Resolution # 02 2010-2011
College Senate

TO: Dr. John R. Halstead, College President
FROM: The College Senate: September 27, 2010
RE:
   I. Formal Resolution (Act of Determination)
   II. Recommendation (Urging the Fitness of)
   III. Other, For Your Information (Notice, Request, Report, etc.)

SUBJ: Replacement of CHM 303 Analytical Chemistry with CHM 313 Quantitative Chemical Analysis (Routing #01-10-11UC)

Signed: ____________________________ Date: 10/1/10
(fore R. Torre, 2010-11, College Senate President)

Please fill out the bottom portion and follow the distribution instructions at the end of this page.

TO: Jose R. Torre, College Senate President
FROM: John R. Halstead, College President
RE:
   I. Decision and Action Taken on Formal Resolution (circle choice)
      a. Accepted - Implementation Effective Date: ____________
      b. Deferred for discussion with the Faculty Senate on ____________
      c. Unacceptable for the reasons contained in the attached explanation

   II, III. Response to Recommendation or Other/FYI
      a. Received and acknowledged 10/10/10
      b. Comment:

Signed: ____________________________ Date: 10/16/10
(Dr. John R. Halstead, President, The College at Brockport)

DISTRIBUTION
Upon approval, the College President will forward copies of resolutions to his staff who will, in turn, forward copies to their staff. The College Senate Office will post resolutions to the College Senate Web at http://www.brockport.edu/collegesenate/resolutions.
COLLEGE SENATE OFFICE
RESOLUTION PROPOSAL COVER PAGE

Routing Number
Routing # assigned by Senate Office
#01_10-11UC
Use routing number and title in all reference to this proposal.

Replaces Resolution
#

DEADLINE FOR SUBMISSIONS: FEBRUARY 28
Incomplete proposals or proposals received after the deadline may not be reviewed until next semester.

INSTRUCTIONS – please, no multiple attachments – each proposal must be submitted electronically as one document.
• Submit only complete proposals. Include support letters from department chair and dean.
• Proposals must be prepared individually in Word format using committee guidelines available at brockport.edu/collegesenate/proposal.html.
• Fill out this cover page for each proposal and insert it electronically as the front page of your document. (/collegesenate/proposal.html)
• Email whole proposal with cover page as one document to senate@brockport.edu and facprez@brockport.edu.
• All updates must be resubmitted to the Senate office with the original cover page including routing number.
• Questions? Call the Senate office at 395-2586 or the appropriate committee chairperson.

1. PROPOSAL TITLE: Please be somewhat descriptive, ie. Graduate Probation/Dismissal Proposal rather than Graduate Proposal.

Replacement of CHM 303 Analytical Chemistry with CHM 313 Quantitative Chemical Analysis as the analytical chemistry course required for the Medical Technology degree program (B.S.) and Biology degree program (B.S.)

2. BRIEF DESCRIPTION OF PROPOSAL:
The Chemistry department is adding a new prerequisite to CHM 303 to better prepare their majors for a B.S. degree. This inadvertently increases the co-requisite course load for current Medical Technology and Biology undergraduate degree students. To accommodate the need for an analytical chemistry course for non-chemistry majors, they developed CHM 313, Quantitative Analytical Chemistry. After reviewing the curriculum, we feel it adequately addresses the needs of our students, therefore we are proposing to replace CHM 303 with CHM 313 for both degrees.

3. WILL ADDITIONAL RESOURCES AFFECTING BUDGET BE NEEDED? _X_ NO ___ YES EXPLAIN YES

4. HOW WILL THIS EFFECT TRANSFER STUDENTS:
N/A

5. ANTICIPATED EFFECTIVE DATE:
Immediatley

6. SUBMISSION & REVISION DATES: PLEASE PUT A DATE ON ALL UPDATED DOCUMENTS TO AVOID CONFUSION.

<table>
<thead>
<tr>
<th>First Submission</th>
<th>Updated on</th>
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<td>8/25/10 (received at Senate)</td>
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7. SUBMITTED BY: (contact person)

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
<th>Phone</th>
<th>Email</th>
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<tbody>
<tr>
<td>Laurie Cook</td>
<td>BIO</td>
<td>395-5757</td>
<td><a href="mailto:lcook@brockport.edu">lcook@brockport.edu</a></td>
</tr>
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8. COMMITTEES TO COPY: (Senate office use only)

<table>
<thead>
<tr>
<th>Standing Committee</th>
<th>Forwarded For Approval To</th>
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<tr>
<td>__ Enrollment Planning &amp; Policies</td>
<td>Committee for approval</td>
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<td>__ Faculty &amp; Professional Staff Policies</td>
<td>Executive Committee</td>
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<td>__ General Education &amp; Curriculum Policies *</td>
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<td>__ Graduate Curriculum &amp; Policies</td>
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<td>__ Student Policies</td>
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* follow special Gen Ed procedures for submission of General Education proposals at “How to Submit Proposals” on our Website.

NOTES:
1. Side-Side Comparison of Old Program and New Program

Medical Technology (B.S.)

Old Program

<table>
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<td>BIO 321</td>
<td>Anatomy &amp; Physiology I</td>
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<td>BIO 322</td>
<td>Anatomy &amp; Physiology II</td>
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* Students must also choose from one of the following:
  - CHM 306 Organic Chemistry II 4
  - CHM 303 Analytical Chemistry I 4

* Students must choose from one of the following sets of Introductory Physics courses:
  - PHS 205 Introduction to Physics I with Lab 4
  - PHS 210 Introduction to Physics II with Lab 4

OR

  - PHS 235 Physics I with Lab 4
  - PHS 240 Physics II with Lab 4

* Students must choose from ONE of the following:
  - MTH 201 Calculus I 4
  - MTH 221 Calculus for Business, Social and Life Sciences 3
  - MTH 243 Elementary Statistics 3
  - ENV 437 Biostatistics 3

* Please note that prerequisites may apply for all Math courses

It is recommended that the following course be taken:

  - BUS 365 Principles of Management 3

34 credits (clinical year) taken at an approved school of medical technology

New Program

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<td>Senior Seminar</td>
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<td>Electives by advisement</td>
<td>0-8</td>
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<tr>
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- CHM 303 Analytical Chemistry I 4

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*Please note that prerequisites may apply for all Math courses*

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*Please note that prerequisites may apply for all Math courses*
2. Rationale for the Proposed Changes:
The Chemistry department has made changes to Analytical Chemistry 303 that makes it a majors only course requiring additional prerequisites that were not previously required. The additional prerequisites inadvertently increases the number of credits needed to complete the B.S. degree in Biology and Medical Technology because CHM 303 is listed as a co-requisite requirement for each. To service the Analytical Chemistry needs for other departments, CHM now offers an additional Analytical Chemistry course that will be called CHM 313 - Quantitative Chemical Analysis. CHM 313 only requires CHM 206 (General Chemistry II) as a prerequisite as did the old Analytical Chemistry course CHM 303. A memo (see attached) was obtained from Dr. Godleski, Chair of the Chemistry Department, explaining the rationale behind the Chemistry department's decision to offer an additional Analytical Chemistry course, CHM 313. Based on an evaluation of the syllabi for both the old Analytical Chemistry CHM 303 and new Analytical Chemistry CHM 313, and a discussion with Dr.'s Godleski, Brown, and Logan, our department decided that CHM 313 will be acceptable as a fourth semester chemistry co-requisite for the Med Tech and Biology undergraduate majors. We would like to formally acknowledge this replacement of CHM 303 with CHM 313 for the chemistry electives. On a case-by-case basis, students with the appropriate prerequisite background wishing to take CHM 303 instead of CHM 313 and apply it to the majors in Biology and/or Medical Technology may do so with departmental permission.

MEMO:

To: Prof. Laurie Cook, Biology Department
From: Prof. Stephen Godleski, Chair, Chemistry Department
Re: Analytical Chemistry Curricular Changes

An ad hoc committee of Chemistry Department faculty chaired by Maggie Logan met over the summer of 2009 to consider curriculum changes in Chemistry. One outcome of this committee’s deliberation was the proposal that Analytical Chemistry (CHM 303) be split into two courses. The rationale for the proposed change is as follows. Over the last four years a typical enrollment in CHM 303 was 40 students with the average breakdown by major of ENV 75%, CHM 20%, BIO and Med Tech 5%. The committee believed that the needs of the student populations were sufficiently different so as to justify the splitting of Analytical into two courses. For example, the chemistry majors have a greater need to know the theory behind the analytical methods used in the course, while the non-chemistry majors would benefit from increased emphasis on applications that would be more relevant to their interests. In this context, matrix effects are of particular relevance to students in both biological sciences and environmental science, and will be given more emphasis in the course for ENV, BIO and Med Tech majors. In addition, the mathematical backgrounds of the populations of students tend to be quite different, with CHM majors typically having completed Calculus 3 and the ENV and BIO majors generally having less course background in math. This diversity of math
background and facility has also made it difficult to structure the course to meet the needs of all students. Also, changes in the requirements for American Chemical Society approved degrees has provided a strong incentive to add a foundation course in inorganic chemistry prior to CHM 303, rather than only offering an advanced inorganic course. This new class would be a prerequisite for CHM 303. Separating the analytical chemistry courses would permit us to add this new inorganic course at some point in the future.

These changes were unanimously approved by the Chemistry faculty and the plan to split the courses (CHM 303 for CHM majors and CHM 313 for ENV, BIO and Med Tech majors) was communicated to both the Environmental Science and Biology Departments and received their support. The courses will both be offered in the Spring of 2010 with separate lectures, but in this first year of existence the lab portions of the courses will meet together. In future years, CHM 313 will have its own laboratory curriculum and sections.

3. There are no additional staffing or resources needed.

4. Syllabi are attached

5. Letters of support from R. Sia, Chair of Biology and Dean Appelle are attached.
Instructors: Prof. M. A. Brown (Lecture and Laboratory sections 02 & 04)
Office: Smith Hall, Room 227; E-mail: mabrown@brockport.edu; Phone: 395-5596
Office Hours: Monday 10:00-11:00am, Tuesday 2:00-3:00pm, Wednesday 3:00-4:00pm
Friday 11:00am-12:00pm

Prof. M. P. Heitz (Laboratory section 01)
Office: Smith Hall, Room 233; E-mail: mheitz@brockport.edu; Phone: 395-5586
Office Hours: Monday 1:15-2:15pm, Wednesday 12:00-1:00pm, Friday 9:30-10:30am

Dr. Paul Milazzo (Laboratory section 03)

Lecture: M, W, F 8:15-9:15am, Edwards Hall, Room 104

Recitation: Tuesdays 4:40-5:40pm, Hartwell Hall, Room 122

Lab: Thursdays; Section 01: 8:00-11:30am; Section 02: 1:15-4:45pm, Section 03: 6:00-9:30pm
Section 04: Wednesdays 6:00-9:30pm (All sections meet in Smith Hall, Room 211)

A. Course Description

This one-semester course introduces fundamental principles of analytical chemistry with emphasis on quantitative analysis. Material learned in general chemistry (CHM 205/206) such as stoichiometry and acid-base equilibria will be revisited and built upon in this course (refer to Chapters 1, 2, 6 Harris). The lecture component of this course serves to clarify concepts and examples described in the text and to evaluate performance with exams, quizzes, and homework. In preparation for lecture, you should read the relevant chapter(s), review notes, and begin homework assignments. The laboratory is designed to illustrate examples discussed in lecture and provide practical experience with analytical instrumentation. The recitation section reinforces lecture material through open discussion and problem solving.

Overall, the main objective is to introduce the theory and practice of analytical chemistry concentrating on the following topics:

- Solution preparation and sample handling
- Experimental error and statistical treatment/evaluation of data using Excel®
- Introduction to quality assurance and calibration methods
- The study of various solution equilibria, complex protolytic reactions, and titrations
- The theory and practice of electrochemical analysis
- Quantitative spectroscopy
- Analytical separation techniques

B. Goals of the Course

1. Learn fundamental principles of analytical chemistry.
2. Acquire skills to solve problems efficiently as possible.
4. Become skilled at managing time in an independent laboratory setting.
5. Learn to make careful and accurate analytical measurements.
6. Develop the ability to collect, evaluate, and report data and observations.
7. Learn to prepare formal laboratory reports.
8. Become a better critical thinker.

C. Required Course Materials


Additional Materials:

1. Scientific Calculator (TI-30X or equivalent) Must have exponential, log, antilog, mean, standard deviation capabilities

   *Note:* You will not be allowed to use a programming or graphing calculator, a cell phone, or other electronic device other than the approved calculator on exams or quizzes. Also you will not be able to borrow a calculator from another student during exams or quizzes.

2. Safety Goggles (Department-approved goggles are in the campus bookstore or Liftbridge® books)

3. Laboratory notebook (carbonless copy type)

4. Marker (e.g. Sharpie®)

D. Suggested Resources

Textbook Website: Contains Excel® spreadsheets, online quizzes, exercises, notes, etc.
http://bcs.whfreeman.com/qca7e/

E. Policies and Requirements

Assignments: Missed assignments like exams and quizzes are automatically given a grade a zero unless extreme circumstances exist (see attendance policy below). Late assignments for both lecture and laboratory may be deducted 10% of the maximum points per day late. No assignments will be accepted past six days from the original due date except for certain cases (see attendance policy below). An assignment is deemed late if it is turned in after 6:00pm on the due date. Also no assignments will be accepted after 6:00pm on Friday, May 8, 2009. Assignment due dates will be announced in class and posted on Angel.

Attendance: Attending lecture, laboratory, and recitation is expected though I understand circumstances may arise that require one to miss a class. Please contact me either by phone or e-mail as soon as possible if you will be absent especially for an exam, quiz, or laboratory. Because laboratory is on a tight schedule, it will be difficult to make-up work, so avoid missing.

Assignments missed because of an excused absence are expected to be made up, but the criteria of what meets an excused absence is determined by The College at Brockport’s policy (see below), not you. It is the student’s responsibility to document an absence as excused and schedule a time to make-up an assignment (with the instructor’s permission). Assignments missed because of an unexcused absence will automatically result in a grade of zero. If more than 15 % of classes are missed due to unexcused absences then the instructor has the right to assign a failing grade.

Official Campus Attendance Policy

“The student is responsible for all assigned course work and cannot be absolved of this responsibility. When enrolled in a particular course, the student is obligated to do all of the work assigned. Punctual and regular attendance is vital to the discharge of this obligation. Absences, excused or not, do not alter this responsibility.
Absences will be excused for a) documented illness, b) official representation of the College, c) death of a close relative, d) religious holiday, and e) other circumstances beyond the control of the student. Excuses for official representation of the College must be obtained from the official supervising the activity or event.

Absences deemed excessive by the instructor may result in a lowered grade. Students whose unexcused absences exceed 15% of the scheduled classes and laboratories will be subject to failure at the instructor's discretion (The College at Brockport, SUNY, 2008).”

**Recitation Section:** You are required to attend the Tuesday Problem-Solving Sessions except if
1. You have a B or better in both the CHM 205 and CHM 206 courses (taken at The College at Brockport) with proper documentation or
2. you earn and maintain a B or better in this course (decided after the first exam). However anyone exempt whose grade for this course drops below a B (evaluated after every exam) will be required to start attending recitation. Those that are exempt are still welcome to attend. First meeting is Feb 3, 2009.

**Academic Misconduct:** You are encouraged to form study groups to review notes and work problems; however, just copying the answers, besides being unacceptable, will not prepare you for exams and quizzes. As outlined by The College at Brockport’s policy, academic misconduct will not be tolerated. The first instance of misconduct will result in a zero for the assignment for all parties involved. A second instance of misconduct will result in immediate administrative action. Remember to review proper citation and paraphrasing guidelines (refer to a MLA or APA manual) to avoid plagiarism.

**Drop/Withdrawal:** The final day on which you may drop this course without penalty is 5:00pm, February 23, 2009. The final day to withdraw with penalty is May 1, 2009. Details about this process are explained on The College at Brockport’s website ([http://www.brockport.edu/registrar/faq/withdrawing.html](http://www.brockport.edu/registrar/faq/withdrawing.html)).

**Disability Policy Statement:**

“Students with documented disabilities may be entitled to specific accommodations. The College at Brockport’s Office for Students with Disabilities makes this determination. Please contact the Office for Student with Disabilities at (585) 395-5409 or osdoffic@brockport.edu to inquire about obtaining an official letter to the course instructor detailing any approved accommodations. The student is responsible for providing the course instructor with an official letter. Faculty work as a team with the Office for Students with Disabilities to meet the needs of students with disabilities (The College at Brockport, SUNY, 2008).”

**Usage of Electronic Devices:**

- E-devices can only be used for taking notes and/or downloading course materials like objectives or this syllabus. Not for internet browsing, checking e-mail, watching videos, listening to music, texting, etc. Also usage of e-devices on exams and quizzes is prohibited.
- Please silence your cell phone before class begins.
- Failure to comply with this policy may result in me asking you to leave the classroom. [http://www.brockport.edu/policies/docs/use_of_electronic_devices_in_the_classroom.pdf](http://www.brockport.edu/policies/docs/use_of_electronic_devices_in_the_classroom.pdf)

**F. Evaluation and Grading**

*Important Note:* Angel will be used to display grade information, links to supplemental material, announcements, a calendar, and revisions to this syllabus as necessary.
Exams: The lecture is comprised of three modules each ending with a regular exam worth 100 pts each. Tentatively, one regular exam will be given prior to mid-term and two additional exams during the remainder of the semester. A comprehensive final exam, worth 150 pts, is scheduled for Monday, May 11, 2009 from 8:00-10:00am. This exam will possibly contain my questions and some from an ACS exam or all ACS questions.

Quizzes: A total of 6 quizzes worth 20 pts each will be randomly given throughout the semester; however a quiz will not be given on the same week as a scheduled exam. The best 5 out of 6 quiz scores will be used for grading. A maximum time of 15 minutes will be allowed for each quiz. You should view quizzes as practice for working problems in an exam-like situation.

Homework: Problems will be assigned for each relevant chapter, and be collected into 10 sets each worth 15 pts each. These sets will be due one week following the completion of the last chapter covered in the set.

Laboratory: Exactly 25% of your course grade comes from laboratory work. The bulk of points are based on your results in lab, maintaining a notebook, and submitting formal laboratory reports. The actual points for each experiment may vary and will not total to 240 pts, but will be adjusted to equal 25% of the final grade.

Attendance: Attending classes is an important factor in borderline cases as is non-attendance! A maximum of 20 pts is possible for having no unexcused absences in lecture or lab. One unexcused absence will drop this number to 10 pts.

Final Grade: Your final grade will be calculated based on the points you earn with a maximum of 960 pts being possible. An approximate grading scale that equates the percentage scale to The College at Brockport’s letter scale system is given below.

<table>
<thead>
<tr>
<th>Component</th>
<th>Point Values</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams</td>
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<td>300</td>
</tr>
<tr>
<td>Final Exam</td>
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<td>150</td>
</tr>
<tr>
<td>Quizzes</td>
<td>5 @ 20 each</td>
<td>100</td>
</tr>
<tr>
<td>Homework</td>
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<td>150</td>
</tr>
<tr>
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<table>
<thead>
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<th>A- &gt; 835</th>
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<tbody>
<tr>
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<td>&gt; 806</td>
<td>B &gt; 777</td>
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<tr>
<td>C+</td>
<td>&gt; 710</td>
<td>C &gt; 681</td>
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<tr>
<td>D+</td>
<td>&gt; 614</td>
<td>D &gt; 585</td>
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<tr>
<td></td>
<td></td>
<td>E &lt; 480</td>
</tr>
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</table>

G. Lecture Schedule

This lecture schedule is tentative, so be aware of any changes mentioned by the instructor or listed on Angel.

Module 1

<table>
<thead>
<tr>
<th>Topic</th>
<th>Relevant Chapter(s)</th>
<th>Date(s)</th>
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</thead>
<tbody>
<tr>
<td>Introduction: Analytical Measurements</td>
<td>Chapters 0-2</td>
<td>1/26</td>
</tr>
<tr>
<td>Experimental Error</td>
<td>Chapter 3</td>
<td>1/28, 1/30</td>
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<tr>
<td>Statistics</td>
<td>Chapter 4</td>
<td>2/2, 2/4</td>
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<tr>
<td>Calibration Methods</td>
<td>Chapter 5</td>
<td>2/6, 2/9</td>
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<tr>
<td>Chemical Equilibrium</td>
<td>Chapters 6 &amp; 8</td>
<td>2/11-2/20</td>
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<tr>
<td>Exam #1</td>
<td>0-5, 6, 8</td>
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Module 2

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<tbody>
<tr>
<td>Acid-Base Equilibria</td>
<td>Chapters 9 &amp; 10</td>
<td>2/25, 2/27, 3/2, 3/4</td>
</tr>
<tr>
<td>Intro to Titrations</td>
<td>Chapter 7</td>
<td>3/6, 3/9</td>
</tr>
<tr>
<td>Acid-base Titrations</td>
<td>Chapter 11</td>
<td>3/11, 3/13, 3/23</td>
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<tr>
<td>SPRING BREAK (3/16 – 3/20)</td>
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<td></td>
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<tr>
<td>Topic</td>
<td>Relevant Chapter(s)</td>
<td>Date(s)</td>
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<tr>
<td>-----------------------------</td>
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<td>EDTA Titrations</td>
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<td>3/30</td>
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<td>Electroanalytical Techniques</td>
<td>Chapters 14-16</td>
<td>4/1-4/10</td>
</tr>
<tr>
<td>Spectroscopy</td>
<td>Chapters 18-21</td>
<td>4/13-4/24</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exam #3</td>
<td>14-16, 18-21</td>
<td>4/27</td>
</tr>
<tr>
<td>Chromatography</td>
<td>Chapters 23-25</td>
<td>4/29-5/8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>Content chosen from Modules 1-3 (ACS)</td>
<td>5/11</td>
</tr>
</tbody>
</table>
**Instructors:**  
**Prof. M. A. Brown** (Lecture and lab sections 02 and 04)  
Office: Smith Hall, Room 227; E-mail: mabrown@brockport.edu; Phone: 395-5596  
Office Hours: TBA  

**Prof. M. P. Heitz** (Laboratory section 01)  
Office: Smith Hall, Room 233; E-mail: mheitz@brockport.edu; Phone: 395-5586  
Office Hours: TBA  

**Prof. T. W. Kallen** (Laboratory section 05)  
Office: Smith Hall, Room 229; E-mail: tkallen@brockport.edu; Phone: 395-5590  
Office Hours: TBA  

**Additional Instructor:** TBA  

**Lecture:**  
M, W, F, 8:15 - 9:15 am, Edwards Hall, Room 104  

**Recitation:**  
Session 1: Mondays, 4:45 - 5:45 pm, Smith Hall, Room 121; Session 2: TBA  

**Lab:**  
Section 01: Thursdays, 8:00 - 11:30 am; Heitz  
Section 02: Thursdays, 1:15 - 4:45 pm; Brown  
Section 03: Thursdays, 6:00 - 9:30 pm; TBA  
Section 04: Wednesdays, 6:00 - 9:30 pm; Brown  
Section 05: Fridays, 1:15 - 4:45 pm; Kallen  

*Note:* All sections meet in Smith Hall, Room 211  

**A. Course Description**  
This one-semester course introduces fundamental principles of analytical chemistry and associated techniques. More specifically, the analytical process, chemical measurements, quality assurance and control, statistical treatment and interpretation of data, quantitative titrations, gravimetric analysis, electroanalytical techniques, quantitative absorption spectrophotometry, and separation techniques will be discussed in lecture. Emphasis is also placed on the applications of these methods and techniques towards field and laboratory work in environmental science.  

The laboratory portion of the course is designed to explore both traditional and modern analytical techniques commonly used in environmental analysis; though these techniques are also commonly applied in pharmaceutical and biological sciences. Specific areas of interest include: the use of Excel® for data treatment and performing calculations; maintaining a proper laboratory notebook; to effectively manage time in the laboratory; to perform quantitative chemical analysis of unknown samples in various types of matrices using classical and modern instrumental techniques; and to prepare formal reports.  

**B. Main Course Objectives**  
1. Explore the fundamental principles of analytical chemistry as applied in environmental science  
2. Learn proper methods and techniques for choosing, storing, preparing, and analyzing representative samples from various types of matrices  
3. Gain experience applying programs such as Excel® towards performing calculations, recording analog/digital data from instrumentation, developing control charts, and performing statistical treatment of data  
4. Learn to perform titrimetric and gravimetric analyses  
5. Gain experience using instrumentation such as a gas chromatograph, a high performance liquid chromatograph, potentiometric electrodes, a simple molecular spectrophotometer, a scanning UV-Vis spectrophotometer, and a flame
C. Required Materials for Lecture

Additional Materials:
- Scientific Calculator (TI-30X or equivalent): Must have exponential, log, antilog, mean, standard deviation capabilities. *

*Note: You will not be allowed to use a programming or graphing calculator, a cell phone, or any other electronic device other than the approved calculator on exams or quizzes. Also you will not be able to borrow a calculator from another student during exams or quizzes.

- i-Clicker device: purchase this from the book store; the same device can be used for more than one course

D. Required Materials for Laboratory
- Lab handouts: adapted from Harris, Daniel C. *Experiments to Accompany Exploring Chemical Analysis*, W. H. Freeman, 2008 and other source material; will be posted on Angel at start of semester
- Safety Goggles: department-approved, splash-proof goggles; available in campus bookstore
- Laboratory notebook: carbonless copy type, at least 100 pages
- Permanent Marker (Sharpie®)

E. Additional Resources
Textbook Website: Contains Excel® spreadsheets, online quizzes, exercises, notes, and experiments Link: http://bcs.whfreeman.com/exploringchem4e/default.asp?s=&n=&i=&v=&o=&ns=0&uid=0&rau=0

Student Learning Center: Additional assistance can be obtained at the Student Learning Center located in Cooper Hall. Because math is a crucial component in this course, math tutors can be very helpful. A course tutor, if available, will be announced the first week of class.

Fellow Students: I encourage forming study groups to review material and work problems.

F. Lecture and Laboratory Policies and Requirements
Attendance: Attending lecture and laboratory is expected though I understand circumstances may arise that require one to miss. Please contact me either by phone or e-mail as soon as possible if you will be absent, especially if it is on a day that an exam or quiz is scheduled. If more than 15% of classes or labs are missed due to unexcused absences then the instructor has the right to assign a failing grade as outlined by the College at Brockport’s policy below.

Official Campus Attendance Policy

“The student is responsible for all assigned course work and cannot be absolved of this responsibility. When enrolled in a particular course, the student is obligated to do all of the work assigned. Punctual and regular attendance is vital to the discharge of this obligation. Absences, excused or not, do not alter this responsibility.

Absences will be excused for a) documented illness, b) official representation of the College, c) death of a close relative, d) religious holiday, and e) other circumstances beyond the control of the student. Excuses for official representation of the College must be obtained from the official supervising the activity or event.
Absences deemed excessive by the instructor may result in a lowered grade. Students whose unexcused absences exceed 15% of the scheduled classes and laboratories will be subject to failure at the instructor's discretion (The College at Brockport, 2008).”

**H1N1 flu:** The College has released a campus-wide policy concerning the H1N1 flu (see College website---http://www.brockport.edu/healthctr/h1n1flu.html). If you become infected please follow the policy exactly and notify me by e-mail. In the event that I become sick, either the class will be cancelled (if short notice) with assignments posted on Angel for you to complete or a substitute instructor will be present to review material and/or hand-out exercises. All laboratories will proceed as planned with substitute instructors where needed.

**Missed Assignments:**

Lecture: Assignments missed because of an excused absence are expected to be made up, but the criteria of what meets an excused absence is determined by The College at Brockport’s policy (see above). It is the student’s responsibility to document an absence as excused and schedule a time to make-up an assignment (exam or quiz) with the instructor’s permission. Assignments missed because of an unexcused absence will automatically result in a grade of zero unless special circumstances exist.

Laboratory: Unlike lecture, making up assignments in laboratory (experiments) may be difficult or impossible given the tight schedule. If you must miss, immediately inform the instructor of your lab section or Prof. Brown. There is the slight possibility that another section may have additional space for you to work; however this decision is ultimately up to the instructor of the lab section and Prof. Brown.

**Late Assignments:** An assignment is deemed late if it is turned in after 6:00 pm on the due date. Late assignments may be deducted 10% of the maximum possible points per day late. No assignments will be accepted past six days from the original due date unless authorized by the instructor (see policy below). Absolutely, no assignments will be accepted after 6:00 pm on Friday, May 7, 2010 (final day of class). Due dates will be announced in class and posted on Angel.

**Academic Misconduct:** You are encouraged to study together in groups to review notes, work homework problems, or discuss experiments; however, assignments must not be copied verbatim. As outlined by The College at Brockport’s policy, academic misconduct such as this will not be tolerated. The first instance of misconduct will result in a warning. A second offense will result in a zero for the assignment for all parties involved. A third instance of misconduct will result in immediate administrative action as dictated by the College. Remember to review proper citation and paraphrasing guidelines (refer to a MLA or APA manual) to avoid plagiarism for any writing assignment.

**Drop/Withdrawal:** The final day on which you may drop this course without penalty is 5:00 p.m. on Monday, February 22, 2010. The final day to withdraw without the Department Chair’s permission is 5:00 p.m. on Friday, April 9, 2010. The final day to withdraw needing permission from the Department Chair is 5:00 p.m. on Friday, April 30, 2010. Details about this process are explained on The College at Brockport’s website (http://www.brockport.edu/registrar/faq/withdrawing.html).

**Disability Policy Statement:**

“Students with documented disabilities may be entitled to specific accommodations. The College at Brockport’s Office for Students with Disabilities makes this determination. Please contact the Office for Student with Disabilities at (585) 395-5409 or osdoffic@brockport.edu to inquire about obtaining an official letter to the course instructor detailing any approved accommodations. The student is responsible for providing the course instructor with an official letter. Faculty work as a team with the Office for Students with Disabilities to meet the needs of students with disabilities (The College at Brockport, SUNY, 2008).”
Use of Electronic Devices:

No electronic devices other than your calculator can be used during class or laboratory unless authorized by the instructor. Please silence your cell phone, blackberry, etc. before class. Failure to comply with this policy may result in me asking you to leave the classroom or laboratory as outlined in the College at Brockport’s policy.

G. Additional Laboratory Policies
You are required to complete all experiments; those not completed will be given a grade of zero. The grade of "Incomplete" will not be given for unfinished lab work. A carbonless, bound laboratory notebook is required to record all raw data, procedures, and observations. All information written into the notebook should be in ink. See the “Guidelines for Maintaining a Proper Laboratory Notebook” section in your laboratory packet.

Laboratory Safety Policy: Safety is very important in lab. Before coming to lab you should read the set of safety regulations in the laboratory packet. These regulations will also be discussed by your instructor during the first laboratory period. Afterwards you will sign and date a safety agreement form stating that you understand and will abide by these regulations. If any of these regulations are broken the “lab safety infraction policy” will be enforced.

Chemistry Department Breakage Card Policies: To compensate for broken glassware, equipment, and/or instrumentation components a breakage card policy has been adopted. Please refer to the laboratory packet for additional details.

H. Recitation Attendance Policy
You are required to attend one of the Problem-Solving sessions every week of the semester unless: (1) You have a B or better in both the CHM 205 and CHM 206 courses (taken at The College at Brockport) with proper documentation or (2) You earn and maintain a B average in the course. Previously exempt students who fall below a B average (evaluated every week) will be required to start attending. Those that are exempt are still welcome to attend. First meeting is Feb. 1, 2010.

I. Evaluation and Grading

Important Note: Angel will be used to display grade information, links to supplemental material, announcements, a calendar, and revisions to this syllabus. Please check at least every week.

Exams: The lecture is comprised of three modules each concluding with a regular exam worth exactly 100 pts each. Tentatively, one regular exam will be given prior to mid-term and two exams during the remainder of the semester. A comprehensive final exam worth 150 pts is scheduled for Wednesday, May 12, 2010 from 8:00 – 10:00 am.

Quizzes: During the semester 10 announced quizzes worth 10 pts each will be administered. Quizzes will not be given on the same week as a scheduled exam. A maximum time of 15 minutes will be allowed. Quizzes are a perfect opportunity to practice for an exam type situation.

Homework: A total of 6 homework sets will be assigned worth 10 pts each (problems TBA)

i-Clicker Participation: Participation is mandatory; each lecture will contain at least one multiple choice question for you to answer. A total of 30 pts are possible.

Critical Reviews: A critical review of relevant article will be assigned during the semester (articles will be selected by the instructor). The review should be written using MLA or APA format, 12 pt font, double spaced, not justified, with proper citations (if necessary), and be at least 2 pages long and no longer than 3 pages long. A critical review should contain an introduction (synopsis of argument and objectives of research contained in the article), a summary section (summary of key points), the critique/review (strengths and weakness/ discuss main aspects of research), and a conclusion section (give your conclusions about the article). This assignment is worth 20 pts.
Class Exercises: Periodically, class exercises will be assigned that will require either group work or individual work. No direct grade will be issued, but participation is expected.

Attendance: Attending classes is an important factor in borderline cases as is non-attendance!

Laboratory: Exactly 25% of your course grade comes from laboratory work. The bulk of points are based on your results in lab, maintaining a notebook, and submitting formal laboratory reports. The actual points for each experiment may vary.

Final Grade: Your final grade will be based on the points you earn from the components listed in the table given below. Grade Percentage = your points divided by the maximum number of points possible (840 pts) x 100%.

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<th>Point Values</th>
<th>Totals</th>
<th>%</th>
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<td>Critical Reviews</td>
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<td><strong>840</strong></td>
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A’s = > 88%
B’s = > 77%
C’s = > 66%
D’s = > 55%
E < 55%

(+-s and –s are issued as grades are compiled)

J. Tentative Lecture Topics
I. Fundamental Principles of Analytical Chemistry
   A. The analytical process, chemical measurements, and solution preparation
   B. Error analysis and proper reporting of results
   C. Statistical treatment, assessment, and interpretation of data
   D. Quality assurance, calibration methods, and usage of control charts
II. Assessment and Treatment of Data (Statistics)
III. Volumetric Techniques (Titrations)
IV. Gravimetric and Thermal Analysis
V. Electroanalytical Techniques
VI. Principles of Spectrometry
   A. Molecular Spectrophotometry
   B. Atomic Absorption
   C. Mass Spectrometry
VII. Chromatography Techniques
   A. Gas chromatography
   B. Liquid chromatography
   C. Capillary Electrophoresis
VIII. Alternative Techniques (time permitting)
IX. Additional Applications

K. Tentative Laboratory Topics
I. Introduction to Instrumentation and Equipment (check-in period)
II. Plotting and Linear Regression and error analysis using Spreadsheets (Excel® exercise)
III. Fundamentals of Sampling and Solution Preparation
   A. Sampling Exercise: Simulated soil analysis (sampling exercise, data treatment)
   B. Calibration of Glassware (error and uncertainty assessment)
   C. Solution Preparation (preparing standards)
IV. Titrations
   A. Acid-base (pH meter, ISE)
   B. EDTA
   C. Redox

V. Spectrometry Techniques
   A. Molecular Absorption
   B. Flame Atomic Absorption

VI. Separation Techniques
   A. GC
   B. HPLC
**College Course Registration Form**

This form is used to register all courses. It must be signed by the department chair and the school dean who will send it forward to the Registrar’s Office. Registration of General Education courses requires an additional *Supplemental Course Registration Form* and the appropriate *Student Learning Outcomes Checklist*. Approval by the Faculty Senate’s General Education Committee is necessary for all General Education courses.

Data entry fields are shaded. Some fields have limits on numbers and spaces that can be entered. Some areas have drop-down menus with options that can be selected by clicking your choice. Save the blank form before using it and then save each course form with an individual file name. Go back to the saved blank for each new form but save with a different name after filling in data.

---

**Action concerns a new course**  
**Discipline**  
**Number**

---

**Course Submitted by:** Stephen Godleski  
**Department:** Chemistry

---

**Chairperson’s Approval:** ___________________________  
**Date:** July 15, 2010

---

**Dean’s Approval:** ___________________________  
**Date:**

---

1. **Action requested:**
   - [ ] Registration of new course  
   - [ ] Revision of content for existing course  
   - [ ] Registration of general course listing under which related titles can be taught (umbrella courses)  
   - [ ] Registration of topics course for specific semester (if checked, complete item 2 below)  
   - [ ] Change of course title – Previous Title: Environmental Analytical Chemistry  
   - [ ] Inactivation of existing course registration (course will not be taught in near future)  
   - [ ] Other – Describe:

2. **Complete for registration of topics courses or umbrella courses:**
   a. **General course registration:**  
      **Discipline:**  
      **Number:**
   b. **General registration title:**
   c. **Specific course title for semester offered (topics course title):**
   d. **Topics course registration is for:** FALL SEMESTER  
      **Year:**

3. a. [ ] Undergraduate listing:  
      **Discipline:** CHM  
      **Number:** 313
   b. [ ] Graduate listing:  
      **Discipline:**  
      **Number:**

4. a. **Official course title:** Quantitative Chemical Analysis  
   b. **Course start date:** SPRING  
      **SEMESTER**  
      **YEAR:** 2011

5. **Abbreviated course title (restricted to 16 spaces):** Quant Chem Analy
6. a. Semester hours of credit assigned to course (invariable): 4
   b. Can this course have variable credit  ☒ No  ☐ Yes - Credit range to semester hours
   c. Is this course is repeatable for multiple credit?  ☒ No  ☐ Yes - Credit Maximum =

7. Type of Course: LIBERAL ARTS

8. General Education Information: (Complete only for General Education courses)
   a. General Education Knowledge Area (choose one if applicable): NONE
   
   b. Additional student learning outcomes: (check all codes that are currently approved)
      ☐ Contemporary Issues (I)  ☐ Upper Level Writing (U)
      ☐ Both Contemporary Issues and Upper Level Writing (J)
      ☐ Scholarship on Women (W)  ☐ Diversity (D)
      ☐ Science & Technology (E)  ☐ Other World Civilizations (Non-Western) (O)

9. If cross-listed in another discipline(s), give discipline(s)/number(s):
   If there are pre-requisites that are enforced, give discipline(s)/number(s): CHM 206
   If there are co-requisites, give discipline(s)/number(s):

10. a. Approximate total number of seats/semester expected: 50
    b. How many sections do you expect to offer per semester: 4

11. Sections of this course are (check one): taught by one instructor  ☒
       taught by a team  ☐

12. Planned frequency of offering: EVERY SPRING

13. Grading (check any that apply):
      ☒ Letter grade  ☐ Pass/Fail (S/U) ONLY  ☐ Approved for IP grade
      ☐ Course requires a minimum grade of  for General Education or the major

14. If this course requires any special scheduling arrangements with regard to time or room/space, please comment on this in the space provided:

15. If this course is required for any degrees/programs, please list them below:
    Environmental Science major
16. Write a brief course description for the College Catalogs. Reflect content as accurately as possible using 65 words or less (about 500 characters. Use action verbs and omit “This course covers...” and similar phrases.

Course fee. Introduction to analytical methods with emphasis on statistical evaluation of quantitative data and sampling strategies, analytical applications of acid-base equilibria, and chromatographic separations. Also includes a survey of classical volumetric methods, quantitative absorption spectrophotometry, and an introduction to ion selective electrode potentiometry. Required for Environmental Science majors. Elective for Medical Technology and Biology majors.

17. For all courses, please attach the following information:
(a) a list of major course objectives
(b) a topical outline of course
(c) a list of methods used to evaluate student performance
(d) a list of instructional materials used – give bibliographic citations of texts, critical readings, films, e
(e) a current course syllabus, if possible
(f) a brief statement detailing the additional work required of graduate students in a “swing course.”

For General Education courses only, attach also:
(g) Supplemental General Education Course Registration Form
(h) Student Learning Outcomes Checklist (for specific codes requested).
July 16, 2010

To the College Senate,

The Dept. of Chemistry no longer offers CHM 303 Analytical Chemistry for non-majors. As a result, I support the proposal that the Dept. of Biology accept CHM 313 Quantitative Chemical Analysis instead of CHM 303 towards its BIO and Med Tech major course requirements.

Sincerely,

Rey A. Sia
Hi,
I have attached a proposal to change the Analytical Chemistry requirements for the BIO and Med Tech majors. I have also attached the course name change request recently submitted for approval by Steve Godleski, Chair of Chemistry because our proposal reflects the NEW course numbers and course name. Below you will find Dean Appelle's statement of support and I've attached Rey Sia’s letter of support (as chair of Biology). If you need anything else from me, please let me know! I look forward to seeing it again as Chair of the UG Curriculum Committee😊

Thanks,
Laurie Cook

From: Stuart Appelle [mailto:sappelle@brockport.edu]
Sent: Tuesday, July 27, 2010 2:03 PM
To: lcook@brockport.edu
Subject: FW: Letter of Support for Senate Proposal - BIO

I support the attached proposal “Replacement of CHM 303 Analytical Chemistry with CHM 313 Quantitative Chemical Analysis as the analytical chemistry course required for the Medical Technology degree program (B.S.) and Biology degree program (B.S.)”

Stuart Appelle, Ph.D.
Dean, School of Science and Mathematics
The College at Brockport
State University of New York
350 New Campus Drive
Brockport, New York 14420

From: Laurie Cook [mailto:lcook@brockport.edu]
Sent: Thursday, July 15, 2010 12:49 PM
To: sappelle@brockport.edu; rsia@brockport.edu
Subject: Letter of Support for Senate Proposal - BIO

Hi,
Attached is the finalized proposal from the BIO department to replace CHM303 with CHM313 as an elective chemistry c-requisite course for the BIO and Med Tech majors. Please review and if you agree, send me a letter of support when you get the chance?
Thanks,
Laurie Cook

Attachment: CHM313 change - June 2010.doc (366k bytes) Open

Attachment: 313_Quant Chem Analysis.doc (74k bytes) Open

Attachment: CHM313 Support.docx (68k bytes) Open