UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF GEOSCIENCE
COURSE OUTLINE
WINTER 2015

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

   Lecture Sections:

   L01: MoWeFr, 10:00-10:50, SB 146

   Lab Sections:
   B01: Tu, 11:00 – 13:50, ES 213
   B02: Tu, 14:00 – 16:50, ES 213
   Instructor, Dr. R. Taerum, Office 210, Tel. No. 403-220-7375, e-mail address, rltaerum@ucalgary.ca,
   Office Hours: Friday 13:30 – 16:00

   See course information on Desire 2 Learn (D2L) GLGY 541
   Geoscience Department ES 118, 403-220-5841, geoscience.ucalgary.ca, geoscience@ucalgary.ca

2. **Prerequisites:** Geology 341 or 343 and completion of at least 15 full-course equivalents. 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)

   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)
Midterm Lab Examination	10%	(175 minutes, **March 17**, in your scheduled lab period)
Final Lab Examination	10%	(175 minutes, **April 14**, in your scheduled lab period)
Term Project	10%	(due **March 10,** in your scheduled lab period)
Research Project	60%	(due **April 13**)

   The Midterm and Final lab examinations will be open book with calculators allowed. They are intended to test for comprehension of material and problem-solving abilities, not memorization of definitions and formulas. Each piece of work (lab assignment, project report, lab midterm, lab final examination and research project) 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	50-<56
B	73-<78	F	0-<50
B-	68-<73		

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. **Course Materials:** Textbooks: Simony & Spratt "Structural Methods, 2003; 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.

6. **Examination Policy**: No electronic aids (eg. cell phones, tablets, computers, PDAs) will be allowed during writing of any exams. Calculators, notes, previous assignments, etc. will be permitted to answer questions on exams. Students should also read the Calendar, Section G, on Examinations.

7. **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.

8. **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) Academic Accommodation Policy: Students with documentable disabilities are referred to the following links: Students with Disabilities: http://www.ucalgary.ca/pubs/calendar/current/b-1.html B.1 and Student Accessibility Services: http://www.ucalgary.ca/access/.

   (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: 220-3911 Email: suvpaca@ucagary.ca.
   SU Faculty Rep. Phone: 220-3913 Email: sciencerep@su.ucalgary.ca; Student Ombudsman

   (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). Your responses make a difference – please participate in USRI Surveys.

Department Approval: Original Signed Date: December 19, 2014

Associate Dean's Approval for
Alternate final examination arrangements: Original Signed Date: January 5, 2015

Tentative Schedule

Week	Lec #	Date	Topic	Lab
1	1	Jan 12	Course Logistics, Structure intro	Intro to Term Project
		Jan 13	Term Project	
	2	Jan 14	Structure intro	
	3	Jan 16	Mohr Circle, Stress & Strain, Rock Mechanics	
2	4	Jan 19	Stereonet review, minor structures	Lab #1 Review plotting & projecting of structures
		Jan 20	Lab 1	
	5	Jan 21	Faulting 1	
	6	Jan 23	Boreholes & dipmeter data 1	
3	7	Jan 26	Boreholes & dipmeter data 2	Lab #2 Drill hole problems & dipmeter data analysis
		Jan 27	Lab 2	
	8	Jan 28	Faulting 2	
	9	Jan 30	Directional cosines, contouring & statistics 1	
4	10	Feb 2	Directional cosines, contouring & statistics 2	Lab #3 Directional cosines & statistical analysis
		Feb 3	Lab 3	
	11	Feb 4	Folding 1	
	12	Feb 6	Structure maps 1	
5	13	Feb 9	Structure maps 2	Lab #4 Bengston diagrams & structure contour mapping
		Feb 10	Lab 4	
	14	Feb 11	Folding 2	
	15	Feb 13	Critical wedge	
		Feb 15-22	Reading Week	
6	16	Feb 23	Dip-domain modeling, Busk arcs	Lab #5 Busk arc fold model
		Feb 24	Lab 5	
	17	Feb 25	Structural Styles	
	18	Feb 27	Cross-section construction & balancing	
7	19	Mar 2	Cross-section construction & balancing	Lab #6 Cross-section balancing
		Mar 3	Lab 6	
	20	Mar 4	Structural Styles	
	21	Mar 6	Structural Styles	
8	22	Mar 9	Strain Phenomenon, Riedel Shears, etc.	complete project
		Mar 10	Complete project	
	23	Mar 11	Igneous Rocks	
	24	Mar 13	Igneous Rocks	
9	25	Mar 16	Recent Deformation	Lab Midterm exam
		Mar 17	Lab Midterm exam	
	26	Mar 18	Recent Deformation	
	27	Mar 20	Polyphase Folds	
10	28	Mar 23	Polyphase Folding	Lab #7 Polyphase folding
		Mar 24	Lab 7	
	29	Mar 25	Modern topics	
	30	Mar 27	Modern topics	
11	31	Mar 30	Modern topics	Lab #8 Polyphase folding & ore reserves
		Mar 31	Lab 8	
	32	Apr 1	Modern topics	
	33	Apr 3	Good Friday	
12	34	Apr 6	Modern topics	Lab #9 Review lab problem
		Apr 7	Lab 9	
	35	Apr 8	Modern topics	
	36	Apr 10	Modern topics	
13	37	Apr 13	Review	Lab final exam
		Apr 14	Lab Final	
	37	Apr 15	No Lecture	