UNIVERSITY OF CALGARY
DEPARTMENT OF CHEMISTRY
COURSE SYLLABUS
FALL 2014

COURSE: CHEMISTRY 515, Advanced Instrumental Analysis

LEC	DAYS	TIME	ROOM	INSTRUCTOR	OFFICE	PHONE	EMAIL	OFFICE HOURS
L01	MWF	9:00-9:50	EEEL 345	Dr. A. S. Hinman	SA 144B	220-2017	ashinman@ucalgary.ca	MWF 12:00-1:00 TR 2:00-3:00

Textbook: Principles of Instrumental Analysis, Skoog et al., 6th edition

List of Topics and Suggested Reading:
1. Generalized Instrumentation, Figures of Merit, Chapter 1
2. Evaluation of Analytical Data (Review) and Statistics of Linear Regression and Calibration Curves
   Chapter 1, Appendix 1
3. Electrical Circuit Components and Circuits, Chapter 2: A,B
4. Operational Amplifiers in Chemical Instrumentation, Chapter 3: A,B,C,E
5. Concepts in Digital Measurements, Chapter 4: A,B,C
6. Signals and Noise, Chapter 5
7. Monochromators and Light Detectors, Chapter 7: A,C,E
8. UV, visible, and near infrared spectroscopy, Chapter 13
9. Atomic Absorption Spectroscopy, Chapter 9
10. Atomic Emission Spectroscopy, Chapter 10: A
11. Fourier Transform Infrared Spectroscopy, Chapter 16: B1 ; Chapter 7: I
12. Mass Spectrometry, Chapter 11: A,B,C
13. Chromatographic Separations, Chapter 26
14. Gas Chromatography, Chapter 27
15. High-Performance Liquid Chromatography, Chapter 28: A-G

List of Laboratory Experiments
1. Gas Chromatography - Determination of Alcohols in Sherry
2. High Performance Liquid Chromatography
3. Ion Chromatography with Indirect UV detection
4. Uv-visible Spectrophotometry
5. Analysis of Drugs of Abuse by GC- Mass Spectrophotometry
6. Atomic Absorption and Flame Emission Spectrophotometry
7. Lead in Wine by Graphite Furnace Atomic Absorption Spectroscopy
8. Voltammetry and Anodic Stripping Analysis
9. Inductively Coupled Plasma Atomic Emission Spectroscopy
10. Trace Nutrients in Cereal by Inductively Coupled Plasma Mass Spectrometry
11. Copper Speciation by Ion-Selective Electrode and Atomic Spectroscopy

Department Approval: _____ Date: _____