5–9 three-hour labs will be arranged on the following topics: taphonomy, paleoecology, classification, functional morphology, and microscopic structures relevant to sedimentary petrology.
  1. Fossilization
  2. Bacteria and Protists
  3. The reef-builders: Sponges, Corals, and Byozoans
  4. The Shelly Benthos: Brachiopoda and Mollusca
  5. Arthropoda (trilobites and “sea scorpions”)
  6. The Deuterostomate Invertebrates: Echinodermata and Hemichordata
- A student must complete all lab assignments in order to get a final grade for the course.
- Each lab assignment is due one week (7 days) after your lab session.
- A 10% deduction of marks will be assessed per one day of late submission.
- Although group work is encouraged in labs, each student is expected to turn in their own, individual assignment.

<b>Course evaluation:</b>	Mid-term exam (October 16 <sup>th</sup> – In Class):	20%
	Final exam (University scheduled):	40%
	Classroom quizzes (random)	10%
	Lab assignments (see under Laboratory)	30%

### **Recommended Texts and Other Course Material**

- 1) Clarkson, E.N.K. 1998. Invertebrate Palaeontology and Evolution (4<sup>th</sup> edition). Blackwell Science.
- 2) Jin, J. 2010. Earth Sciences 2265 Paleobiology and Paleoecology, Laboratory Manual. 110 pp. (Available in PDF electronic version on OWL)
- 3) Jin, J. Powerpoint lectures. (Available in PDF electronic version on OWL)

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