

# **SIO 120: Introduction to Mineralogy**

**Lecture (Vaughan 100)** 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

**Email-** gwcook@ucsd.edu; **Phone-** 534-3406

**Office Hours-** TH 10-11 (Vaughan 303- SIO); F 11-12 (Galbraith 366); and by appointment

## ***Class Organization and grade breakdown:***

Lab exercises: 40%

Midterm: 20%

Final exam: 25%

Reading quizzes, homework, and in-class assignments: 15%

The lab portion of the class will consist of regular lab exercises that will be due weekly. One lab exam 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 23<sup>rd</sup> 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/](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. 6 AND 8: INTRODUCTION***

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

**M-** Introduction  
**W-** Hand sample ID of common minerals

### ***WEEK 2: JAN. 13 AND 15: CRYSTALLOGRAPHY***

**M-** Crystallography: symmetry operators, crystal classes, Hermann-Mauguin notation (Ch. 6-10)  
**W-** Crystallography: crystal systems, crystal axes, miller index (Ch. 6-10)

**M-** Crystallography I- Crystal models and systems  
**W-** Crystallography I- Crystal models and systems

### ***WEEK 3: JAN. 20 AND 22: CRYSTALLOGRAPHY***

**M-** NO CLASS (MLK Holiday)  
**W-** Crystallography: miller index, defects, twins (Ch. 6-10)

**M-** NO LAB (MLK Holiday)  
**W-** Crystallography II. Miller index and polar projections

### ***WEEK 4: JAN. 27 AND JAN. 29: MINERAL CHEMISTRY***

**M-** Introduction to systematic mineralogy/non-silicates  
**W-** Non-silicate minerals

**M-** Non-silicates I  
**W-** Non-silicates I

### ***WEEK 5: FEB. 3 AND 5: SYSTEMATIC MINERALOGY***

**M-** Silicate minerals (Ch. 18-19)  
**W-** Silicate minerals (Ch. 18-19)

**M-** Non-silicates II  
**W-** Non-silicates II

### ***WEEK 6: FEB. 10 AND 12: SYSTEMATIC MINERALOGY***

**M-** MIDTERM EXAM  
**W-** Silicate minerals (Ch. 18-19)

**M-** Silicates I  
**W-** Silicates II

**LECTURE Topic:**

**LAB Topic:**

***WEEK 7: FEB. 17 AND 19: SYSTEMATIC MINERALOGY***

**M- NO CLASS (PRESIDENTS' DAY)**  
**W- Mineral chemistry and bonding (Ch. 3+4)**

**M- NO LAB (PRESIDENTS' DAY)**  
**W- Finish silicate mineral ID's and LAB QUIZ (mineral ID in hand specimen)**

***WEEK 8: FEB. 24 AND FEB. 26: 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. 2 AND 4: 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. 9 AND 11: 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 (minerals in thin section)**

**FINAL EXAM Friday, March 22<sup>rd</sup> 11:30 -2:30 PM in Vaughan 100**