INTRUMENTAL METHODS
CHEMISTRY 302
Professor: Dr. Stacy Brown
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Research lab: Byrd Hall, Room 313
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OFFICE HOURS: Monday, Wednesday: 9-9:50AM
                             Monday: 2-2:50PM
                             Thursday: 9-10:50AM
                             Other times can be arranged by appointment.

CLASS MEETINGS: Monday, Friday: 1-1:50PM (Lecture)
                        Wednesday: 1-4:50PM (Lecture & Lab)

GOALS:

➢ To learn the fundamental principles behind the instrumental analysis of chemical
  compounds
➢ To develop a working knowledge of the design and operation of common instruments
  used by analytical chemists in industry and research
➢ To gain experience with execution of chemical analysis and data processing
➢ To develop an understanding of the respective strengths, weaknesses, and limitations of
  various analytical techniques

TEXTBOOK:

Principles of Instrumental Analysis, 5th edition by Skoog, Holler, and Nieman

TESTING/GRADING: Exam 1: 10% 90-100 = “A”
                             Exam 2: 10% 80-89 = “B”
                             Lab Reports: 40% 70-79 = “C”
                             Lab Notebook: 10% 60-69 = “D”
                             Homework: 5% below 60 = “F”
                             Final Exam: 25%

                                  100%

Make-up exams can only be arranged in the case of family or medical emergencies (i.e. situations
that would warrant emergency leave). Late homework problems will not be accepted. Late lab
reports will be penalized 10% for each day late. Lab reports are due at the beginning of class,
therefore it does not behoove you to miss class to complete your report – you will still be
penalized 10%!

ABSENCES AND TARDINESS:

Attendance at each class is mandatory, and punctuality is expected as described in the college
catalog. If an absence cannot be avoided, the student should notify the professor in advance, and
the student is responsible for any material missed. According to Citadel policy, the absolute
maximum number of absences allowed is 20% of the total class meetings; exceeding this limit
may result in a failing grade and dismissal from the class. If an unexcused absence occurs on an
exam date, a grade of zero will be assigned for that exam.
WEBCT RESOURCES:

CHEM 302 information can be accessed via WebCT. You can get to WebCT from The Citadel home page. For your first log-in to WebCT, your log-in name will be the numerical digits from your Citadel i.d. #, and your password will be the last 4 digits of your social security number. After one successful log-in, you will be allowed to change this information.

LAB:

- **LAB NOTEBOOK:**

  You are required to keep a detailed lab notebook throughout the course of the semester (see handout). You should purchase a notebook with bound pages that cannot be removed. Notebooks with carbon copy pages are nice but are not mandatory. The assessment of your lab notebook at the end of the semester counts for 10% of your final grade.

- **LAB EXPERIMENTS AND REPORTS:**

  The lab time will be allocated to complete 3 multi-week projects, an exercise on analytical method validation, and an exercise on spectral interpretation. The projects are as follows:

  1. Separation and quantitation of organic components in gasoline and jet fuel samples by GC-MS
  2. Comparative study of UV-Vis spectroscopy versus HPLC with UV detection for the detection and quantitation of caffeine and preservative levels in commercial soft drinks
  3. Synthesis and characterization of various metal (acac) complexes

  Upon completion of each project, a (typed) formal lab report is to be submitted (see handout). A tentative schedule of experimental progress and lab report due dates is attached. Our time allocated for lab is very brief, so preparation for lab must be completed prior to actual class time in order to maximize the use of instrument time. These experiments are not ‘cook-book’ and will require you to do a great deal of the experimental planning. A research paper pertaining to a topic of your choice from the 2004 Pittsburgh Conference will be counted as one lab report. Your lab report average will include the method validation and spectral interpretation exercises, the grade from your Pittcon research paper, and the grades from each project report.