Course: Instrumental Methods of Analysis Lab (CHEM-4234) 2 credits
Instructor: Dr. Arthur R. Murphy
Office: Dickinson Hall Room 4413
Phone Number: (201)-692-2322
e-mail: murphy@fdu.edu
Office Hours: M: 11:00 AM – 11:50 PM
F: 11:00 AM – 11:50 PM
F: 11:00 AM – 11:50 PM and by appointment.

Semester: Fall 2014
Required Text: None. Handouts for the experiments will be distributed.
Classroom 5519: Day and Time: Monday: 5:25 PM – 9:00 PM
Or Wednesday 11:20 AM – 2:50 PM

2008 – 2010 Catalog Description:
Practical laboratory experiments in absorption, emission, and interpretative spectroscopy, electroanalytical methods, chromatography, and elementary electronics.

Intended Audience:
This course is designed for students majoring in chemistry. Students majoring in other Natural Sciences may also find the course of interest.

Teaching Methodologies:
This is a hands-on course in which student laboratory activities are closely monitored. The experiments which will be performed are designed to complement material which will be presented in the lecture portion of the course.

Course Objectives and Outcomes:
Objective 1: Students should understand applications and techniques of atomic and molecular spectroscopy.

Outcome 1.1: Students will perform a variety of experiments using IR, UV, Visible, AA, and fluorescence.

Objective 2: Students should understand applications and techniques of electroanalytical chemistry.

Outcome 2.1: Students will perform a variety of experiments using potentiometry, and coulometry.

Objective 3: Students should understand simple electronic circuits and their use.

Outcome 3.1: Students will perform a variety of experiments in analogue and digital electronics.

Outcome 3.2: Students will learn about Op Amps.

Laboratory Safety:
All students are expected to follow all laboratory safety and etiquette rules. These rules will be distributed during the first laboratory period. Equipment is not to be abused, and the lab is to be kept clean and orderly. Points will be deducted for violations of any of these rules.
Syllabus for Instrumental Methods of Analysis Lab. (continued)

Experiments:
Experiments will be chosen by the instructor from the following list:

1) The Analysis of a two component mixture.
2) Nephelometry
3) Photometric titrations
4) Fluorescence
5) Determination of a formula of a complex using the mole ratio method and/or the method of continuous variations.
6) Coulometric Titrations
7) Conductometric Titrations
8) Determination of I- using an ion selective electrode
9) Potentiometric titrations of Phosphoric acid and mixtures
10) A computer exercise in simplex techniques
11) Interpretive spectroscopy (Computer presentations and lab exercises)
12) IR of aldehydes and ketones. Sample preparation techniques
13) Review of elementary electronics, op amps, and digital circuitry
14) Introduction to interfacing
15) HPLC computer simulation and experiment
16) Scanning Tunneling Microscopy
17) Atomic Absorption Spectroscopy

Tentative Schedule for the Experiments
During the first laboratory section, a laboratory experiment schedule will be established.

Policies:
The last day for withdrawing from the course with a grade of "W" is Oct 31, 2014

Grading Policy:
The laboratory grade is based entirely on the laboratory reports submitted by each student. Important factors are:

1) Neatness
2) Clarity
3) Proper English
3) Thoroughness
4) Accuracy
5) Discussion of errors
6) Adherence to the lab report format that will be distributed during the first laboratory period.

Note that sharing of computer files in their entirety or in part is not allowed. Unless given instructions to the contrary all lab reports are due two weeks after the completion of the laboratory experiment.

Please be sure to read FDU’s Academic Integrity Policy on the WEB.

Academic Integrity Policy
Students enrolled at Fairleigh Dickinson University are expected to maintain the highest standards of academic honesty. Students have the responsibility to each other to make known the existence of academic dishonesty to their course instructor, and then, if necessary, the department chair, or the
academic dean of their College. Course instructors have the added responsibility to state in advance in their syllabi any special policies and procedures concerning examinations and other academic exercises specific to their courses. Students should request this information if not distributed by the instructor.

Academic dishonesty includes, but is not necessarily limited to, the following:

1. **Cheating**—Giving or receiving unauthorized assistance in any academic exercise or examination. Using or attempting to use any unauthorized materials, information, or study aids in an examination or academic exercise.

2. **Plagiarism**—Representing the ideas or language of others as one's own. A more complete description is listed below in the section titled “Plagiarism Described.”

3. **Falsification**—Falsifying or inventing any information, data, or citation in an academic exercise.

4. **Multiple Submission**—Submitting substantial portions of any academic exercise more than once for credit without the prior authorization and approval of the current instructor.

5. **Complicity**—Facilitating any of the above actions or performing work that another student then presents as his or her assignments.

6. **Interference**—Interfering with the ability of a student to perform his or her assignments.

**Plagiarism Described**

As defined by the Council of Writing Program Administrators, plagiarism “occurs when a writer deliberately uses someone else’s language, ideas, or other original (not common-knowledge) material without acknowledging its source.” (“Defining and Avoiding Plagiarism: The WPA Statement on Best Practices.”<http://www.wpacouncil.org/positions/WPAplagiarism.pdf>)

Plagiarism can occur in the following ways:**

- Using text from another source (e.g. websites, books, journals, newspapers, etc.) without documenting the source;
- Using direct quotation from a text without quotation marks, even if the source has been cited correctly;
- Paraphrasing or summarizing the ideas or text of another work without documenting the source;
- Substituting a word or phrase for the original while maintaining the original sentence structure or intent of the passage;
- Using graphics, visual imagery, video or audio without permission of the author or acknowledgment of the source;
- Translating text from one language to another without citing the original work;
- Obtaining packaged information, foreign language translation or a completed paper from an online source and submitting it as one’s own work without acknowledgment of the source; and
- Presenting the work of another student as one’s own.
Fairleigh Dickinson students are responsible for authenticating any assignment submitted to an instructor should the instructor request it. Students must be able to produce proof that the assignment they submit is actually their own work. Therefore, students must engage in a verifiable work process on all assignments:

- Keeping copies of all drafts of work;
- Making photocopies of research materials (including downloads from websites);
- Writing summaries of research materials;
- Keeping Writing Center receipts;
- Keeping logs or journals of their work on assignments and papers; and
- Saving drafts or versions of assignments under individual file names on a computer, external drive or other source.

In addition to requiring students to authenticate their work, Fairleigh Dickinson University instructors may employ various other means of ascertaining authenticity—such as using search engines to detect plagiarism, using external plagiarism detection services, creating quizzes based on student work, and requiring students to explain their work and/or process orally. The inability to authenticate work is sufficient grounds for a charge of plagiarism.

If subsequent evidence of plagiarism should be found after a grade has already been assigned, instructors have the right to lower the grade and/or apply one of the sanctions listed below.

**Sanctions:** Any student violating academic integrity will, for the first offense, receive one or a combination of the following penalties imposed by the faculty member:

1. *No credit (0) or Failure* for the academic exercise.
2. *Reduced grade* for the course.
3. *Failure* in the course.
4. Recommendation for *Academic Probation* to the dean of the college in which the student is registered.

   The instructor shall file a notice of the penalty in the student’s file maintained in the campus Office of Enrollment Services.

   In cases of interference and complicity, whether or not the student is registered in the affected course, the incident and penalty shall be recorded in the student's file maintained in the campus Office of Enrollment Services.

   For a subsequent violation of academic integrity, a student will be subject to any combination of the above sanctions, and, after due review by the academic dean according to the procedure below, one of the following:

   1. *Suspension* from the University for one year. Readmission will be contingent upon the approval of the academic dean.
   2. *Dismissal* from the University.
3. **Dismissal from the University identified on the student’s academic transcript** as a result of a violation of the Academic Integrity Policy.

**Procedure:** When a faculty member believes that a student has violated the Academic Integrity Policy, the faculty member shall discuss the incident with the student as soon as possible. If after the conference, the faculty member determines that an act of academic dishonesty has occurred, the faculty member may impose the appropriate sanctions. Within five days of the faculty member’s action, the faculty member shall notify his or her department chair/school director in writing of the circumstances of the violation and the imposed sanctions. Within five days the academic department/school shall notify the student via certified mail/return receipt of the sanctions and the appeals’ procedures. Copies of the notice shall be sent to the chair of the department or director of the school of the student's major, the dean of the college in which the course is offered and the campus Office of Enrollment Services. The student may appeal the instructor’s decision as outlined below. Upon completion of the appeals process, the dean shall notify the student of the final disposition of the matter and the sanctions to be imposed, if any, via certified mail with copies to the faculty member, the department chair/school director and the campus director of enrollment services.

**Appeals Process:** A student who is charged with violating the Academic Integrity Policy by an instructor may appeal in writing to the chair of the department or the director of the school in which the alleged incident took place. The letter must state the specific grounds for the appeal. The student must submit a written appeal to the department chair or school director within 14 days of the receipt of the notification of the imposed sanctions. Failure to make an appeal within this 14-day period shall constitute a waiver of the appeal right. Within 10 working days of the receipt of the student’s appeal, the chair/director will review the circumstances of the alleged violation with the student and the instructor and recommend upholding, modifying, or dismissing the sanctions imposed by the instructor. The chair/director, within five working days, shall notify the student in writing via certified mail of the outcome, with copies to the instructor, the chair/director of the student’s major, the academic dean of the college in which the course is taught and the campus director of enrollment services. If it is determined that a violation of academic integrity did not occur, the student’s final grade in the course cannot be based on the assumption of such violation. If the differences between the instructor and the student are not resolved by this review, the student may appeal the outcome to the dean of the college in which the course is offered.

Within 10 working days of the department chair/school director’s notification, the student may submit a written appeal to the dean of the college in which the alleged dishonesty took place. The letter must state the specific grounds for the appeal. Upon receipt of the student’s appeal, the dean shall provide the faculty member and his or her chair/director with a copy of the student’s appeal. Within 10 working days the dean shall convene a five-person hearing committee consisting of a faculty member at large from the college in which the course is offered, the dean or his or her designee, the campus dean of students or his or her designee, a faculty member from the department or school of the student’s major, and a student, selected by the campus dean of students, from the college in which the alleged dishonesty took place. The hearing will be chaired by the college dean or his or her designee. The role of the appeals committee is to review the record of the matter and determine whether a finding of academic dishonesty is founded and whether a sanction is consistent with the terms of this policy. The committee shall base its decision upon a review of the record but may meet with the student and the faculty member to secure additional information.
to help it in making a determination about the merits of the appeal. The committee can uphold, modify or dismiss the sanction imposed by the instructor. The college dean shall notify the student of the committee’s decision within five working days of the hearing. For a second offense of academic dishonesty, the academic dean can suspend or dismiss the student as indicated above.

For a sanction of suspension or dismissal imposed by the academic dean, the student may file a written appeal to the University Provost/Senior Vice President for Academic Affairs within 10 working days of receiving the notification of the dean's decision. The University Provost, or his or her designee, shall review the case within 10 working days of the receipt of the appeal. The University Provost shall make the final decision, using any appropriate resource to assist in deciding the appeal. The University Provost shall then notify all parties in writing of his or her final decision within five working days of his or her decision.

Reviewed: August 2011