

ES 1023a / ES 2123a

Planet Earth: Shaken and Stirred / The Dynamic Earth

		Location:
Lectures:	Tuesday & Thursday 11.30–12.30	NS-1
1023a labs:	Section 002 Monday 11:30–13:30	B&GS-1053
	Section 003 Monday 13:30–15:30	B&GS-1053
	Section 004 Friday 11:30–13:30	B&GS-1053
2123a Labs:	Section 002 Monday 15:30-17:30	B&GS-1053
	Section 003 Thursday 13:30-15:30	B&GS-1053
Instructor:	Dr. Rick Secco and Tim Officer	
Office:	Room 0178 (RS) 1033 (TO), B&GS	
Email:	secco@uwo.ca tofficer@uwo.ca	
Phone:	519-661-4079 (RS)	
Office Hours:	TBA	
TAs:	TBA	

Course Calendar Description for ES 1023a/b:

An overview of the origin and development of Earth and Solar System; constitution and active processes of Earth interior; how these processes have shaped Earth evolution in the past and how they continue to control surface phenomena such as earthquake and volcanic activity. Labs will introduce the main resource exploration techniques.

Prerequisites - None; Antirequisites – ES 2123a/b and the former Earth Sciences 085a/b.

Course Calendar Description for ES 2123a/b:

An introduction to the Earth as a large heat engine; topics will focus on large-scale dynamic processes that occur in the deep interior (mantle and core convection) and their relation to activity and phenomena on the face of the Earth (tectonic plate motions, plate interactions, earth magnetic field, etc.).

Prerequisites - None; Antirequisites – ES 1023a/b and the former Earth Sciences 085a/b.

Course Description:

This course explores the origin and development of Earth, its place in the Universe, its internal structure and the dynamics of its solid and liquid parts. The goal of this course is to enhance students' understanding of *how* our planet was formed, *how* it works, and *why* this is important to know. This course will focus on the following topics:

Building blocks of planets, stars and galaxies.

Origin and history of the Earth.

The structure of the Earth – from core to crust.
Exploring Earth's interior – seismics, gravity and geomagnetism.
Dynamic processes that modify the Earth's surface – plate tectonics, volcanism, and earthquakes.

Geophysical field techniques form a major part of the laboratory work, which involves a two-hour laboratory session weekly.

Course Objectives:

Upon completion of this course successful students will be able to:

- Define terms and concepts that pertain to Earth's dynamic processes.
- Demonstrate concepts and theories through lab exercises.
- Evaluate and discuss concepts, theories, and models related to course material.

Course Materials:

- Textbook: There is currently no textbook for this course. Material will be presented during lectures in the form of electronic presentations and handouts, and posted on OWL. Complete lecture notes will be absolutely necessary for success in this course!
- Lab Manual: Will be provided on-line via OWL.

For additional (optional) reading, the following reference books are available in the Taylor (Science) Library:

- The dynamic Earth: An introduction to physical geology*, B. J. Skinner and S. C. Porter.
- Earth science*, E.J. Tarbuck and F.K. Lutgens.
- The Earth's dynamic systems: A textbook in physical geology*, W. K. Hamblin.
- Physical geology*, C. C. Plummer and D. McGeary.
- The solid earth: An introduction to global geophysics*, C.M.R. Fowler.

Course Evaluation:

Midterm test (in-class - probably October 22, 2013)	30%
Final exam (December 2013; scheduled by registrar's office)	45%
Essay*	Part of final exam
Laboratory reports	<u>25%</u>
	100%

Laboratory reports are due one week after the specific session. **Full laboratory attendance is mandatory to pass this course.** Documentation for missed labs will be required and rescheduling into other sessions for the same week must be arranged specifically with the laboratory instructors. Any missed lab for which a student has an

acceptable reason may be replaced by an extra lab to be posted on-line via OWL at the end of November. This make-up lab will be due the first week of December.

*Essay: As part of the course requirements for students enrolled in ES 2123a, each student will submit an original essay of her/his own effort on any topic within the context of the course that highlights the Earth as a dynamic planet. The grade assigned for the essay will contribute to 10% of the final grade for the course. It will be combined in the final exam grade for a total of (i.e., exam + essay =) 45%. Further details on subject will be handed out in class.

Late Policy: Labs and the essay are due on the date specified on the assignment. 10% will be deducted for every day late. If you have exceptional circumstances, please contact Dr. Secco prior to the due date.

Electronic Devices: Cell phones, music players and cameras will not be used during class time.

Academic Offences:

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/scholastic_discipline_undergrad.pdf

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>).

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Medical Issues:

For UWO Policy on Accommodation for Medical Illness and a downloadable SMC see: <https://studentservices.uwo.ca/secure/index.cfm>

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

Students seeking academic accommodation on medical grounds for any missed tests, exams, participation components and/or assignments worth 10% or more of their final grade must apply to the Academic Counselling office of their home Faculty and provide documentation. Academic accommodation cannot be granted by the instructor or department.

For components or assignments worth less than 10%, individual arrangement will be made between the student and instructor.