Administrative Unit: Science Department

Course Prefix and Number: CHEM 302

Course Title: Qualitative Analysis

Number of Credit Hours: 5 Lecture Hours: 3 Laboratory Hours: 2

Catalog Description: Standard qualitative analysis will be studied including sample treatment and data interpretation. Some quantitative analysis not covered in CHEM 301 will also be included in this course. Instrument components, function and use will be discussed. Laboratory work is included as part of the course. Prerequisite: CHEM 301. $20 lab fee. Occasional offering.

Prerequisite(s)/Corequisite(s): CHEM 301

Text(s): Current editions of:
Analytical Chemistry. G.D. Christian, Wiley

Course Objectives:
• To prepare samples for qualitative analysis.
• To apply instrumental techniques in separation and identification of compounds.
• To interpret data acquired from analysis.

Measurable Learning Outcomes
• Obtain a representative sample of the material to be analyzed.
• Separate the sample into components using precipitation, chromatography, and electrophoresis.
• Calibrate analytic instruments.
• Operate UV, IR, Raman, and NMR spectrometers.
• Utilize potentiometric, coulometric, and voltammetric, and calorimetric techniques.
• Describe mass spectral analysis.
• Explain radiochemical methods of analysis.
• Perform functional group classification tests.
• Infer composition and structure of compounds from analytic data.

Topical Outline (major areas of coverage):
• UV spectrometry
• IR spectrometry
• Raman spectroscopy
• NMR spectroscopy
• Potentiometry
• Coulometry
• Voltammetry
• Electrophoresis
- Thermal Methods
- Radiochemical Methods

Recommended maximum class size for this course: 20

Library Resources: Online databases are available at http://www.ccis.edu/offices/library/resources.asp. You may access them from off-campus using your eServices login and password when prompted.

Prepared by: Julie Estabrooks

Name ___________________________ Signature ___________________________

Date: September 27, 2005

NOTE: The intention of the master syllabus is to provide an outline of the contents of this course, as specified by the faculty of Columbia College, regardless of who teaches the course, when it is taught or where it is taught. Faculty members teaching this course for Columbia College are expected to facilitate learning pursuant to the course objectives and cover the subjects listed in the topical outline. However, instructors are also encouraged to cover additional topics of interest so long as those topics are relevant to the course’s subject. The master syllabus is, therefore, prescriptive in nature but also allows for a diversity of individual approaches to course material.

Office of Academic Affairs
12/04