

Instrumental Techniques in Geochemistry  
GEOL 487/587  
Course Outline

Objectives: To learn fundamentals of analytical techniques in geochemistry, with emphasis on techniques for samples in solution, or that can be put into solution. Practical applications are stressed. Successful completion of this course will qualify the student to operate all analytical instrumentation in the geochemistry laboratories of McClure Hall.

Topics to be covered:

- I. Introduction
- II. Sampling and sample preparation
- III. Sample decomposition
  - a) Acid digestion
  - b) Fusion
  - c) Separation and preconcentration
- IV. Ion chromatography
- V. Atomic spectroscopy
  - a) Atomic absorption
  - b) Atomic emission (ICP-AES)
  - c) Atomic fluorescence
- VI. Mass spectrometry  
- ICP-MS
- VII. Colorimetry - Spectrophotometry
- VIII. Fourier Transform IR Spectroscopy (FTIR)
- IX. Ion specific electrodes (ISE)
- X. Potentiometric titration
- XI. Neutron Activation