UNIVERSITY OF CALGARY

DEPARTMENT OF GEOSCIENCE
COURSE OUTLINE
FALL 2015

1. **Course:** GLGY 313, Mineralogy

   Lecture Sections:

   L01: MoWeFr, 14:00-14:50, KNB 132

   For a listing of all lab sections corresponding with this course, please see the following link:
   http://geoscience.ucalgary.ca/geoscience_info/courses/f15

   Dr. S. Antao, Office: ES 532, Ph. 403-220-3083, antao@ucalgary.ca, Office Hours: M W 12:00-1:00 pm

   Desire 2 Learn (D2L) course name GLGY313: https://d2l.ucalgary.ca
   Geoscience Department ES 118, 403-220-5841, geoscience.ucalgary.ca, geoscience@ucalgary.ca

2. **Prerequisites:** Geology 201; Geology 202 or 203; Chemistry 201 or 211; Chemistry 203 or 213; Mathematics 253 or 283 or 267 or 277 or Applied Mathematics 219; Physics 223. See also Geology Course Descriptions of the University Calendar.
   Antirequisites: Credit for both Geology 313 and 423 will not be allowed.

3. **Grading:** The University policy on grading and related matters is described in 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:

Lab. Assignments (including wooden models)	10%	
Theory Midterm	15%	(October 16, 2015)
Lab. Midterm	15%	(week of October 26, 2015)
Lab. Final	20%	(week of November 30-December 4, 2015)
Theory Final	40%	(to be scheduled by the registrar)

   The theory tests may comprise of multiple-choice questions, short-answer and long-answer format (including illustrations). Bring your calculator to all Theory Tests.

   Each piece of work (assignment, laboratory reports, theory tests, and lab.examinations) 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 course percentage and letter grade is given below.

Letter Grade	Percent	Letter Grade	Percent
A+	95-100	C+	64-67
A	89-94	C	60-63
A-	84-88	C-	56-59
B+	78-83	D+	50-55
B	73-77	D	46-49
B-	68-72	F	0-45

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:**
   Required reference book:
   Nesse, W.D. (1999) Introduction to Mineralogy. Oxford University Press, New York, NY.

   Recommended reference books (available in the Gallagher Library):
   Nesse, W.D. (2003) Introduction to Optical Mineralogy (3rd edition). Oxford University Press, New York, NY.
   Deer, W.A., Howie, R.A., and Zussman, J. (1992) An introduction to the rock-forming minerals (2nd edition). John Wiley and Sons, Inc., New York, NY.

Klein, C. and Dutrow, B. (2007) Manual of Mineral Science (23rd edition). John Wiley and Sons, Inc., New York, NY.
Klein, C. and Hurlbut, C.S. (1998) Manual of Mineralogy (revised 21st edition). John Wiley and Sons, Inc., New York, NY.
MacKenzie, W. S. and Guilford, C. (1980) Atlas of rock-forming minerals in thin section
MacKenzie, W. S.; Donaldson, C. H.; Guilford, C. (1982) Atlas of igneous rocks and their textures
MacKenzie, W. S. and Adams, A. E. (1994) A colour atlas of rocks and minerals in thin section

The course D2L site contains all of the handouts for labs, lectures, and assignments, as well as other resource material that you might find useful. Students are advised that reading the course D2L page is not a substitute for attendance at lectures. The lectures provide an interactive environment that embellishes on, and provides a context for, the material in the textbook, whereas D2L is a live site that allows for tailoring and updating of the course material during the term. A few short movies on Mineralogy shown in class will not be posted on D2L because of copyright issues.

6. **Examination Policy**: All tests are closed book. No portable computing machines will be allowed. 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) 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. 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. Krebes by email krebes@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
SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca;
Student Ombuds Office: 403-220-6420 Email: 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). Your responses make a difference – please participate in USRI Surveys.

Department Approval ORIGINAL SIGNED Date August 17, 2015

TENTATIVE SCHEDULE

Week	Lecture topics	Lab. topics
1	Mineral properties (colour, pleochroism, R.I., relief, birefringence), crystal systems	Lab 1: The Polarizing Microscope
2	Phase relations, interference colours, extinction	Lab 2: Refractive index, relief, anisotropy, pleochroism
3	Accessory plates, indicatrix, uniaxial interference figures	Lab 3: Birefringence, vibration directions, extinction
4	Biaxial interference figures, orientation diagrams, miller index	Lab 4: Uniaxial interference figures
5	Crystallography, symmetry, stereographic projections	Lab 5: Biaxial interference figures
6	Morphological crystallography, point groups	Lab 6: Quartz, micas, serpentines, carbonates
7	Polymorphism, phase diagrams, quartz, mica, carbonates, serpentine, **Theory Midterm**	**Lab. Midterm** (Labs. 1-5)
8	Plagioclase feldspars, alkali feldspars, nepheline, leucite, pyroxenes, amphiboles	Lab 7: Feldspar, nepheline, and leucite
9	Biopyriboles, accessory minerals	Lab 8: Pyroxenes and amphiboles
10	Olivines, chemical analyses, mineral formulae calculations	**READING WEEK** (no Labs.)
11	Metamorphic minerals, X-ray diffraction	Lab 9: Olivine, epidote, and titanite
12	X-ray diffraction, applications of mineralogy to other sciences, biominerals	Lab 10: Metamorphic minerals
13	Review	**Final Lab. exam** (Labs 1-10 + wooden models)