

ERTH 303: Structural Geology

Department of Earth Sciences, Fall 2020

Introduction to the geometry, kinematics, and mechanics of lithospheric deformation.

Instructors:

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Text: Structural Geology, by H. Fossen
2nd Edition

Office hours: by appointment

Lectures: MW 10:30-11:20 ONLINE

Lab: W 1:30-4:20 POST 708 or ONLINE



Schedule

Aug 24	Week 01	M	Chapter 1: Introduction to Structural Geology	Dunn
		W	Chapter 2: Deformation	Dunn
		Lab	Deformation	Dunn
Aug 31	Week 02	M	Chapter 2: Deformation	Dunn
		W	Chapter 2: Deformation	Dunn
		LAB	Mathematics of Deformation	Dunn
Sept 07	Week 03	M	Labor Day: No class	
		W	Chapter 3: Strain in Rocks	Dunn
		LAB	Strikes and Dips	Rowland
Sept 14	Week 04	M	Chapter 4: Stress	Dunn
		W	Chapter 5: Stress in the Lithosphere	Dunn
		LAB	Stereonet	Rowland
Sept 21	Week 05	M	Chapter 6: Rheology	Ito
		W	Chapter 6: Rheology	Ito
		LAB	Rheology	Ito
Sept 28	Week 06	M	Review for Midterm 1	Dunn
		W	Midterm 1	Dunn
		LAB		Ito
Oct 05	Week 07	M	Chapter 7: Fracture and brittle deformation	Ito
		W	Chapter 7: Fracture and brittle deformation	Ito
		LAB	Creating topographic cross-sections	Rowland
Oct 12	Week 08	M	Chapter 8: Joints and veins	Ito
		W	Chapter 8: Joints and veins	Ito
		LAB		Ito
Oct 19	Week 09	M	Chapter 9: Faults	Ito
		W	Chapter 9: Faults	Ito
		LAB	Interpreting geologic maps/constructing cross-sections	Rowland
Oct 26	Week 10	M	Chapter 10: Kinematics and paleostress	Smith-Konter
		W	Chapter 10: Kinematics and paleostress	Smith-Konter
		LAB		Smith-Konter?
Nov 02	Week 11	M	Chapter 11: Deformation at the microscale	Ito
		W	Chapter 11: Deformation at the microscale	Ito
		LAB	Including review for Midterm 2	Ito
Nov 09	Week 12	M	Midterm 2	Ito
		W	HOLIDAY: Veterans' Day	
		LAB	HOLIDAY: Veterans' Day	

Nov 16	Week 13	M	Chapter 12: Folds and Folding	Rowland
		W	Chapter 13: Foliation and Cleavage	Rowland
		LAB	Field trip to visit one or more landslides on O'ahu	Rowland
Nov 23	Week 14	M	Chapter 16: Shear Zones & Strike Slip Regimes	Smith-Konter
		W	Chapter 19: Shear Zones & Strike Slip Regimes	Smith-Konter
		LAB	Shear Zones & Strike Slip Regimes	Smith-Konter
Nov 30	Week 15	M	Chapter 18: Extensional Regimes	Ito
		W	Chapter 18: Extensional Regimes	Ito
		LAB	Extensional Regimes	Ito
Dec 07	Week 16	M	Chapter 17: Contractional Regimes	Janiszewski
		W	Chapter 17: Contractional Regimes	Janiszewski
		LAB	Final Review	Dunn & Ito
Dec 14	Week 17	Final Exam date and time TBD		Dunn

Course Structure: Two lectures and one lab per week. Lecture: includes class participation; small group activities; problem solving; Lab: Lab and outdoor activities with required report.

Grading: We will have homework, lab reports, two midterms, and one final exam. The relative weightings are: Homework and in-class assignments 50%; Labs and course participation 25%. Exams 25%.

Questions: Questions are welcome and help everyone. Please ask questions freely!

Learning Objectives: The **Department of Earth Sciences** has established the following undergraduate student learning objectives. All of these objectives are relevant targets for the curriculum of EARTH303.

1. Students can explain the relevance of geology and geophysics to human needs, including those appropriate to Hawaii, and be able to discuss issues related to geology and its impact on society and planet Earth.
2. Students can apply technical knowledge of relevant computer applications, laboratory methods, and field methods to solve real-world problems in geology and geophysics.
3. Students use the scientific method to define, critically analyze, and solve a problem in earth science.
4. Students can reconstruct, clearly and ethically, geological knowledge in both oral presentations and written reports.
5. Students can evaluate, interpret, and summarize the basic principles of geology and geophysics, including the fundamental tenets of the sub-disciplines, and their context in relationship to other core sciences, to explain complex phenomena in geology and geophysics.

Disability Access: If you have a disability and related access needs the Department will make every effort to assist and support you. For confidential services students are encouraged to contact the Office for Students with Disabilities (known as "Kokua") located on the ground floor (Room 013) of the Queen Lili'uokalani Center for Student Services: KOKUA Program; 2600 Campus Road; Honolulu, Hawaii 96822. Voice: 956-7511; Email: kokua@hawaii.edu; URL: www.hawaii.edu/kokua

The University of Hawai'i is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know is experiencing any of these, the University has staff and resources on your campus to support and assist you. Staff can also direct you to resources that are in the community. Here are some of your options:

As members of the University faculty, your instructors are required to immediately report any incident of potential sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and your instructors cannot guarantee confidentiality, you will still have options about how your case will be handled. Our goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.

If you wish to remain ANONYMOUS, speak with someone CONFIDENTIALLY, or would like to receive information and support in a CONFIDENTIAL setting, use the **confidential resources available here**:

<http://www.manoa.hawaii.edu/titleix/resources.html#confidential>

If you wish to directly REPORT an incident of sex discrimination or gender-based violence including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence or stalking as well as receive information and support, contact: Dee Uwono Title IX Coordinator (808) 956-2299 t9uhm@hawaii.edu.

