MINERALOGY (EESC35)

Dear all,

Welcome to the ‘Mineralogy’ (EESC35) course! This course will bring to you the rich and colourful world of minerals, rocks and their associations. We shall have a look at basic ideas of crystallography, describe the mineral and (a) rock)

5. Chemical composition of minerals
    a. Composition of the Universe, the planets and the Earth
    b. Mineral compositions
    c. Determination of mineral compositions and mineral formulae
    d. Graphical representations of mineral compositions
6. Mineral stability and phase diagrams
    a. Basic thermodynamic values and stability
    b. The phase rule
    c. Phase diagrams (one, two and three component diagrams)
7.

11. Mineral identification techniques III: Optical microscopy
    a. Polarized light and its interaction with minerals
    b. Isotropic and anisotropic crystals
    c. Uniaxial crystals (minerals)
    d. Biaxial crystals (minerals)
    e. Extinction angle and sign of elongation
    f. Interference figures

A note on the tutorials for EESC35

Officially, this course has three hours of lectures (Fridays, 9:00 am – noon) and one hour of tutorials (Tuesdays, 1:00 pm – 2:00 pm), held at the same classroom (SW 313). We shall have our tutorial during the first week of classes: the first tutorial will be on Tuesday, January 15th. The material in this course and the size of our class are, however, specific: small class and availability of models and samples in the classroom will enable us to have a mix of lectures and tutorials in parallel. The tutorials are still important and mandatory: during tutorials you will have a chance to work more independently in order to strengthen your knowledge, during the lectures you'll receive more guidance throughout the material. Also, we'll have tutorial quizzes as described further below.

Office hours should ideally be held in the classroom (and not in the office) because we'll need many gadgets from the classroom to work with. The exact time slot for this type of office hours will be provided to you as soon as the full schedule for our classroom is revealed. This does not mean that I will not see you in my office if you need help: you are very much encouraged to bring your problems and questions to me during my office hours (or set up an appointment if you have a conflict with my office hours) in SW313 or anywhere else!

Here are some tools and gadgets that you should have for the course (both in class and for homework) – I know some of you might find them odd:

1. A drafting compass (for drawing cycles and arcs)
2. A drafting ruler
3. A notebook for tutorials and practice (having some simple drafting paper, without lines or squares, is also very useful for this course)
4. Useful would be also a structure model kit (if you have one from any chemistry course!)

Lecture notes for the course will be posted on the course intranet site at least 24 h in advance of each lecture. They are your starting point – go over the notes, then read the assigned parts of your textbook. We do expect knowledge of both lecture notes and textbook material from you people!

Marking scheme

Your progress in this course will be evaluated as follows:

Two tutorial tests (10% each)	20%
Term test	25%
Term paper	15%
Final exam	40%
TOTAL	100%

Tutorial tests. Two tutorial tests (not necessarily conducted during the tutorials – they might be scheduled during the lectures as well) are designed to test the material we specifically concentrate on during tutorial practice. The exact dates will be announced but the first test should be ahead of the second one should be after the term test. The first tutorial test will cover crystallography (particularly crystal morphology and related concepts). You will be given two to three crystal forms and you task will be to correctly classify each, determine the symmetry and do the projection (you'll have about 30 min to write this test).

The second tutorial test will look at the descriptive mineralogy. This time you'll be given two or three minerals. Your task is to identify each sample, classify it and briefly explain how you determined what you had been given. Again, you'll have about 30 min to write this test.

Term test. Term test will be scheduled outside of lecture and tutorial hours. It depends on the campus administration when exactly the test will be scheduled. The test will cover the material from the lectures – you will not be given any crystal, mineral or rock samples for this test. The questions will have a short answer format. In this case your knowledge and understanding of basic concepts will be tested.

Term paper. You will be asked to write a short paper (1250–1500 words) on two to three mineral species you saw in the Royal Ontario Museum and found interesting. The format and other details will be posted on the intranet. The due date will be after the term test (exact date will be announced in class/on intranet).

Final exam: Our final exam is cumulative. Similarly to the term test, you will not be given any crystal models or mineral/rock samples. Rather, it is going to test you r knowledge and understanding of basic concepts and ideas covered in the course.