

ERTH 3806: STRUCTURAL GEOLOGY – WINTER 2019

COURSE DESCRIPTION:

ERTH 3806 Structural Geology [0.5 credit]: Structures and deformational processes in a variety of crustal settings. Applications to geological engineering and mineral and petroleum exploration. Prerequisites: ERTH 2105 and ERTH 2406. Lecture two hours a week and laboratory three hours a week.

Lectures 2:35 - 4:25 PM (Tuesday)
Laboratory A01 2:35 – 5:25 (Wednesday)

Teaching Assistants (office hours to be determined):
Sarah Davey (SarahDavey@cmail.carleton.ca)
Olivier Heldwien (OlivierHeldwein@cmail.carleton.ca)

MARK DISTRIBUTION:

Class participation & attendance	3%
Laboratory assignments & attendance	37%
Combined lecture and lab midterm test	15%
Final laboratory exam	20%
Final exam	25%

To pass the course: 1) a passing grade is required for all term work (i.e. attendance, labs, and midterm); and 2) a passing grade is required in the final exam. Note that a passing grade is required for the term work in order to be eligible to write the final exam.

COURSE REQUIREMENTS:

- Regularly check cuLearn webpage for lecture topics, homework, reading assignments, laboratory and pre-laboratory assignments and dates of exams, etc.
- Complete all readings and assignments.
- Come prepared to all lectures and laboratories (e.g. to discuss readings; with appropriate tools & materials, laboratory exercises and lab manual, etc.)
- Attend, and arrive on time, for all lectures and laboratories.
- Email sharon.carr@carleton.ca to advise of absences due to illness or emergencies.
- Hand in laboratory and pre-laboratory assignments on time. Pre-laboratory assignments are due at the beginning of each lab. Unless otherwise noted, laboratory assignments are due 1 week after they are assigned, at the beginning of the laboratory period (e.g. Lab 1 is due at the beginning of Lab 2).

- Late labs will be accepted without penalty in the instance of illness or emergencies by consultation with S. Carr. Otherwise, for late labs, 10% per day will be deducted for each day late. Labs will not be accepted more than 6 days after the normal due date.

ERTH 3806 COURSE LEARNING OUTCOMES:

By the end of this course, students will be able to:

1. Identify and describe the physical and geometric characteristics of structures and systems of structures.
2. Apply structural techniques to carry out structural analysis and interpretation (i.e. surface and subsurface mapping; cross-section and block diagram construction; orthographic projection; stereographic projection; strain analysis; kinematic analysis; determination of fault relationships with respect to principal stresses; and, structural analysis of joints, faults, lineations & foliations, folds, and shear zones).
3. Relate forces and stresses to mechanical strength and behaviour of rocks.
4. Explain deformation mechanisms for structures and microstructures.
5. Apply structural analysis to Geoscience problems involving Earth resources and hazards.
6. Interpret and explain structural systems with respect to the tectonic environments in which they form.
7. Separate observation from interpretation, apply critical thinking skills and communicate questions, ideas, data, interpretations, and conclusions pertinent to the field of structural geology.

REQUIRED TEXT BOOK AND LABORATORY MANUAL (on reserve in the library):

Fossen, H. 2016. *Structural Geology*, 2nd edition, Cambridge University Press. Required text book (with online resources) for EARTH 3806 Structural Geology. (Available in hard cover, soft cover and e-book in bookstore and online.)

Rowland, Duebendorfer and Schiefelbein. 2007. *Structural Analysis and Synthesis, A Laboratory Course in Structural Geology*. Third Edition. (Available digitally from the library (pdf file) and may be purchased online.)

TOOLS:

- Hand lens, scale (ruler), protractor, drawing compass, fine point pencils with hard 2H pencil leads, pencil sharpener, eraser, colored pencils, graph paper, tracing paper, mineral and rock identification tools and resources, stereonet, etc.

COPYRIGHT OF COURSE MATERIALS

Classroom teaching and learning activities, including lectures, discussions, presentations, etc., by both instructors and students, are copy protected and remain the intellectual property of their respective author(s). All course materials, including PowerPoint presentations, outlines,

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office hours TBA: after class, after labs,
or, by appointment via email

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Students registered in the course may take notes and make copies of course materials for their own educational use only. Students are not permitted to reproduce or distribute lecture notes and course materials publicly for commercial or non-commercial purposes without express written consent from the copyright holder.

ACADEMIC INTEGRITY AND PLAGERISM

Please review and familiarize yourselves with Carleton's Student Academic Integrity Policy: <https://carleton.ca/secretariat/wp-content/uploads/Academic-Integrity-Policy.pdf>

The University has adopted a policy to deal with allegations of academic misconduct. The Academic Integrity Policy:

- describes those actions and behaviors which violate Carleton University's standards of academic integrity;
- defines the responsibilities of various offices and individuals in upholding the policy;
- specifies the procedures and processes to be followed when an allegation of violating these standards has been made against a student;
- specifies the sanctions that may be applied to a student who has been found to have violated these standards; and,
- describes the appeal and petition processes open to students who feel they have not been treated fairly under this policy.

The Policy is strictly enforced and is binding on all students.

The instructor is required to report all incidents (or suspected incidents) in violation of the policy directly to the Dean. All work handed in must be your own work. Plagiarism (i.e. presenting another's ideas, arguments, words or images as your own), violation of exam rules, misrepresentation of facts for any academic purpose, using unauthorized material, misrepresentation, fabricating or misrepresenting research data, unauthorized co-operation or collaboration, or completing work for another student are viewed as being particularly serious, and the sanctions imposed are accordingly severe. Students who infringe the Policy may be subject to one of several penalties including: suspension from a program; withdrawal from courses; a grade of zero, a failure or a reduced grade for a piece of academic work; completion of a remediation process, etc.

ACADEMIC ACCOMMODATIONS

Requests for Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

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office hours TBA: after class, after labs,
or, by appointment via email

Pregnancy obligation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Religious obligation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Academic Accommodations for Students with Disabilities

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made.
carleton.ca/pmc

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline