

ESCI 331
Geologic Structures and Map Interpretation
Spring 2012 – Lec 2 Lab 3 Cr. 4

Class Schedule: T 12:15-1:55; Th 12:15-2:45 Location: BBH 120 Instructor: Dr. Genet Ide Duke Office: BBH 225E Email: g-duke@neiu.edu (best and fastest) Phone: 773-442-6055	Office Hours: M 11 am to 3 pm T 2-3 pm Or by appointment
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Required Texts:

- (1) *Structural Geology* by Haakon Fossen, 2011, Cambridge Press. This is a brand new textbook, and I am looking forward to exploring this book with you. This book has a lot of associated online activities, which should be fun!
- (2) The readings and information from the text will be supplemented with additional materials from other sources throughout the semester.

Required materials: A set of colored pencils, a 0.5 mm or 0.3 mm mechanical pencil with #3 or #4 hardness (or at least a sharpen-able pencil with #3 or #4 hardness), a pack of tracing paper (30-40 sheets; 8 x 11.5 in), your own hand lens to take with you into the field, a field notebook, safety glasses or goggles, good hiking boots/shoes (ankle height), a clear plastic protractor and ruler (also to take into the field). You can purchase the hand lens and field notebook online from Miners, Inc. or Forestry Suppliers. There are lots of choices, so check with me before you order.

LAPTOPS are NOT ALLOWED during lecture, but they are REQUIRED for several LABS. If you do not have one, you may use the computers in Room 130.

Course Description

Determination of the attitude and thickness of inclined strata and their bearing on outcrop patterns; preparation of geological maps from given field data; and interpretations of aerial photos, topographic maps, and geological maps depicting folds, faults, unconformities and intrusive bodies; preparation of geological cross sections. Lecture 2 hours, lab 3 hours. Prerequisites: Undergraduate level [ESCI211](#) Minimum Grade of D.

Course Objectives: By the end of the course, you should be able to:

- Work comfortably with geologic maps, being able to (1) identify all structural features, (2) identify stresses and stress directions, (3) analyze the region of the map tectonically.
- Identify small structural features in outcrop, hand specimen, or microscope, and be able to make basic conclusions regarding stress regime of formation.
- Use Google Earth to analyze regional geologic features.
- Analyze faults, fault surfaces, folds, sequences of folding events, kinematics.
- Be able to create/draft geologic maps and structural sections from geologic maps.

Attendance Policy:

It is your responsibility to show up, listen, and take good notes. I may provide you with handouts, and if you miss class, it will be your responsibility to get notes and photocopy the handouts from your classmates. You will be expected to attend every class, and you are required to be in attendance at quizzes/exams. Attendance will be taken at the beginning of every class. If you leave class early, it cannot count as a fully attended class. Lab periods are especially important, and labs cannot be made up for any reason. For about half the labs, you will turn in the work that you do in lab at the end of the lab period; each of these labs will count toward your lab grade.

-You are REQUIRED to attend the 3-day field trip and complete the 2-week associated assignment.

*Students who miss **no more than one** class (and are **tardy to no more than one** class) will be **rewarded** with **2%** added to their final grade for the course.*

Method of Evaluation:

Field trip and accompanying map/report	5%
Lab work (reports, maps, drawings)	25%
Lab quizzes	20%
Lecture quizzes	50%
TOTAL	100%

Grading Scale: 90-100% A, 80-89.9% B, 70-79.9% C, 60-69.9% D; below 60% = F.

Due Dates for Lab Assignments and other Assignments:

Lab work will be combined in a lab notebook, which will be turned in the last week of class. Some labs will be turned in at the end of lab period, and some labs will be due the following lab period. We will use Thursdays for labs, because these are longer periods; so, labs will always be due the following Thursday, except for a 2-week lab assignment.

Field trip lab report and accompanying maps: Due April 26, at the beginning of class. 50% off if late within 24 hours, and no credit after that.

Policies for “Make-Up” for Quizzes and Lab Work:

- **Lecture Quizzes:** There will be many quizzes throughout the semester. These quizzes will not be made up for any reason, but to account for illness and other legitimate absence, the lowest quiz grade will be dropped.
- **Lab Quizzes:** The same policy as for Lecture Quizzes.
- **Lab work:** About half the labs will be turned in at the end of the period used for lab class, but some will be due the following Thursday. They must be turned in at the beginning of Thursday’s class, and they will have a 50% grade deduction if turned in after that. If labs are not turned in by 4 pm Friday, they will receive a 0 (zero). Do not turn them in late. Each lab will receive credit if turned in on time. Some labs may count more than others, but the lowest lab grade will be dropped, in the interest of legitimate absence/illness.
- **Field Trip:** There is not a possibility of “making up” the field trip. You must plan for it now. The trip itself counts 5% of the grade. The maps and report that will be produced from it will be a significant 2-week lab grade.

Course Structure: Tuesdays will be mostly lecture, and Thursdays will be lab, because it is a longer period.

Lab Notebooks: You will assemble your maps, drawings, and reports in a special type of binder that will be shown to you in the first week of class. Each lab will be handed in separately, but then you will assemble them all together into the binder to hand in on the 26th of April (last class). Every lab will count toward your grade. Some labs will be just “for credit,” which means that they still will be graded on thoroughness, precision, neatness, and careful thought. Some labs will be graded based on more detailed rubrics to be provided with each separate lab assignment.

Field Trip: There will be one 3-day field trip. This is required (*NOT an option*) and will count 5% toward your grade. You will incur an additional cost to yourself for hotel (or camping), and your gas, wear/tear with your car. We will leave at noon on April 12th and return by noon on Sunday, April 15th. ***Please plan accordingly with family, children, other classes, and jobs.*** There will be ***no class held on April 17th or 24th*** to accommodate for this lengthy time “in class” on our field trip. We will have lots of fun and learn a lot, too!!!

Course Schedule (subject to change):

Week	Date	Topic	Readings
1	Jan 10	General information on Structural Geology, review of what you might have learned in Physical Geology	Ch 1 Fossen
	12	General information on Structural Geology Lab 1: Geologic Maps—reading, interpretation	
2	17	Deformation, Strain and Stress Brittle deformation vs Plastic deformation	Ch 7 Fossen Other readings
	19	Lab 2: Geologic map construction	
3	24	Faults	Parts of Ch 8 & 9 Fossen
	26	Lab 3: Geologic cross sections	
4	31	Contractional regimes	Ch 16 Fossen
	Feb 2	Lab 4: Structural analysis of hand specimens and outcrops	
5	7	Extensional regimes	Ch 17 Fossen
	9	Lab 5: Geologic Maps--faults	
6	14	Microscale deformation	Ch 10 Fossen
	16	Lab 6: Strain analysis	
7	21	Folding	Ch 11 Fossen
	23	Lab 7: Structural Analysis (Stereonet) (Part I)	
8	28	Foliation and cleavage	Ch 12 Fossen
	Mar 1	Lab 8: Structural Analysis (Part II)	
9	6	Lineations and boudinage	Ch 13-14 Fossen

	8	Lab 9: Google Earth exercise/mapping (ArcGIS?)	
10	13	Shear zones and mylonites	Ch 15 Fossen
	15	Lab 10: Structure Contours	
11	20	Spring Break: No classes	
	22	Spring Break: No classes	
12	27	Strike-slip faults	Ch. 18 Fossen
	29	Lab 11: Measuring strike and dip of planes and lines of objects in the lab and in the NEIU courtyard.	
13	April 3	Salt tectonics	Ch 19 Fossen
	5	Lab 12: Seismic interpretation	
14	10	Summary and preview of field trip	Ch 21 Fossen
	12	Field Trip April 12-15, Leaving at noon on the 12th, and returning by noon on the 15th.	
15	17	No class to accommodate 3 days on field trip.	
	19	Last Lab class. (Note: This might be largely lecture by necessity. Short lab to turn in at the end of class.)	
16	24	No class to accommodate the 3 days on field trip.. <i>I recommend attending the regional GSA meeting in Dayton, Ohio, which will take place April 23 and 24. There are field trips that students should sign up for online in January!!!</i>	
	26	Last class: Last Lab quiz/test <i>Major Field Trip Project: Paper and Maps due from the Field Trip.</i>	

Last day to drop classes and received a W: March 30, 2012.

Last day of classes: Monday April 30, 2012.

Final exam: There will be no final exam in this class.

OTHER INFORMATION:

Work outside of class time:

As a rule of thumb, in any college course, you should expect to spend 3 hours outside of class studying or working on labs for every credit hour. For this 4 cr-hr class, you will need to spend 12 hours outside of class studying and working on assignments.

Electronic Communication: As much as possible, I will use Blackboard and email to give you details of the course. You must have an email account, and you are expected to check your email and the Blackboard site at least twice a week. I also will need your cell phone number later in the term for the field trip.

Exams and quizzes: This class will have only quizzes, or “short” tests that should take perhaps 20-30 minutes; a couple quizzes might take 45 minutes. Lab quizzes will cover lab material, and these will involve drawing, interpreting, calculations, measurements, problem-

solving. Lecture quizzes may have any of the following formats: T/F, Multiple Choice, Fill-In-The-Blanks, and open-ended questions that you can answer using diagrams, drawings, lists, calculations, and/or explanations. Lecture quizzes will be on both class lectures and your readings from the textbook.

Statement on Academic Conduct (from the NEIU Course Catalog): Northeastern Illinois University students are expected to exhibit the highest standards of academic integrity. Academic misconduct such as plagiarism or cheating is unacceptable and will be investigated in accordance with University policy on Academic misconduct.

Accessibility: If you have a physical, psychological, medical or learning disability that may impact on your ability to carry out assigned course work, I would urge that you contact the staff in the Accessibility Center Office, Building D, room 104, phone extensions: 5495, 5496, 5497, and 5498. The Accessibility Center will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation of disability are confidential.

Web Link to Emergency Information

It is recognized that a safe university environment is a shared responsibility of faculty, staff, and students, all of whom are expected to familiarize themselves with and cooperate with emergency procedures. Web links to Campus Safety: Emergency Procedures and Safety Information can be found on NEIUport on the MyNEIU tab or as follows:

For the Main campus:

http://www.neiu.edu/~neutemp/Emergency_Procedures/MainCampus/

OTHER NOTES:

- 1) Do NOT wait until the night before the exam to study. The best way to study for exams is to study your notes every day, even if only for 15-20 minutes.
- 2) The instructor reserves the right to make necessary modifications or adjustments to the syllabus during the semester as necessary. Appropriate notification during class will be given if any changes are made.
- 3) The instructor reserves the right to change office hours during the course of the semester and will post new hours outside the office door, as well as announcing it during class period.
- 4) The instructor reserves the right to remove any student from the class who is disruptive, at any time. This includes, *but is not limited to*, talking with others during class, use of cell phones, and making noises or gestures of any kind that are disturbing to others. Cell phones must be turned on silent mode. If your phone goes off in class two times, I will have to ask you to leave.
- 5) Children or guests are not allowed in classes. If you have a REAL emergency, you can call me ahead of time (give me at least 30 minutes warning), and ask me if I can make an exception. Please do not show up at class with surprises.
- 6) No laptop usage in class. No texting in class. Cell phones must be on silent mode, not vibrate or ring. No Kindles, I-Pods, I-Pads, or ANY electronic devices in class.

- 7) If you are found using an electronic device (cell phone, Kindle, I-Pod, I-Pad, or ANY electronic device) during a quiz or an exam, this will result in an automatic failure of the quiz or exam.