

SIO 120: Introduction to Mineralogy

Lecture (Vaughan 147) M/W 1:00 PM – 2:20 PM

Lab (Vaughan 147) M/W 2:30 PM – 3:50 PM

Instructor- Geoffrey Cook

Office- Vaughan 303

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Office Hours- M/W 11-12 and by appointment

Class Organization and grade breakdown:

Lab exercises: 45%

Midterm: 20%

Final exam: 20%

Reading quizzes and assignments: 15%

The lab portion of the class will consist of regular lab exercises that will be due weekly. One lab quiz will be given as well. The lecture portion of the class will include daily lectures, a midterm and a final exam, reading quizzes (online), and a research-based homework assignment.

The lecture text is *Manual of Mineral Science 23rd Ed.*, by Klein and Dutrow. The text is required and will supplement the lectures. You are responsible for reading the chapters assigned, and the exams will include material covered in the text. Please note, however, that there will be information covered in class that is not covered in the book.

Absences and Missed Work:

In the case of legitimate conflicts, notification is required at least one week prior to the regularly scheduled examination. In the case of other types of emergencies or eventualities (sickness, etc.) notification is appreciated as soon as possible and must be verified by a third party. *All excuses must be in writing.*

Academic Integrity- Students' Responsibilities:

Students are expected to complete the course in compliance with the instructor's and university standards. No student shall engage in any activity that involves attempting to receive a grade by means other than honest effort. University policies, regulations, and standards of conduct can be found on the Academic integrity office website at http://www.ucsd.edu/current-students/_organizations/academic-integrity-office/.

Accommodations for Documented Disabilities:

Any student with a documented disability is welcome to contact me as early in the semester as possible so that we may arrange reasonable accommodations. As part of this process, please be in touch with the UCSD Office of Disability Resources (<http://disabilities.ucsd.edu/>).

SIO 120 Schedule

Note: This syllabus is an outline of proposed events. It is subject to change; however, never without notification, and never to advance the due dates of assignments.

LECTURE TOPIC:

LAB TOPIC:

WEEK 1: JAN. 9 AND 11: INTRODUCTION

M- Introduction to mineralogy: what is a mineral, why are they important? (Ch.1)
W- Physical properties of minerals (Ch.2)

M- Hand sample identification of common minerals
W- Hand sample identification of common minerals

WEEK 2: JAN. 16 AND 18: CRYSTALLOGRAPHY

M- NO CLASS (MLK Holiday)
W- Crystallography: symmetry operators, crystal classes, Hermann-Mauguin notation (Ch. 6-10)

M- NO LAB (MLK Holiday)
W- Crystallography I- Symmetry patterns

WEEK 3: JAN. 23 AND 25: CRYSTALLOGRAPHY

M- Crystallography: crystal systems, crystal axes, miller index (Ch. 6-10)
W- Crystallography: miller index, defects, twins (Ch. 6-10)

M- Crystallography II- Crystal models and systems
W- Crystallography II- Crystal models and systems

WEEK 4: JAN. 30 AND FEB. 1: MINERAL CHEMISTRY

M- Mineral chemistry and bonding (Ch. 3+4)
W- Systematic mineralogy; nesosilicates + sorosilicates (Ch. 18-19)

M- Crystallography III- Miller index
W- Nesosilicates + sorosilicates

WEEK 5: FEB. 6 AND 8: SYSTEMATIC MINERALOGY

M- Inosilicates + tectosilicates (Ch. 18-19)
W- Cyclosilicates + phyllosilicates (Ch. 18-19)

M- Inosilicates + tectosilicates
W- Cyclosilicates + phyllosilicates

WEEK 6: FEB. 13 AND 15: SYSTEMATIC MINERALOGY

M- MIDTERM EXAM
W- Non-silicates (Ch. 15-17)

M- Native elements, sulfides
W- Halides and carbonates

LECTURE Topic:

LAB Topic:

WEEK 7: FEB. 20 AND 22: SYSTEMATIC MINERALOGY

M- NO CLASS (PRESIDENTS' DAY)

W- Non-silicates (Ch. 15-17)

M- NO LAB (PRESIDENTS' DAY)

W- Oxides, sulfates, phosphates, and vanadates

WEEK 8: FEB. 27 AND MAR. 1: OPTICAL MINERALOGY

M- Optical mineralogy (Ch. 13)

W- Optical mineralogy (Ch. 13)

M- Opaque and isotropic minerals in thin section

W- Uniaxial minerals in thin section

WEEK 9: MAR. 6 AND 8: OPTICAL MINERALOGY

M- Optical mineralogy (Ch. 13)

W- Optical mineralogy (Ch. 13)

M- Uniaxial minerals in thin section

W- Biaxial minerals in thin section

WEEK 10: MAR. 13 AND 15: OPTICAL MINERALOGY AND ANALYTICAL MINERALOGY

M- Analytical techniques in mineralogy (Ch. 14)

W- Minerals as natural resources and as hazards

M- Biaxial minerals in thin section

W- Minerals in rocks and LAB QUIZ (systematic mineralogy and minerals in thin section)