

## Chem 274 – Spring 2020 Principles of Analytical Chemistry

**Instructor:** Professor Tom Apple (Office: Bilger 245 – Phone 6-8038 - Email: [tapple@hawaii.edu](mailto:tapple@hawaii.edu))

**Textbook:** "Quantitative Chemical Analysis", Daniel C Harris, 9th edition, Freeman (2010) and "Solutions Manual"

**Office Hours:** Wednesday 11:30 – 12:30; Thursday 11:30 – 12:30

**Prerequisites:** Chem 162 or 171; Math 215 or Math 241 or Math 251A, or equivalent

**Exams:** Four 1-hour mid semester exams (25 pts each) or four exams (15pts. each) and a 2-hour cumulative Final (40 pts).

**Course Grade:** Will be based on the scores you obtain on the exams (100 pts).

There will be no makeup exams so please note carefully the date for the exams on the next page. If you do miss an exam, email me as soon as possible (within 24 hrs of the time of the test) to explain why you missed the exam. Missing an exam due to illness will usually be an acceptable excuse as long as a valid Doctor's note is provided.

**Homework:** Practice problem sets will be suggested but will not be collected or graded.

### Learning Objectives:

Develop an understanding of the physical principles of analytical chemistry.

Develop an appreciation for how error analysis and statistics determine the accuracy one can expect from experimental measurements.

Explore the role chemical equilibria play in performing chemical measurements.

Understand fundamentals of separations

### Course Schedule – Chem 274 – Spring '20

1. Experimental Error (3)
  2. Statistics (4, 5)
  3. Chemical Equilibrium (6-8) **EXAM I – February 6**
  4. Monoprotic Acid/Base/Buffers (9, 10)
  5. Polyprotic Acid Base Titrations (9-11) **EXAM II – March 3**
  6. Complexometric Titrations (12, 13)
  7. Electrochemistry (14,15) **EXAM III – March 31**
  8. Redox Titrations (16)
  9. Separations (23-25) **EXAM IV - 23**
- FINAL (2 hours) tbd – **May 11-15**