

ESS 222: Petrology

Winter 2016 Course Outline

Lectures: Tuesday, Wednesday 12-1 ES B142

Labs: (four sections)	P0101 Wednesday 2-5	ES 2101
	P0201 Thursday 2-5	ES 2101
	P0301 Friday 1-4	ES 2101

Instructor: Jim Mungall
ES 2120, telephone 416 978 2975, email mungall@es.utoronto.ca

TAs:
Neal Sullivan neal.sullivan@mail.utoronto.ca
Robin Wolf robin.wolf@utoronto.ca

Office Hours: Wednesday 9-12

Text: (optional, because it costs \$222!) Blatt, H and Tracy, R.J. Petrology: Igneous, Sedimentary and Metamorphic 3rd edition W.H. Freeman and Co. I have not ordered it in the bookstore but you might find it used or on Amazon.

Course notes: I will put my .ppt lectures onto the course website for you. They are mostly images, lightly supplemented by notes. Come to class.

Supplementary texts (optional, but useful for those continuing in Geology):
Nesse WD Introduction to Optical Mineralogy Second Edition Oxford University Press
Deer W.A., Howie R.A., and Zussman J. (1992) The Rock-Forming Minerals.
Kerr, P.F., (1933, 1942, 1959, 1961, 1977...) Optical Mineralogy, McGraw-Hill **my favorite**
Mackenzie, W.S., and Adams, A.E., (1994) A Color Atlas of Rocks and Minerals in Thin Section, Wiley.
MacKenzie, W.S., and Guilford, C. (1980) Atlas of rock-forming minerals in thin section, Longman
Yardley, B.W.D., MacKenzie, W.S., and Guilford, C. (1990) Atlas of metamorphic rocks and textures, Longman.

Marking:

Laboratory assignments: 11 (3% each)	33%
Mid-term test: 1 hour, March 1	15%
Lab test: 3 hours, April 5, 5 or 7	17%
Final examination: 3 hours, TBA	35%

Note: Old exams are available at <https://exams-library-utoronto-ca.myaccess.library.utoronto.ca/>

Missed Tests or lab exercises

Missed test or lab exercise and late hand-ins will only be excused for cases in which the absence was entirely beyond your control (e.g., medical reasons, personal affliction, bereavement), and only if the proper documentation is submitted. You must submit within one week of the missed test during regular office hours:

For medical reasons;

- 1) a complete **official U. of T. medical certificate** (the form is in your Timetable Booklet, or you can get it from your College Registrar). Only this form will be accepted.
- 2) A detailed letter from you requesting consideration for the missed test. The letter must include the following information: Your name, student number, e-mail address, course name and number, the date of the test, when you started to feel sick, and how it prevented you from studying and writing the test, when you returned to school. **Both** documents **must** be submitted to Scott Moore, Student Affairs Officer, Earth Sciences Department, 22 Russell Street, ESC Room 1066.

For non-medical reasons;

- 1) A detailed letter from you requesting consideration for the missed test. The letter must include the following information: Your name, student number, e-mail address, course name and number, the date of the test, and the reason why you were unable to attend. Reasons involving personal commitments such as vacation travel arrangements are not considered legitimate grounds for missing tests. The letter **must** be submitted to Scott Moore, Student Affairs Officer, Earth Sciences Department, 22 Russell Street, ESC Room 1066.

Scott's phone number is (416) 978-1240, and his e-mail is s.moore@utoronto.ca.

If your petition is successful, you will be informed by e-mail. The rest of the course and the examination will be re-weighted.

There will be no make-up test.

Academic offences

I have vigorously pursued academic offenses in the past and intend to continue to when circumstances warrant it. The following passages have been excerpted from the calendar of the Faculty of Arts and Sciences, and will be applied in this course to ensure that students get credit where credit is due.

It shall be an offence for a student knowingly:

- ☺ to use or possess an unauthorized aid or aids or to obtain unauthorized assistance in any academic examination or term test or in connection with any other form of academic work;
- ☺ to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e., to commit plagiarism.

These regulations exist to prevent the value of your work from being cheapened by other people who might want to copy or otherwise infringe upon it. I encourage students to work together on lab assignments and to study together for tests and exams, but the work you finally submit or write on your test papers **must be yours and yours alone**.

This means, don't copy and don't cheat.

ESS 222 2016 Lecture and Laboratory Schedule

Date	lect	Ch	Lecture Topic	Lab	Lab Topic
Jan 12	1	1	Igneous processes	Lab 1	Review of optical methods Optical properties of common minerals
Jan 13	2	2	Igneous minerals and textures		
Jan 19	3	3	Chemistry and classification of igneous rocks	Lab 2	Recognition of rock-forming minerals in hand specimen and thin section
Jan 20	4	4	Volcanism		
Jan 26	5	5	Melting: phase rule	Lab 3	Textures and mineralogy of plutonic rocks
Jan 27	6	5	Melting: binary systems		
Feb 2	7	5	Ternary systems: Origin of magmas by melting	Lab 4	Classification of plutonic rocks
Feb 3	8	6	Evolution of magmas		
Feb 9	9	7	Petrology of the mantle and plate tectonics	Lab 5	Textures mineralogy of extrusive rocks
Feb 10	10	8	Igneous rocks of the oceanic lithosphere		
February 15-19: Reading week - no lab, no lectures					
Feb 23	11	9	Igneous rocks of convergent margins	Lab 6	Classification of extrusive rocks
Feb 24	12	10	Intraplate magmatism		
Mar 1			Midterm test	Lab 7	Norm calculation Alkali-silica, Jenner, and AFM diagrams
Mar 2	13	11,12	Weathering and sedimentary rocks		
Mar 8	14	13,14	Clastic sediments	Lab 8	Textures and classification of clastic rocks
Mar 9	15	15	Limestones and dolostones		
Mar 15	16	16	Other types of sedimentary rocks	Lab 9	Textures and classification of carbonate rocks
Mar 16	17	17	Metamorphism: facies		
Mar 22	18	18	Metamorphism: processes and fabric development	Lab 10	Metamorphic facies for basaltic protoliths
Mar 23	19	19, 20	Metamorphism: Assemblages, reactions and equilibrium		
Mar 29	20	19, 20	Metamorphic facies, isograds and preservation	Lab 11	Metamorphic textures and classification for pelitic protoliths
Mar 30	21		Metasomatism and hydrothermal alteration		
Apr 5	22		Ore Deposits I		Lab test
Apr 6	23		Ore Deposits II		

TAs: Neal Sullivan Robin Wolf