

EAS 233 Geologic Structures and Maps: Course outline, Winter 2009

About the course:

EAS 233, Geologic Structures and Maps, is an introductory course in structural geology, for students of Geology, Paleontology, Environmental Earth Science, and Geophysics. It is one of the most important courses in your program, because structural geology is the study of how the make-up and fabric of the Earth's crust varies from place to place. Structural geology is important in many ways: for the location of energy and mineral resources, for the behaviour of water within the Earth's crust, for the interpretation of remotely sensed data including geophysical measurements, and for our understanding of how our planet's tectonic system has operated over geologic time.

Calendar description

*3 (fi 6) (either term, 3-0-3). Orientation, measurement description, and analysis of planar and linear structures in rocks, including folds, faults, and fabrics. Introduction to mapping and the collection of structural information. Construction of geologic maps and cross-sections. Introduction to stereographic and equal-area projections. Basic concepts of strain and stress in rock deformation. Prerequisite: EAS 105 or 210. [Faculty of Science]

Objectives

- to learn to make accurate descriptions of all types of structures exposed at the Earth's surface
- to use this information to understand three-dimensional structures within the Earth's crust;
- to interpret the changes that produced these structures over geologic time.

Web site: <http://courses.eas.ualberta.ca/eas233/>

About your instructor

- John Waldron Ph.D.
- Room ESB 4-10A
- Telephone 780 492 3892
- email john.waldron@ualberta.ca
- Office Hours Tu/Th 2.30-3.30. These are my 'official' office hours and I will do my best to be available at these times. However, I am happy to answer questions at other times too. Please feel free to visit my lab and office at EAS 410/410A and see if I am available.

Classes

Lectures Tu, Th 12.20-13.50 CEB 251

Labs: Tu, W, Th, or Fri 2.00 - 5.00, ESB 4-09, starting in the week of January 12th.

Register for one lab session H01 - H04

Note: you must attend your selected lab session. If you have a pressing need to change a lab session please contact your teaching assistant and make arrangements in advance.

Prerequisites

To take this course you must have taken either EAS 100 and 105, or EAS 210, or an approved transfer equivalent. If you have not completed either of these options, and you wish to remain in

EAS 233, you *must* complete a waiver request form (available from a rack outside ESB 1-26) indicating your relevant background. Waiver forms require instructor approval, and you must consult with me before I will approve any waiver request.

Note that by attending this course you represent that you have completed the prerequisites or have received an official waiver from the instructor and the department.

Required materials

Text: Rowland, S.M., Duebendorfer, E.M., and Schiefelbein, I.M. 2007. *Structural Analysis and Synthesis: A Laboratory Course in Structural Geology*. Blackwell, Malden, MA. This text takes the form of a lab manual. Some lab questions will be completed on the text pages and passed in for credit. It is essential that you have a copy of this manual, and that you read the relevant sections where indicated. The text also contains many questions which will not be used in the labs. You are encouraged to work through these questions as review and practice material for the exams. We may use examples from the text in the lectures, so please try to bring your textbook to the lectures.

In addition you will require the following for every lab:

- Loose leaf paper, metric graph paper, tracing paper
- A ruler at least 30 cm long
- Drawing instruments: protractor, compass.
- Sharp pencils for graphical constructions, pencil sharpener, eraser
- Coloured pencils - 10 different colours - (for labelling)
- Scientific calculator (must have square root, sin, cos, tan, and their inverses)
- A mapping pen (e.g. Staedtler pigment liner or similar, 0.2 mm tip) is very useful

Specialized Support and Disability Services

Students who require accommodations in this course due to a disability affecting mobility, vision, hearing, learning, or mental or physical health are advised to discuss their needs with Specialized Support and Disability Services, 2-800 Students' Union Building, 492-3381 (phone) or 492-7269 (TTY). Please ensure that the required forms for exams are submitted to the instructor several days before the date of the midterms or final.

Evaluation and grading

Marks will be distributed as follows:

- 40% Weekly laboratory assignments. Total of ten; **ALL TEN** must be completed in order to pass the course.
- 20% Mid-term test: this will take place in your lab session, during the week beginning February 23rd.
- 40% Final exam. 2:00 pm Thursday April 16. Room TBA.

Both exams will combine theoretical and practical aspects of the course. The final test will cover material from throughout the term.

Bring all the standard lab materials to the tests, and make sure you have them all before you enter the room where the test is held; there may be materials set out on the benches so you will not be allowed to leave or talk once you have entered the room. Leave bags and coats outside or in designated space at the side of the room.

If your performance in any part of the course is significantly affected by illness, family emergency, other factors beyond your control, please let me know promptly, within 48 hours of the affected lab or test. If you are sick for a test, obtain medical advice and, if applicable, have the University medical form completed *on the day of the test*.

Grading will be based on a combination of relative standing in the class and absolute achievement. This means that grades will be assigned neither with slavish adherence to a distribution or 'curve' nor with predetermined absolute numerical cut-offs. The historical distribution will be used as a rough guide to what the distribution of marks could look like, but an exceptional class that performs well will be rewarded with higher grades than "normal"; conversely, an underachieving class may receive grades that are lower than university long-term averages.

Academic integrity

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at "www.ualberta.ca/secretariat/appeals.htm") and avoid any behaviour which could potentially result in suspicions of

- cheating
- plagiarism
- misrepresentation of facts
- participation in any of the above with others.

Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

Lab integrity

EAS 233 is a very practical course in which you may benefit from discussions with your instructor, teaching assistants, and fellow students in devising problem-solving strategies. However, the actual answers you record must be exclusively your own work. This means that:

- ***observations must be your own;***
- written answers must be expressed in sentences and paragraphs ***composed uniquely in your own words;***
- every calculation and construction ***must be carried out by you.***

(In the event that you are explicitly instructed to work in groups on a problem, your answer must contain a written acknowledgement of the other participants.)

Important notes on exam procedure

Maps and/or samples will be on the desks when you enter the exam room. Have your required materials unpacked and available before you go in.

- ***No books, notes, mp3 players or cell phones are allowed in the exam room, unless securely packed in a single bag brought in closed and left in a designated place away from your desk before you start.***
- Electronic devices must be switched off.
- ***No talking is allowed once you enter the room.***
- If you leave before the end of the exam, do not speak to other students on your way out.

Mid-term test questions will be different for each lab section. Nonetheless, do not discuss the content of the mid-term test with other students during the mid-term week (Feb 23-27), as this could be interpreted as an attempt to give or obtain an unfair advantage. No notes or rough work may be removed from the room where the mid-term test takes place.