



UNIVERSITY OF CALGARY  
FACULTY OF SCIENCE  
DEPARTMENT OF GEOSCIENCE  
COURSE OUTLINE  
WINTER 2016

1. **Course:** Geology 641, Advanced Structural Methods

Lecture Sections:

L01: MoWeFr, 10:00-10:50, ST 131

For a listing of all lab sections corresponding with this course, please see the following link:

[http://geoscience.ucalgary.ca/geoscience\\_info/courses/w16](http://geoscience.ucalgary.ca/geoscience_info/courses/w16)

Instructor, Dr. R. Taerum, Office 210, Tel. No. 403-220-7375, e-mail address, [rtaerum@ucalgary.ca](mailto:rtaerum@ucalgary.ca),  
Office Hours: Friday 13:30 – 16:00

Geoscience Department ES 118, 403-220-5841, [geoscience.ucalgary.ca](http://geoscience.ucalgary.ca), [geoscience@ucalgary.ca](mailto:geoscience@ucalgary.ca)

2. **Prerequisites:** Consent of the Department. See section 3.5.C in the Faculty of Science section of the online Calendar ([www.ucalgary.ca/pubs/calendar/current/sc-3-5.html](http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html))

**Antirequisite:** Credit for both Geology 541 and 641 will not be allowed.

3. **Grading:** The University policy on grading and related matters is described sections [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Laboratory Assignments (8)	10%	(due when indicated)
First Lab Examination	10%	(175 minutes, <b>March 8,9</b> in your scheduled lab period)
Second Lab Examination	10%	(175 minutes, <b>April 5,6</b> in your scheduled lab period)
Term Project	10%	(due <b>April 1</b> , in lecture period)
Course Final Examination	10%	(scheduled by registrar)
Research Project	50%	(due <b>April 13</b> )

All examinations will be closed book with calculators allowed. Geometry sets and stereonetts will be allowed for lab exams. Each piece of work (lab assignment, term project, lab exams and course final examination) submitted by the student will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade. The conversion between grade points and letter grades is given below.

Letter Grade	Percent	Letter Grade	Percent
A+	95-100	C+	64-<68
A	89-<95	C	60-<64
A-	84-<89	C-	56-<60
B+	78-<84	D+	53-<56
B	73-<78	D	50-<53
B-	68-<73	F	0-<50

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar.

5. **Scheduled out-of-class activities:** There is a weekend field excursion held during the term in this class.

**REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.** If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:** Textbook: Marshak & Mitra "Basic Methods of Structural Geology" will help with labs. Recommended reference books include: Davis, Reynolds, and Kluth (2012) Structural Geology of rocks and regions; Lisle & Leyshon (2004) Stereographic projection techniques for geologists and engineers; The course website (D2L) contains handouts for labs, lectures, as well as other resource material that you will find useful.

7. **Examination Policy:** No electronic aids (eg. cell phones, tablets, computers, PDAs) will be allowed during writing of any exams. Calculators, geometry sets and stereonets will be permitted to answer questions in lab exams. Students should also read the Calendar, [Section G](#), on Examinations.

8. **Writing across the curriculum statement:** In this course, the quality of the student's writing in laboratory reports will be a factor in the evaluation of those reports. See also [Section E.2](#) of the University Calendar.

9. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**

(a) **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties

(b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).

(c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at [http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities\\_0.pdf](http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf). Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Geoscience, Dr. E.S. Krebs by email [krebs@ucalgary.ca](mailto:krebs@ucalgary.ca) or phone 403-220-5850.

(d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

(e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.

(f) **Student Union Information:** VP Academic Phone: 403 220-3911 Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca) SU Faculty Rep. Phone: 403 220-3913 Email: [science1@su.ucalgary.ca](mailto:science1@su.ucalgary.ca), [science2@su.ucalgary.ca](mailto:science2@su.ucalgary.ca) and [science3@su.ucalgary.ca](mailto:science3@su.ucalgary.ca); Student Ombuds Office: 403-220-6420 Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca); <http://ucalgary.ca/provost/students/ombuds>

(g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

(h) **U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses ([www.ucalgary.ca/usri](http://www.ucalgary.ca/usri)). Your responses make a difference – please participate in USRI Surveys.

Department Approval: ORIGINAL SIGNED

Date: December 23 2015

Associate Dean's Approval for  
out of regular class-time activity and  
alternate final examination arrangements: ORIGINAL SIGNED

Date: January 7 2016

## Tentative Schedule

Week	Lec #	Date	Topic	Lab
1	1	Jan 11	Course Logistics & Introduction to Structure	Lab #1 Review plotting & projecting of structures
		Jan 12,13	Lab 1	
	2	Jan 13	Introduction to Structure	
	3	Jan 15	Borehole data	
2	4	Jan 18	Borehole data	Lab #2 Drill hole problems & dipmeter data analysis
		Jan 19,20	Lab 2	
	5	Jan 20	Term Project	
	6	Jan 22	Analysis & Directional cosines	
3	7	Jan 25	Analysis & Directional cosines	Lab #3 Directional cosines & statistical analysis
		Jan 26,27	Lab 3	
	8	Jan 27	Contouring, Structure maps, Cross-sections	
	9	Jan 29	Contouring, Structure maps, Cross-sections	
4	10	Feb 1	Contouring, Structure maps, Cross-sections	Lab #4 Conical Folds & structure contour mapping
		Feb 2,3	Lab 4	
	11	Feb 3	Kinematic Models	
	12	Feb 5	Kinematic Models	
5	13	Feb 8	Kinematic Models	Lab #5 cross-section balancing I
		Feb 9,10	Lab 5	
	14	Feb 10	Geological Map Interpretation	
	15	Feb 12	Geological Map Interpretation	
		Feb 14-21	Reading Week	
6	16	Feb 22	Cross-section construction & balancing	Lab #6 cross-section balancing II
		Feb 23,24	Lab 6	
	17	Feb 24	Cross-section construction & balancing	
	18	Feb 26	Cross-section construction & balancing	
7	19	Feb 29	Cross-section construction & balancing	No Lab
		Mar 1,2	No Lab	
	20	Mar 2	Rock Mechanics	
	21	Mar 4	Rock Mechanics	
8	22	Mar 7	Review	First Lab Exam
		Mar 8,9	<b>First Lab Exam</b>	
	23	Mar 9	Critical wedge	
	24	Mar 11	Polyphase Folds	
9	25	Mar 14	Polyphase Folds	Lab #7 Polyphase folding
		Mar 15,16	Lab 7	
	26	Mar 16	Polyphase Folds	
	27	Mar 18	Igneous Structures	
10	28	Mar 21	Modern topics	Lab #8 Polyphase folding & ore reserves
		Mar 22,23	Lab 8	
	29	Mar 23	Modern topics	
	30	Mar 25	Good Friday	
11	31	Mar 28	Modern topics	No Lab
		Mar 29,30	No Lab	
	32	Mar 30	Modern Topics	
	33	Apr 1	Modern Topics <b>Term Project Due</b>	
12	34	Apr 4	Review	Second Lab Exam
		Apr 5,6	<b>Second Lab Exam</b>	
	35	Apr 6	Modern Topics	
	36	Apr 8	Modern Topics	
13	37	Apr 11	Modern Topics	No Lab
		Apr 12,13	No Lab	
	37	Apr 13	No Lecture	