FACULTY CURRICULUM COMMITTEE COURSE FORM

Contact Name: Pam Riggs-Gelasco  Email: gelascop@cofc.edu  Phone: 3-7455

Department or Program Name: Chemistry  School name: School of Science and Math

Course Prefix, Number, and Title: Chem 110, Calculations in Chemistry

I. CATEGORY OF REVIEW (Check all that apply)
(Note: For changes to course, if you check more than two separate changes, you must create a new course.)

<table>
<thead>
<tr>
<th>NEW COURSE</th>
<th>CHANGE COURSE</th>
<th>DELETE COURSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ New Course (attach syllabus)</td>
<td>□ Change Number</td>
<td>□ Re-activate Course</td>
</tr>
<tr>
<td></td>
<td>□ Change Title</td>
<td>□ Delete Course</td>
</tr>
<tr>
<td></td>
<td>□ Change Credits/Contact hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Prerequisite Change</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Edit Description</td>
<td></td>
</tr>
</tbody>
</table>

☐ Approve for Cross-listing (attach rationale and written permission from relevant department)

☐ Intended to fulfill a General Education requirement (new courses only). If this box is checked, the course must also be submitted for review by the General Education Committee using this form.

Date (Semester/Year) the course will first be offered: Summer 2013

What are the prerequisites AND OTHER RESTRICTIONS (e.g., class level, major, co-requisite, credit for a mutually exclusive course)?

Proficiency at Math 101 level or a Math 101 co-requisite or permission of instructor

Will this course be added to the Degree Requirements of a Major, Minor, Concentration or List of Approved Electives?

a) ☑ Yes  ☒ No

b) If yes, complete and attach the CHANGE DEGREE REQUIREMENT form(s) for each affected program. List the name(s) of each program affected below:

II. NUMBER OF CREDITS and CONTACT HOURS per week

A. Contact Hours

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lab</th>
<th>Seminar</th>
<th>Ind. Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

B. Credit Hours

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Is this course repeatable? ☑ yes  ☒ no  If so, how many credit hours may the student earn in this course?

III. CATALOG DESCRIPTION Limit to 50 words EXACTLY as you want it to appear in the catalog: include prerequisites, co-requisites, and other restrictions.
Chemistry 110, Calculations in Chemistry  
Math 101 proficiency or Math 101 co-requisite required

This course reviews basic math skills while introducing application of these skills to problems in chemical stoichiometry and nomenclature.

IV. RATIONALE or JUSTIFICATION: If course change or deletion—please provide reasons for change(s) to or deletion of a course. If a new course—briefly address the goals/objectives for the course, how the course supports a major or minor program, etc. For non-major courses address how the course supports the liberal arts tradition and the mission of the institution.

Chem 110 will develop quantitative problem solving skills by applying basic math/algebra skills to select topics in general chemistry. DWF rates in Chem 111 (the gateway course in chemistry for both the biology and chemistry major) are high, typically at 25%. The target audience for this course includes three subsets of students 1) students who fail Chem 111 or withdraw from 111 (usually in the fall semester); these students would take Chem 110 as an express course in the fall and the one-credit would help replace the 4 credits of the withdrawn course. 2) students who have a high anxiety of fulfilling the chemistry requirement in their pre-allied health preparation or major requirement; these students could also take the Fall Express course in advance of taking Chem 111 for the first time in the spring. 3) SCAMP summer students as part of the summer bridge program; as we are able, we will offer a summer II course for high-risk high school students matriculating at the College in the Fall semester. The average GPA in Chem 111 for at-risk populations is 1.6. We hope to improve this statistic with the availability of this course.

Students’ poor problem solving skills often prevents them from mastering the chemical principles overlaid on the math, despite the pre- or co-requisite of Math 111 for Chem 111. This course would provide practice in converting chemical principals into algebraic form. We note that Chem 101 is not an “easier” version of Chem 111 and does not directly confront the mathematical problem solving deficiencies of our students who have difficulties succeeding in Chem 111. The Chem 101/Chem 102 survey sequence incorporates elements of general, organic, and biochemistry and is intended as a stand-alone sequence for certain professional fields (e.g. nursing) or for general education; the courses do not map well onto the Chem 111/Chem 112 sequence.

V. STUDENT LEARNING OUTCOMES and ASSESSMENT

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<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
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<td>What will students know and be able to do when they complete the course?</td>
<td>How will each outcome be measured? Who will be assessed, when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>1) To understand how fundamental math skills are applied to problems in general chemistry</td>
<td>All 4 elements will be evaluated using a pre and post assessment test; all students would take the test prior to beginning the curriculum and all students would take the same test after completing the course. We would expect C-D range scores prior to beginning the course and A-B range scores after completion.</td>
</tr>
<tr>
<td>2) To master unit conversions, dimensional analysis, scientific notation, significant figures, and graphing through application of problem solving methods to chemical word problems</td>
<td></td>
</tr>
<tr>
<td>3) To master the naming of basic chemical compounds both ionic and molecular</td>
<td></td>
</tr>
<tr>
<td>4) To understand how numerical ratios govern chemical reactivity</td>
<td></td>
</tr>
</tbody>
</table>

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

“The BS Biochemistry-Chemistry major will demonstrate proficiency in the broader discipline of Chemistry.”
Quite frankly, we do not expect the main impact of this course to be on our majors. The majority of students in chemistry 111 are biology majors; we would expect the course to have a positive impact on the numbers of biology students clearing the chemistry hurdle successfully. If our students do take this course, we would expect to see an impact on their Chem 111 performance in the short term, and in improved major retention in the long term.

This is skill introduced level.

**VII. IMPACT ON EXISTING PROGRAMS and COURSES:** Please briefly document the impact of this new/changed/deleted course on other programs and courses; if deleting a course—list all programs that include the course; if adding/changing a course—explain any overlap with existing courses in the same or different departments.

We expect this course will help improve retention in the sciences; we hope that in particular it will serve minority populations well. The main beneficiaries will be biology majors, given that the majority of students in our lower level courses are biology majors. We note that the Biology department might not like the improved retention.

**VIII. COSTS ASSOCIATED WITH THE ACTION REQUESTED:** List all of the new costs or cost savings, (including new faculty/staff requests, library or equipment, etc.) associated with the action requested.

This course has tremendous potential as an online-course in the future, and it could therefore be revenue generating.

**IX. APPROVAL AND SIGNATURES**

1. Signature of Department Chair or Program Director:
   
   [Signature]
   
   Date: 9/17/12

2. Signature of Academic Dean:
   
   [Signature]
   
   Date: 9/21/12

3. Signature of Provost:
   
   [Signature]
   
   Date: 10/17/10

4. Signature of Curriculum Committee Chair:
   
   [Signature]
   
   Date: 

5. Signature of Faculty Senate Secretary:
   
   [Signature]
   
   Date: 

Date Approved by Faculty Senate: ________________________________

Following Senate approval, the Faculty Senate Secretary will forward the entire packet to the Registrar.
Chem 110
Calculations in Chemistry

Instructor: Dr. Dawne M. Taylor
Office: SSMB 112
Phone: 953-5052
e-mail: taylord@cofc.edu

Text: Prep for Success in Chemistry by Laurie K. Sorge

Course Objectives:
1. To master fundamental math skills necessary for Chemistry 111
2. To master unit conversions and dimensional analysis
3. To master and use scientific notation and significant figures
4. To master graphing
5. To master the naming chemical compounds both ionic and molecular
6. To understand what is involved in a chemical reaction and stoichiometry
7. Calculate Theoretical and percent yields

Calculators: You will need a calculator that performs exponential and logarithmic functions. You will need to bring it to all class meetings. You do not need one, but if you have a programmable calculator you will need to come to exams early to show me all programs that are currently on your calculator.

Responsibilities: You are responsible for all material covered or assigned in class. It is absolutely vital that you keep current in your studies. My expectation is that for every hour spent in lecture you will spend a minimum of 3 hours of study. The instructor is here to explain the material and help you to the best of her time and ability. However, the burden of learning is upon you, the student, which includes making use of tutors and office hours. Homework will be assigned but not be graded. The problems are representative of what you need to know for the quizzes and exams. The key to success in this class is working through chemistry problems again and again.

Attendance and Participation: Attendance is expected but NOT mandatory. You are responsible for all information presented in class whether are present or not.

Quizzes: There will be in class or take home quizzes given. The quizzes will cover the most important topics discussed in the previous lecture(s). You will need a calculator for all quizzes. There will be NO make up quizzes.

Weekly ALEKS Assessments. Weekly Assessments will be done through ALEKS. (www.aleks.com). You will also take a hard copy assessment test at the beginning of the semester and at the end. It will be worth 5% of your final exam grade and you will get 100% if your score improved.

Midterm: 15%
Final Exam: 20%

Grading:
Your final grade will be calculated by the following formula:

Quizzes: 15%
Homework 20%
Weekly Assessments 40%
Midterm: 15%
Final: 20%

Grading Scale:
Note +/− are now in affect

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
</tr>
<tr>
<td>A−</td>
<td>90-92%</td>
</tr>
<tr>
<td>B+</td>
<td>87-89%</td>
</tr>
<tr>
<td>B</td>
<td>83-86%</td>
</tr>
<tr>
<td>B−</td>
<td>80-82%</td>
</tr>
<tr>
<td>C+</td>
<td>77-79%</td>
</tr>
<tr>
<td>C</td>
<td>73-76%</td>
</tr>
<tr>
<td>C−</td>
<td>70-72%</td>
</tr>
<tr>
<td>D+</td>
<td>68-69%</td>
</tr>
<tr>
<td>D</td>
<td>66-67%</td>
</tr>
<tr>
<td>D−</td>
<td>65%</td>
</tr>
<tr>
<td>F</td>
<td>Below 65%</td>
</tr>
</tbody>
</table>
The tentative schedule for the semester is below. We may speed up or spend more time on a topic based on the understanding and comprehension of the class.

**Semester Schedule**

<table>
<thead>
<tr>
<th>Day and Date</th>
<th>Syllabus and Register for ALEKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon July 9</td>
<td>Chapter 1</td>
</tr>
<tr>
<td>Wed July 11</td>
<td>First Assessment due by 5 pm</td>
</tr>
<tr>
<td>Fri July 13</td>
<td>(Assessment test)</td>
</tr>
<tr>
<td>Mon July 16</td>
<td>Chapters 3 and 6</td>
</tr>
<tr>
<td>Wed July 18</td>
<td>Quiz 2 on unit conversion, sig figs, density and reporting measurements</td>
</tr>
<tr>
<td>Fri July 20</td>
<td>scientific notation</td>
</tr>
<tr>
<td>Mon July 23</td>
<td>Quiz 3 on Scientific Notation</td>
</tr>
<tr>
<td></td>
<td>New Material: Naming Compounds and writing molecular formulas</td>
</tr>
<tr>
<td>Wed July 25</td>
<td>MIDTERM Material from Monday July 5th through Monday July 23rd</td>
</tr>
<tr>
<td>Fri July 27</td>
<td>Chapter 12 and Chapter 13</td>
</tr>
<tr>
<td>Mon July 30</td>
<td>Second Assessment due by 5 pm</td>
</tr>
<tr>
<td>Wed Aug 1</td>
<td>Quiz 4 on Friday July 27th lecture</td>
</tr>
<tr>
<td>Fri Aug 3</td>
<td>Reactions and More Stoichiometry</td>
</tr>
<tr>
<td>Mon Aug 6</td>
<td>Lab 3-5 (dress appropriately)</td>
</tr>
<tr>
<td></td>
<td>FINAL on Material from July 23rd through Friday August 3rd and take assessment test again</td>
</tr>
<tr>
<td></td>
<td>Third Assessment due by 5 pm</td>
</tr>
</tbody>
</table>

**Academic Integrity:** One of the core values of the College is academic integrity. This course is conducted under the Honor Code of the College of Charleston (see [http://www.cofc.edu/studentaffairs/HonorBoard2/HonorBoard.htm](http://www.cofc.edu/studentaffairs/HonorBoard2/HonorBoard.htm)) and the department's Policy on Scientific Integrity (see [http://www.cofc.edu/~chem/advising/integ.pdf](http://www.cofc.edu/~chem/advising/integ.pdf)). Cheating will not be tolerated. This includes copying data from another student in class, using work from a student in a previous class, and other violations described in the Student Handbook. If you are caught cheating, you will automatically receive a grade of XF for the course, and you will be brought before the Honor Board.

**Electronics Device Policy** Devices that are prohibited in class at any time are: pagers, cell phones, radios, TV, CD, DVD, and MP3 players and similar devices. Keep these devices off and out of sight. Devices that are allowed to be used at certain times during class, except during tests, exams and quizzes are mobile computing devices (no bigger than laptops), laptops, handheld computers, PDAs, electronic pens, calculators, and similar devices. The sound must be off unless otherwise specified by the instructor. During tests, exams, and quizzes no electronic devices are allowed to be on or in sight, unless otherwise specified by the instructor. The use of any wireless communication device during a quiz, test, or final exam is prohibited and will be considered a violation of the [Honor Code](http://www.cofc.edu/studentaffairs/HonorBoard2/HonorBoard.htm).

**Email** Email is considered an official method for communication at the College of Charleston. Email accounts are automatically assigned to all students upon acceptance at the College (e.g. your @edisto.cofc.edu account). If a student wishes to have email redirected from their official College issued account to another email address (e.g., @aol.com, @hotmail.com, @yahoo.com, or any other server other than the official @edisto.cofc.edu), they may do so, but at their own risk. Having email redirected does not absolve the student from the responsibilities associated with official communication sent to his or her College account. The College is not responsible for the handling of email by outside vendors or unofficial servers. A link to instructions on how to forward Edisto email can be found by clicking on Web Mail from the CofC home page. Students are expected to check their College of Charleston official email on a frequent and consistent basis in order to remain informed of College related communications. Checking email on a daily basis is recommended. Students have the responsibility to recognize that certain communications may be time-critical. “I didn’t check my email”, error in forwarding email, or email returned to the College with “Mailbox Full” or “User Unknown” are not acceptable excuses for missing official College communications via email.
**FACULTY CURRICULUM COMMITTEE COURSE FORM**

Contact Name: Pam Riggs-Gelasco  Email: gelascop@cofc.edu  Phone: 3-7455

Department or Program Name: Chemistry  School name: School of Science and Math

Course Prefix, Number, and Title: Chem 183, Introductory Special Topics in Chemistry and Biochemistry

I. CATEGORY OF REVIEW (Check all that apply)
(Nota: For changes to course, if you check more than two separate changes, you must create a new course.)

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☐ Approve for Cross-listing (attach rationale and written permission from relevant department)

☐ Intended to fulfill a General Education requirement (new courses only). If this box is checked, the course must also be submitted for review by the General Education Committee using this form.

Date (Semester/Year) the course will first be offered: Fall 2013

What are the prerequisites AND OTHER RESTRICTIONS (e.g., class level, major, co-requisite, credit for a mutually exclusive course)?

These will depend on the nature of the topic. The “183” level would probably have a Chem 111 pre- or co-req.

Will this course be added to the Degree Requirements of a Major, Minor, Concentration or List of Approved Electives?

a) ☑ Yes  ☑ No

b) If yes, complete and attach the CHANGE DEGREE REQUIREMENT form(s) for each affected program. List the name(s) of each program affected below:

II. NUMBER OF CREDITS and CONTACT HOURS per week

<table>
<thead>
<tr>
<th>A. Contact Hours</th>
<th>Lecture</th>
<th>Lab</th>
<th>Seminar</th>
<th>Ind. Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>0-3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| B. Credit Hours | 1-3 | 0-1 | 0 | 0 |

Is this course repeatable? ☑ yes  ☑ no  If so, how many credit hours may the student earn in this course? 8
III. CATALOG DESCRIPTION Limit to 50 words EXACTLY as you want it to appear in the catalog: include prerequisites, co-requisites, and other restrictions.

Chemistry 183, Introductory Special Topics in Chemistry and Biochemistry
Pre-requisite: Permission of Instructor

This course covers a special topic in chemistry or biochemistry, usually in an emerging area of research, in an area of industrial importance, or in an interdisciplinary field, at a level appropriate for a freshmen chemistry student.

IV. RATIONALE or JUSTIFICATION: If course change or deletion—please provide reasons for change(s) to or deletion of a course. If a new course—briefly address the goals/objectives for the course, how the course supports a major or minor program, etc. For non-major courses address how the course supports the liberal arts tradition and the mission of the institution.

Chemistry and Biochemistry has a single Special Topics Course, Chem 583, which has been used as a catch-all course number for ANY course being taught outside the normal curriculum. This has occasionally led to freshmen and sophomores being given “500-level” credit for courses that really are not at that level, either in their pre-req requirements or in their sophistication level. We are proposing to create a 100-level and a 200-level special topics course to fix this problem. We are asking to put this framework in place for future courses. This type of numbering for special topics courses is in place in numerous departments, including English, Biology, and Art History. We can only offer some sample ideas, rather than a full syllabus for the 100-level course. An example course might be a “Chemistry Book Club” course, where students read popular literature covering a range a topics or that detail big discoveries in the chemical/biochemical sciences (human genome, discovery of DNA, discovery of buckeyballs, etc.) Such a course would emphasize prominent examples of scientific discovery process. This might be a course that only requires an interest in these topics and not a detailed understanding of the field. Another example might be “Introduction to Research”, where freshmen students attend a series of 1-hour lectures given by each faculty member in the department to inform them about current research taking place on the CofC campus.

V. STUDENT LEARNING OUTCOMES and ASSESSMENT

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
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<tr>
<td>What will students know and be able to do when they complete the course?</td>
<td>How will each outcome be measured? Who will be assessed. when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>1. appreciate the role of chemistry in solving problems of industrial and/or interdisciplinary importance</td>
<td>Traditional exams and writing assignments appropriate to the topic discussed. Approval of new courses at the departmental level will require an assessment plan and more specific learning outcomes</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>2. understand the importance of an emerging sub-field in chemistry or biochemistry</td>
<td>Traditional exams and writing assignments appropriate to the topic discussed. Approval of new courses at the departmental level will require an assessment plan and more specific learning outcomes</td>
</tr>
</tbody>
</table>

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

“The BS Biochemistry major will demonstrate proficiency in one or more of the more narrowly defined sub-disciplines of Chemistry, which include Analytical, Biochemistry, Inorganic, Organic, or Physical chemistry”
Chemistry special topics courses usually emphasize a particular sub-discipline in chemistry (i.e. polymer chemistry reinforces topics in organic). A student taking the course would be more proficient in that area after taking a course that expands on one of the core curriculum courses.

VII. IMPACT ON EXISTING PROGRAMS and COURSES: Please briefly document the impact of this new/changed/deleted course on other programs and courses; if deleting a course—list all programs that include the course; if adding/changing a course—explain any overlap with existing courses in the same or different departments.

Some of these courses might be interdisciplinary in nature, for example, a "nanoscience" course. Such a course might draw interest from students in other departments. Even in cases where the course might appear to be similar to another department’s course offering or special topics course, a special topics course in chemistry would most likely emphasize chemical structure or mechanism and is therefore likely to be fundamentally different in its content.

VIII. COSTS ASSOCIATED WITH THE ACTION REQUESTED: List all of the new costs or cost savings, (including new faculty/staff requests, library or equipment, etc.) associated with the action requested.

Any time a special topics course is offered there is the potential that the faculty member teaching it will be removed from the roster of regular courses that still need to be covered. This might lead to the need for an additional adjunct to cover a lab section. Because our pool of interested students is fairly small and because Chem/Biochem students have very little flexibility in their schedule, it is unlikely that we would offer more than two special topics courses in any given semester. In many cases in the past, faculty taught special topics as an overload, so there was no additional cost associated with the course. We anticipate that most special topics courses would be lecture based courses, so that lab expenses are not likely to be involved. We have listed a possible lab component (0-3 contact hours) in case this might be a crucial component in the future.

IX. APPROVAL AND SIGNATURES

1. Signature of Department Chair or Program Director:
   [Signature] Date: 9-17-12

2. Signature of Academic Dean:
   [Signature] Date: 9/21/12

3. Signature of Provost:
   [Signature] Date: 10/17/12

4. Signature of Curriculum Committee Chair:
   [Signature] Date: 

5. Signature of Faculty Senate Secretary:
Following Senate approval, the Faculty Senate Secretary will forward the entire packet to the Registrar.
FACULTY CURRICULUM COMMITTEE COURSE FORM

Contact Name: Pam Riggs-Gelasco  Email: gelascop@cofc.edu  Phone: 3-7455

Department or Program Name: Chemistry  School name: School of Science and Math

Course Prefix, Number, and Title: Chem 283, Intermediate Special Topics in Chemistry and Biochemistry

I. CATEGORY OF REVIEW (Check all that apply)
(Note: For changes to course, if you check more than two separate changes, you must create a new course.)

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☐ Approve for Cross-listing (attach rationale and written permission from relevant department)

☐ Intended to fulfill a General Education requirement (new courses only). If this box is checked, the course must also be submitted for review by the General Education Committee using this form.

Date (Semester/Year) the course will first be offered: Fall 2013

What are the prerequisites AND OTHER RESTRICTIONS (e.g., class level, major, co-requisite, credit for a mutually exclusive course)?

These will depend on the nature of the topic. The “283” level would probably have a Chem 231 or Chem 232 pre- or co-req (i.e. sophomore level organic chemistry).

Will this course be added to the Degree Requirements of a Major, Minor, Concentration or List of Approved Electives?

a) ☐ Yes  ✓ No

b) If yes, complete and attach the CHANGE DEGREE REQUIREMENT form(s) for each affected program. List the name(s) of each program affected below:

II. NUMBER OF CREDITS and CONTACT HOURS per week

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<td>0</td>
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B. Credit Hours

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<th>Ind. Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Credit Hours</td>
<td>1-3</td>
<td>0-1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Is this course repeatable? ☒ yes  no  If so, how many credit hours may the student earn in this course? 8
III. CATALOG DESCRIPTION Limit to 50 words EXACTLY as you want it to appear in the catalog: include prerequisites, co-requisites, and other restrictions.

Chemistry 283, Intermediate Special Topics in Chemistry and Biochemistry
Pre-requisite: Permission of Instructor

This course covers a special topic in chemistry or biochemistry, usually in an emerging area of research, in an area of industrial importance, or in an interdisciplinary field, at a level appropriate for a sophomore-level chemistry student.

IV. RATIONALE or JUSTIFICATION: If course change or deletion—please provide reasons for change(s) to or deletion of a course. If a new course—briefly address the goals/objectives for the course, how the course supports a major or minor program, etc. For non-major courses address how the course supports the liberal arts tradition and the mission of the institution.

Chemistry and Biochemistry has a single Special Topics Course, Chem 583, which has been used as a catch-all course number for ANY course being taught outside the normal curriculum. This has occasionally led to freshmen and sophomores being given “500-level” credit for courses that really are not at that level, either in their pre-req requirements or in their sophistication level. We are proposing to create a 100-level and a 200-level special topics course to fix this problem. We are asking to put this framework in place for future courses. This type of numbering for special topics courses is in place in numerous departments, including English, Biology, and Art History. For the 200-level course, we can offer a sample syllabus, “Chemistry of Beer” as a past example of a course that has been offered in the past under the “583” course number (see attached). This course touches on topics covered in sophomore chemistry only, so it is best advertised under a 200-level course.

V. STUDENT LEARNING OUTCOMES and ASSESSMENT

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>What will students know and be able to do when they complete the course?</td>
<td>How will each outcome be measured? Who will be assessed, when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>1. investigate the role of chemistry in solving problems of industrial and/or interdisciplinary importance</td>
<td>Traditional exams and writing assignments appropriate to the topic discussed. Approval of new courses at the departmental level will require an assessment plan and more specific learning outcomes</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>2. investigate the importance of an emerging sub-field in chemistry or biochemistry</td>
<td>Traditional exams and writing assignments appropriate to the topic discussed. Approval of new courses at the departmental level will require an assessment plan and more specific learning outcomes</td>
</tr>
</tbody>
</table>

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

“The BS Biochemistry major will demonstrate proficiency in one or more of the more narrowly defined sub-disciplines of Chemistry, which include Analytical, Biochemistry, Inorganic, Organic, or Physical chemistry”

Chemistry special topics courses usually emphasize a particular sub-discipline in chemistry (i.e. polymer chemistry reinforces topics in organic). A student taking the course would be more proficient in that area after taking a course that expands on one of the core curriculum courses. For example, in the sample course, “Chemistry of Beer”, students learn some applications of biochemistry and organic chemistry that build on topics they learn in other required chemistry courses.
VII. IMPACT ON EXISTING PROGRAMS and COURSES: Please briefly document the impact of this new/changed/deleted course on other programs and courses; if deleting a course—list all programs that include the course; if adding/changing a course—explain any overlap with existing courses in the same or different departments.

Some of these courses might be interdisciplinary in nature, for example, a “nanoscience” course. Such a course might draw interest from students in other departments. Even in cases where the course might appear to be similar to another department’s course offering or special topics course, a special topics course in chemistry would most likely emphasize chemical structure or mechanism and is therefore likely to be fundamentally different in its content.

VIII. COSTS ASSOCIATED WITH THE ACTION REQUESTED: List all of the new costs or cost savings, (including new faculty/staff requests, library or equipment, etc.) associated with the action requested.

Any time a special topics course is offered there is the potential that the faculty member teaching it will be removed from the roster of regular courses that still need to be covered. This might lead to the need for an additional adjunct to cover a lab section. Because our pool of interested students is fairly small and because Chem/Biochem students have very little flexibility in their schedule, it is unlikely that we would offer more than two special topics courses in any given semester. In many cases in the past, faculty taught special topics as an overload, so there was no additional cost associated with the course. We anticipate that most special topics courses would be lecture based courses, so that lab expenses are not likely to be involved. We have listed a possible lab component (0-3 contact hours) in case this might be a crucial component in the future.

IX. APPROVAL AND SIGNATURES

1. Signature of Department Chair or Program Director:
   
   [Signature]
   Date: 9-17-12

2. Signature of Academic Dean:
   
   [Signature]
   Date: 9/21/12

3. Signature of Provost:
   
   [Signature]
   Date: 10/17/12

4. Signature of Curriculum Committee Chair:
   
   ____________________________
   Date: ________________________

5. Signature of Faculty Senate Secretary:
   
   ____________________________
   Date: ________________________

Date Approved by Faculty Senate: ________________________________
Chemistry 283, Chemistry of Brewing
Fall 2013

Instructor: Dr. Jason Overby
Office: SCIC 331
Office Hours: MWF 10-11; M 2-4 (contact me directly, by email or by phone)
e-mail: overbyj@cofc.edu
Homepage: http://www.cofc.edu/~overbyj
Phone: 953-8098

Description of Course

The course will cover the fundamentals of brewing and the science behind it.

Co-requisites and prerequisites

General Chemistry

Text (required)

No text is required.

Supplemental materials

Lecture notes will be available on the web.

Learning Objectives

After completing this course, you should be able to do the following:

Understand the basic processes of producing beer, wine, and distilled spirits including their similarities and differences

Class policies

Attendance at all class meetings is required and will be taken accordingly. Each missed lecture period will result in a 1% deduction from your final course grade. This course is only a one hour course that meets only once per week, therefore, attendance is vital for understanding the material.

Grading Scheme

<table>
<thead>
<tr>
<th>Examinations</th>
<th>80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing Assignment</td>
<td>20%</td>
</tr>
</tbody>
</table>
Grading Scale

A  92-100
A- 90-91
B+ 88-89
B  82-87
B- 80-81
C+ 78-79
C  72-77
C- 70-71
D+ 68-69
D  62-67
D- 60-61
F  below 60

Grading Policy

There will be two exams in this class. Each will be multiple choice.

The writing assignment will be graded on a holistic scale but must include proper English grammar usage. Deductions as necessary will be assessed.

You are not competing against everybody else in the class nor is there a set number of grades that will be given. It should be your objective to do the best you can on all the work. I firmly believe that teachers do not give grades, students earn them.

Examination Schedule (subject to change)

Because of the free form nature of this course, the examinations will occur at a logical stopping point. However, there will be a week break between when exam material stops and the actual exam. The second exam will occur during the last meeting period of this course.

Important Dates

October 14-15 - Fall Break
October 23 - Last day to withdraw from classes with the grade of “W”
November 27-31 - Thanksgiving Break
December 2 - Last day of classes

Writing Assignment

You are required to choose a topic related to the science of beer, wine or distilled liquor and write a two-page paper on this topic. For example, topics might include the process of making organic and/or gluten-free beers, the science of oxidation of wine or the distillation process of vodka. The range of topics is limited only by your imagination but must focus on the scientific aspect of the topic.

This paper will be graded on a holistic scale but as noted above must include proper English usage. You must provide references for your paper, including all websites used in conjunction with its preparation. Finally, the paper must be typewritten. Absolutely no handwritten papers will be accepted. This paper will be due on the last of this class.
FACULTY CURRICULUM COMMITTEE COURSE FORM

Contact Name: Pam Riggs-Gelasco  Email: gelascop@cofc.edu  Phone: 3-7455

Department or Program Name: Chemistry  School name: School of Science and Math

Course Prefix, Number, and Title: Chem 353, Chemical Biology

I. CATEGORY OF REVIEW (Check all that apply)
(Note: For changes to course, if you check more than two separate changes, you must create a new course.)

NEW COURSE

☐ New Course (attach syllabus)

CHANGE COURSE

☐ Change Number
☐ Change Title
☐ Change Credits/Contact hours
☐ Prerequisite Change
☐ Edit Description

DELETE COURSE

☐ Re-activate Course
☐ Delete Course

☐ Approve for Cross-listing (attach rationale and written permission from relevant department)

☐ Intended to fulfill a General Education requirement (new courses only). If this box is checked, the course must also be submitted for review by the General Education Committee using this form.

Date (Semester/Year) the course will first be offered: Spring 2014

What are the prerequisites AND OTHER RESTRICTIONS (e.g., class level, major, co-requisite, credit for a mutually exclusive course)?


Will this course be added to the Degree Requirements of a Major, Minor, Concentration or List of Approved Electives?

a) ☐ Yes  ☑ No (Not yet, anyway)

b) If yes, complete and attach the CHANGE DEGREE REQUIREMENT form(s) for each affected program. List the name(s) of each program affected below:

II. NUMBER OF CREDITS and CONTACT HOURS per week

A. Contact Hours

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lab</th>
<th>Seminar</th>
<th>Ind. Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

B. Credit Hours

| 3 | 0 | 0 | 0 |

Is this course repeatable? ☐ yes ☑ no  If so, how many credit hours may the student earn in this course?
III. CATALOG DESCRIPTION Limit to 50 words EXACTLY as you want it to appear in the catalog; include prerequisites, co-requisites, and other restrictions.

Chemistry 353, Chemical Biology
Pre-requisite Chem 351

This literature-based course examines current topics in chemical biology, including in vitro evolution, chemical modification of nucleic acids and proteins, single molecule techniques and pre-steady state kinetics. Students will develop skills in reading the literature critically.

IV. RATIONALE or JUSTIFICATION: If course change or deletion—please provide reasons for change(s) to or deletion of a course. If a new course—briefly address the goals/objectives for the course, how the course supports a major or minor program, etc. For non-major courses address how the course supports the liberal arts tradition and the mission of the institution.

A recurring theme in senior exit surveys of our department for the past 7 years was a demand for more upper-level biochemistry courses. As part of the College’s 2008 Howard Hughes grant, we requested a faculty line in Chemical Biology to expand our curriculum specifically in this interdisciplinary area. Dr. Marcello Forconi was hired to develop this course, which we have offered twice as a special topics course. Student response to the course has been overwhelmingly positive. We are evaluating the course using an online survey tool—CURE—that measures perceived learning outcomes. This HHMI assessment tool evaluates classroom-based research experiences. While this is not a lab course, it does develop skills critical for a lab scientist, such as the ability to read the literature critically. In the CURE survey, students scored this course as providing a significant learning gain in the ability to read and understand the primary literature and in understanding how scientific assertions are supported with evidence.

Senior exit surveys since the course was implemented are highly complimentary of the teaching methods in the course, i.e. using primary literature as reading material and covering current research papers. We may in future years amend this course to include a lab. Also, in upcoming years, we may request that the course fulfill one of the cognate requirements for the biochemistry major. For now, however, we are only requesting the lecture be approved as an elective for biochemistry, chemistry or biology majors (the students most likely to have the pre-requisite of Biochemistry I). Note: while the numbering suggests that this course is “after” Chem 352 (Biochem II), either Biochem II (Chem 352) or Chem 353 or both can be taken after Chem 351 is completed.

V. STUDENT LEARNING OUTCOMES and ASSESSMENT

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>What will students know and be able to do when they complete the course?</td>
<td>How will each outcome be measured? Who will be assessed, when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>1. Explain how chemical tools can be used to study the properties of biological systems and molecules</td>
<td>Major Field Test: Look for improved scores on Biochemistry subsection and on critical thinking subsection of questions. We would expect students in this course to have better scores in these two areas than other students in our program. Test is taken annually by all graduating seniors.</td>
</tr>
<tr>
<td>2. Evaluate the logic behind specific experiments reported in scientific papers</td>
<td>CURE survey questions on improved ability to read and understand the primary literature. Survey is taken at the end of the class along with normal course evaluation. Expect scores of 4-5 on</td>
</tr>
</tbody>
</table>
3. Discriminate between data and interpretations in science

CURE survey questions on understanding how science is constructed. Survey is taken at the end of the class along with normal course evaluation. Expect scores of 4-5 on a 5 point scale, with 5 being significant improvement in the skill of understanding how scientific arguments are supported with data.

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

“The BS Biochemistry major will demonstrate proficiency in one or more of the more narrowly defined sub-disciplines of Chemistry, which include Analytical, Biochemistry, Inorganic, Organic, or Physical chemistry”

Chem 353 will greatly expand the student's exposure to emerging areas of research at the interface of chemistry and biology, and can therefore be expected to contribute to a student's proficiency in Biochemistry sub-discipline. This course is advanced, capstone-like course and students will be demonstrating this skill.

VII. IMPACT ON EXISTING PROGRAMS and COURSES: Please briefly document the impact of this new/changed/deleted course on other programs and courses; if deleting a course—list all programs that include the course; if adding/changing a course—explain any overlap with existing courses in the same or different departments.

We hope that the course attracts Biology majors as well as Chem/Biochem majors. Biology could decide to accept this course as an acceptable option for their degree requirements, but this discussion is premature.

VIII. COSTS ASSOCIATED WITH THE ACTION REQUESTED: List all of the new costs or cost savings, (including new faculty/staff requests, library or equipment, etc.) associated with the action requested.

We have already hired a faculty member with expertise to teach and deliver the course. We do note, however, that this is likely to be a low enrollment course, but the department is willing to accept this in order to provide this high-impact, capstone-type course. We hope enrollment will grow if we allow the course to “count” towards obtaining the BS in Biochemistry at a future date.

IX. APPROVAL AND SIGNATURES

1. Signature of Department Chair or Program Director:

Pamela Riggs-DeLancey  Date: 9-17-12

2. Signature of Academic Dean:

Date: 9/1/12
3. Signature of Provost: 

Date: 10/17/12

4. Signature of Curriculum Committee Chair:

Date: __________________________

5. Signature of Faculty Senate Secretary:

Date: __________________________

Date Approved by Faculty Senate: __________________________

Following Senate approval, the Faculty Senate Secretary will forward the entire packet to the Registrar.
Syllabus
Chemical Biology (CHEM 583) - Spring 2011

Lecture: Tuesday and Thursday, 9:25-10.40 am, 125 New Science Building

Instructor: Dr. Marcello Forconi
302 New Science Building, 202 Calhoun Street
Phone: 843-953-3616
Email: forconim@cofc.edu

Office Hours: Tuesday and Thursday, 10:50-12:00 pm

Course’s website: This syllabus and papers needed for the course will be available at the EReserve page for this course (go to http://erereserve.cofc.edu/eres/ and then search for CHEM583).

Textbook: There is no textbook for this course.
Papers from the literature will be provided through the course’s website.

Suggested additional book for enzyme kinetics:
Should you decide to investigate this topic more deeply, there are two almost equivalent books by Alan Fersht: “Structure and mechanism in protein science: a guide to enzyme catalysis and protein folding” and “Enzyme structure and mechanism”. These books are available from the Addlestone library.

Prerequisite: CHEM 351

Course Objectives:
- To understand how chemical modification can be used to study the properties of biological macromolecules.
- To learn how to read and evaluate a scientific paper
### (Tentative) Course Sequence for CHEM 583 – Spring 2011

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/11</td>
<td>Introduction to Chemical Biology</td>
<td>Zhuang PNAS 2008</td>
</tr>
<tr>
<td>01/13 &amp; 18</td>
<td>DNA polymerases: fast and slow</td>
<td>Tsai Biochem 2006</td>
</tr>
<tr>
<td>01/20 &amp; 25</td>
<td>Group I ribozyme: kinetics and mechanisms</td>
<td>Karbstein Biochem 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Narlikar PNAS 1995</td>
</tr>
<tr>
<td>01/27 &amp; 02/01</td>
<td>RNA modifications and applications to catalysis</td>
<td>Das NSB 2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forconi Biochem 2008</td>
</tr>
<tr>
<td>02/03 &amp; 08</td>
<td>Unnatural amino acids</td>
<td>Dawson Science 1994</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ohuchi 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vallyaveetil Science 2006</td>
</tr>
<tr>
<td>02/10</td>
<td>TEST</td>
<td></td>
</tr>
<tr>
<td>02/15 &amp; 17</td>
<td>Halogenases and cryptic halogenases</td>
<td>Zhu JACS 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Villancourt Nature 2005</td>
</tr>
<tr>
<td>02/22 &amp; 24</td>
<td>Catalytic promiscuity</td>
<td>TBA</td>
</tr>
<tr>
<td>03/01 &amp; 03</td>
<td>In-vitro evolution</td>
<td>TBA</td>
</tr>
<tr>
<td>03/08 &amp; 10</td>
<td>Spring Break</td>
<td></td>
</tr>
<tr>
<td>03/15 &amp; 17</td>
<td>Resurrection of ancient enzymes</td>
<td>Thomson Nat Genet 2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ortlund Science 2007</td>
</tr>
<tr>
<td>03/22</td>
<td>Test</td>
<td></td>
</tr>
<tr>
<td>03/24 &amp; 29</td>
<td>Protein &amp; RNA folding problems</td>
<td>Dill NSB 1997</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Solomatin Nature 2010</td>
</tr>
<tr>
<td>03/31 &amp; 04/05</td>
<td>Dynamics in macromolecules</td>
<td>Boehr Science 2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Watt PNAS 2007</td>
</tr>
<tr>
<td>04/07</td>
<td>Specificity in signal transduction systems</td>
<td>Kung PNAS 2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Skerker Cell 2008</td>
</tr>
<tr>
<td>04/12</td>
<td>Profiling protein thiol oxidation</td>
<td>Seo PNAS 2009</td>
</tr>
<tr>
<td>04/14</td>
<td>Suspended animation</td>
<td>Blackstone Science 2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collman PNAS 2009</td>
</tr>
<tr>
<td>04/19 &amp; 21</td>
<td>Genome manipulation and the creation of ‘digital life’</td>
<td>Cello Science 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gibson et al Science 2010</td>
</tr>
<tr>
<td>04/28</td>
<td>FINAL EXAM, 8 - 11 am</td>
<td></td>
</tr>
</tbody>
</table>

Remember, except for the final exam, this is not the final schedule. Please refer to announcements during the lectures for the exact dates of the tests.

**Tests:** There will be two tests. These tests will involve a student presentation of a paper not discussed in the class, but related to the course and its topics.
**Homework:** There will be two homework assignments. Due dates for the assignments will be discussed in the course.

**Final Exam:**        April 28th, 8-11 pm.

**Withdraw Date:**    March 14th

**Grading:**
- Test 1 15%
- Homework 1 15%
- Test 2 15%
- Homework 2 15%
- Final Exam 40%

For a total of 1000 points

<table>
<thead>
<tr>
<th>Letter</th>
<th>points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>925-1000</td>
</tr>
<tr>
<td>A-</td>
<td>900-920</td>
</tr>
<tr>
<td>B+</td>
<td>870-895</td>
</tr>
<tr>
<td>B</td>
<td>830-865</td>
</tr>
<tr>
<td>B-</td>
<td>800-825</td>
</tr>
<tr>
<td>C+</td>
<td>770-795</td>
</tr>
<tr>
<td>C</td>
<td>730-765</td>
</tr>
<tr>
<td>C-</td>
<td>700-725</td>
</tr>
<tr>
<td>D+</td>
<td>670-695</td>
</tr>
<tr>
<td>D</td>
<td>630-665</td>
</tr>
<tr>
<td>D-</td>
<td>600-625</td>
</tr>
<tr>
<td>F</td>
<td>Below 600</td>
</tr>
</tbody>
</table>

**Attendance:** Attendance at lectures is usually proportional to your grade. The exact date of the tests will be announced in advance; the schedule above is not definitive. Attendance at exams is mandatory; however, in extreme instances (such as major medical problems or sudden family situations) there can be make-up exams. Please talk to me should such instances arise. Generally, no more than one justified absence will be tolerated.

**Academic Dishonesty:** Cheating and dishonesty will not be tolerated. Please refer the Student Handbook for the specific definitions. Classroom disruption will also not be tolerated. Serious and persistent classroom disruption could result in disciplinary charges, as explained in the Student Handbook.
Disabilities: If there is a student in this class who has a documented disability and has been approved to receive accommodations though SNAP Services, please feel free to come and discuss this with me during my office hours.

Other possible issues: Please talk to me if you need to discuss a change in an exam time and/or date because of your religious observances. Similarly, please talk to me if you are involved in a sport team and you have a scheduled event on one of the exam dates.
FACULTY CURRICULUM COMMITTEE COURSE FORM

Contact Name: Pam Riggs-Gelasco  Email: gelascop@cofc.edu  Phone: 3-7455

Department or Program Name: Chemistry  School name: School of Science and Math

Course Prefix, Number, and Title: Chem 355, Research Methods in Biochemistry

I. CATEGORY OF REVIEW (Check all that apply)
(Note: For changes to course, if you check more than two separate changes, you must create a new course.)

NEW COURSE

☑ New Course (attach syllabus)

CHANGE COURSE

☐ Change Number
☐ Change Title
☐ Change Credits/Contact hours
☐ Prerequisite Change
☐ Edit Description

DELETE COURSE

☐ Re-activate Course
☐ Delete Course

☐ Approve for Cross-listing (attach rationale and written permission from relevant department)

☐ Intended to fulfill a General Education requirement (new courses only). If this box is checked, the course must also be submitted for review by the General Education Committee using this form.

Date (Semester/Year) the course will first be offered: Fall 2013

What are the prerequisites AND OTHER RESTRICTIONS (e.g., class level, major, co-requisite, credit for a mutually exclusive course)?

Chemistry 354, Biochemistry Laboratory

Will this course be added to the Degree Requirements of a Major, Minor, Concentration or List of Approved Electives?

a) ☐ Yes  ☒ No  (Not yet, anyway)

b) If yes, complete and attach the CHANGE DEGREE REQUIREMENT form(s) for each affected program. List the name(s) of each program affected below:

II. NUMBER OF CREDITS and CONTACT HOURS per week

<table>
<thead>
<tr>
<th>A. Contact Hours</th>
<th>Lecture</th>
<th>Lab</th>
<th>Seminar</th>
<th>Ind. Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

B. Credit Hours

|                  | 2       | 0   | 0       | 0          |

Is this course repeatable? ☐ yes  ☒ no  If so, how many credit hours may the student earn in this course?
III. CATALOG DESCRIPTION Limit to 50 words EXACTLY as you want it to appear in the catalog: include prerequisites, co-requisites, and other restrictions.

Chemistry 355, Research Methods in Biochemistry
Pre-requisite Chem 354

A capstone laboratory experience for biochemistry or molecular biology track Biology majors where students work independently to complete a guided research project.

IV. RATIONALE or JUSTIFICATION: If course change or deletion—please provide reasons for change(s) to or deletion of a course. If a new course—briefly address the goals/objectives for the course, how the course supports a major or minor program, etc. For non-major courses address how the course supports the liberal arts tradition and the mission of the institution.

A recurring theme in senior exit surveys of our department for the past 7 years was a demand for more upper-level biochemistry courses. As part of the College’s 2008 Howard Hughes grant, we requested a faculty line in Chemical Biology to expand our teaching capacity in biochemistry, allowing us to develop and offer more upper level courses in biochemistry. This course will likely appeal to both biochemistry majors and molecular biology track Biology majors. The course parallels a 6-contact hour lab course for chemistry majors (Chem 371). The curriculum of both of these courses (Chem 371 and the proposed Chem 355) center around the research interests of the faculty member teaching the course. Both courses involve independent use of skills that have been introduced in prior lab courses in the development of independent projects. And, finally, both of these classroom research experiences are intended to yield publishable results on a current research problem.

While we encourage our students to participate in our independent study research courses (481 and 482), not all students plan ahead enough to secure a spot in a research lab during their career. Positions in labs are also limited by funding and faculty time. We see this course as a supplement to the research opportunities we already offer. It is also more structured, with students working independently, but in parallel, on similar projects. The final project is two fold—writing a manuscript-style paper and constructing a poster for the SSM poster session in the spring. This is a small enrollment course, with 6-8 students.

The proposed course has been taught as a special topics course in Fall 2011 and Fall 2012. We will be evaluating the course using an online survey tool—CURE—a tool that evaluates classroom-based research experiences. The CURE survey addresses student-perceived improvement in learning outcomes such as 1) clarification of career path, 2) skill in interpretation of results, 3) understanding how knowledge is constructed, 4) ability to analyze data and other information, 5) skill in science writing, 6) ability to read and understand the primary literature. In upcoming years, we may request that the course fulfill one of the cognate requirements for the biochemistry major. For now, however, we are only requesting the lab be approved as an elective for interested biochemistry, chemistry or biology majors (the students most likely to have the pre-requisite of Biochemistry lab).

V. STUDENT LEARNING OUTCOMES and ASSESSMENT

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>What will students know and be able to do when they complete the course?</td>
<td>How will each outcome be measured? Who will be assessed, when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>1. Apply a variety of standard biochemical lab techniques for the completion of a research problem</td>
<td>CURE survey questions on understanding how scientists work on real problems, learning</td>
</tr>
<tr>
<td>in biochemistry</td>
<td>laboratory techniques, and learning to work independently</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>2. Compose a scientific manuscript based on results obtained in the course</td>
<td>CURE survey questions on skills in science writing</td>
</tr>
<tr>
<td>3. defend and present your results to the scientific community at the School of Science and Math poster session</td>
<td>CURE survey questions on understanding how science is constructed and becoming part of a learning community</td>
</tr>
<tr>
<td>4. interpret real data, examine its meaning, and formulate a modified research plan</td>
<td>CURE survey question on understanding how knowledge is constructed</td>
</tr>
</tbody>
</table>

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

"The BS Biochemistry major will demonstrate proficiency in one or more of the more narrowly defined sub-disciplines of Chemistry, which include Analytical, Biochemistry, Inorganic, Organic, or Physical chemistry"

Chem 355 will greatly expand the student’s exposure to emerging areas of research and to topics in the scientific literature, and the course can therefore be expected to contribute to a student’s proficiency in Biochemistry sub-discipline. This course is an advanced, capstone lab course and students will be demonstrating this skill with their final paper and with their poster presentation.

VII. IMPACT ON EXISTING PROGRAMS and COURSES: Please briefly document the impact of this new/changed/deleted course on other programs and courses; if deleting a course—list all programs that include the course; if adding/changing a course—explain any overlap with existing courses in the same or different departments.

We hope that the course attracts Biology majors as well as Biochemistry majors. At the moment, the course would be an elective.

VIII. COSTS ASSOCIATED WITH THE ACTION REQUESTED: List all of the new costs or cost savings, (including new faculty/staff requests, library or equipment, etc.) associated with the action requested.

This lab operates in the biochemistry lab suite and will run in the Fall semester when there is only one or two sections of Chem 354 offered. The HHMI grant provided funds (~$150,000) to double the equipment base in the facility to allow multiple student groups to operate simultaneously and independently. This was the primary expense of the course. The consumable reagents for the next 4 years are covered on the 2012 HHMI grant. The reagents needed for the course in future years (~1,000/semester) will be absorbed in the chemistry department’s budget. Participants in the course would be charged standard lab fees, presumably, which would cover about ¼ of this expense.
IX. APPROVAL AND SIGNATURES

1. Signature of Department Chair or Program Director:

   Pamela Figg-Sulcer  Date: 9-17-12

2. Signature of Academic Dean:

   Date: 9/21/12

3. Signature of Provost:

   Date: 10/17/12

4. Signature of Curriculum Committee Chair:

   Date:

5. Signature of Faculty Senate Secretary:

   Date:

Date Approved by Faculty Senate:

Following Senate approval, the Faculty Senate Secretary will forward the entire packet to the Registrar.
Research Methods in Biochemistry
Instructor: Dr. Riggs-Gelasco
Class Time: Monday 2-5pm
Additional 3 hours of independent work
SSMB 311
Office: New Science Center, room 324
Phone: 953-7455
e-mail: gelascop@cofc.edu
Office Hours:

Course Goals: To give students a research experience in biochemistry by generating useful site-directed mutants that will be useful for characterizing the protein’s function.

Learning Outcomes:
- apply a variety of standard biochemical lab techniques for the completion of a research problem in biochemistry
- compose a scientific manuscript based on results obtained in the course
- defend and present your results to scientific community at the School of Science and Math Poster Session in the spring
- interpret real data, examine its meaning, and formulate a modified research plan

Text: No text for this course; readings from the primary literature will be posted online in Oaks.

Meeting Time: This is a two-credit lab course, which carries an expectation of six hours per week. We will meet on Mondays at 2pm to cover the expectations for the week and allow you to get started on any lab work. The remainder of the time you spend in lab will be at your own convenience between the hours of 8am and 6pm. Please note that Tuesday afternoon there is another lab meeting in the main biochemistry lab, so we need to not interfere with that course. Please avoid being in the lab during the pre-lab discussion, which will be taking place 1:40-2:10pm. On Tuesday afternoon, there will be times when we will not be able to use certain equipment in the lab. If you are in the lab on Tuesdays, try to stay in the back room as much as possible.

Safety: Since most of the work you will perform will be on your own time, it is imperative that you follow these safety guidelines.
1) Always have lab glasses. On your eyes, not on your head.
2) Always have appropriate shoes, pants, and lab coat.
3) Always have another person with you.

Grading:
Assignments: 50%
Final Written Report (individual): 25%
Final Exam: Poster presentation with partner: 25%
| Week 1 Assignments | Read about the protein frataxin  
Turn in questions about protein function |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 Lab work</td>
<td>Familiarize yourself with the process of transformation, plasmid manipulation, and purification using Biorad GPP kit. Group project!</td>
</tr>
<tr>
<td>Week 2 Assignments</td>
<td>Do sequence alignments of the drosophila, human, and yeast proteins and determine the numbering systems for key residues involved in metal binding, in diseased states, and in protein interface areas. With your partner, determine some key residues to focus on. Write up your conclusions and include a figure of your alignment. Be sure to save your DNA and protein sequences.</td>
</tr>
<tr>
<td>Week 2 Lab work</td>
<td>Do a transformation and growth for a plasmid prep on the WT frataxin plasmid.</td>
</tr>
<tr>
<td>Week 3 Assignments</td>
<td>Write up an “experimental” section on your restriction digest conditions that includes a figure of your gel</td>
</tr>
<tr>
<td>Week 3 Lab Work</td>
<td>Do a restriction digest to the plasmid to convince yourself your isolation was effective; run a gel on the digest and on the naked plasmid; document the gel with the gel documentation system</td>
</tr>
<tr>
<td>Week 4 Assignments</td>
<td>Read the stratogene QuikChange mutagenesis protocol. Read it again. Using the class's list of possible useful mutations, determine what mutations are EASY and practical to introduce. Use the NCBI tool mutation analyzer for help in this. <a href="http://www.ncbi.nlm.nih.gov/Class/Structure/aa/aa_explorer.cgi">http://www.ncbi.nlm.nih.gov/Class/Structure/aa/aa_explorer.cgi</a> Prepare a report with your conclusions, showing which codon is being modified.</td>
</tr>
<tr>
<td>Week 4 Labwork</td>
<td>Replace your WT frataxin; Do a 1.5 L growth inducing for protein production with IPTG; harvest and store your cells for future use.</td>
</tr>
<tr>
<td>Week 5 Assignments (no wet lab)</td>
<td>Read about PCR. Design your PCR primers using Stratagene's Primer design program on their website. (Quick Change Primer Design). Prepare a figure that shows the sequence, top strand and bottom strand, and the primers, sense and antisense.</td>
</tr>
<tr>
<td>Week 6 Assignments</td>
<td>Order primers. Start writing an introduction for your final report that summarizes the literature.</td>
</tr>
<tr>
<td>Week 6 lab</td>
<td>Run PCR.</td>
</tr>
<tr>
<td>Week 7 Assignments</td>
<td>Continue to work on your introduction; turn in a draft.</td>
</tr>
<tr>
<td>Week 7 lab</td>
<td>Process your PCR product as directed in the QuikChange kit. (DpnI digestion and transformation); select 5 colonies and do an overnight growth for plasmid preps; Do minipreps on your colonies</td>
</tr>
<tr>
<td>Week 8 Assignments</td>
<td>Read about DNA sequencing</td>
</tr>
<tr>
<td>Week 8 lab</td>
<td>Visit sequencing lab; submit plasmids for sequencing</td>
</tr>
<tr>
<td>Week 9 Assignments</td>
<td>Retrieve DNA sequencing results and align the data with the expected sequence; turn in this alignment.</td>
</tr>
<tr>
<td>Week 9 lab</td>
<td>If your mutation worked, transform your plasmid into overexpressing strain of E. coli and do a 250 mL growth where you express for protein production; run SDS PAGE on your growth. If your mutation did not work....try, try again. Compare to WT protein expression on your gel with your frozen cells.</td>
</tr>
<tr>
<td>Week 10-14 Assignments</td>
<td>Finish writing up your experimental and results section for your final paper thus far. Turn in draft of the experimental. Start assembling your poster.</td>
</tr>
<tr>
<td>Week 10-14 lab</td>
<td>If your protein expresses, begin development of a purification strategy using the WT protocol as a starting point.</td>
</tr>
</tbody>
</table>
FACULTY CURRICULUM COMMITTEE COURSE FORM

Contact Name: Pam Riggs-Gelasco  Email: gelascop@cofc.edu  Phone: 3-7455

Department or Program Name: Chemistry  School name: School of Science and Math

Course Prefix, Number, and Title: Chem 356, Biochemical Basis of Disease

I. CATEGORY OF REVIEW (Check all that apply)
(Note: For changes to course, if you check more than two separate changes, you must create a new course.)

NEW COURSE

✓ New Course (attach syllabus)

CHANGE COURSE

☐ Change Number
☐ Change Title
☐ Change Credits/Contact hours
☐ Prerequisite Change
☐ Edit Description

DELETE COURSE

☐ Re-activate Course
☐ Delete Course

☐ Approve for Cross-listing (attach rationale and written permission from relevant department)

☐ Intended to fulfill a General Education requirement (new courses only). If this box is checked, the course must also be submitted for review by the General Education Committee using this form.

Date (Semester/Year) the course will first be offered: Fall 2013

What are the prerequisites AND OTHER RESTRICTIONS (e.g., class level, major, co-requisite, credit for a mutually exclusive course)?

Chemistry 351

Will this course be added to the Degree Requirements of a Major, Minor, Concentration or List of Approved Electives?

a) ✓ No (Not yet, anyway)

b) If yes, complete and attach the CHANGE DEGREE REQUIREMENT form(s) for each affected program. List the name(s) of each program affected below:

II. NUMBER OF CREDITS and CONTACT HOURS per week

A. Contact Hours

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lab</th>
<th>Seminar</th>
<th>Ind. Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

B. Credit Hours

| 2       | 0   | 0       | 0          |

Is this course repeatable? ☐ yes ✓ no  If so, how many credit hours may the student earn in this course?
### III. CATALOG DESCRIPTION
Limit to 50 words EXACTLY as you want it to appear in the catalog; include prerequisites, co-requisites, and other restrictions.

**Chemistry 356, Biochemical Basis of Disease**  
**Pre-requisite Chem 351**

This course explores the biochemical underpinnings of disease. Topics include prion disease, Alzheimer’s, antibiotic resistance, obesity, heart disease, diabetes, cancer and others. The readings for this course will be from the scientific and medical literature and students will be presenting articles to their classmates.

### IV. RATIONALE or JUSTIFICATION: If course change or deletion—please provide reasons for change(s) to or deletion of a course. If a new course—briefly address the goals/objectives for the course, how the course supports a major or minor program, etc. For non-major courses address how the course supports the liberal arts tradition and the mission of the institution.

A recurring theme in senior exit surveys of our department for the past 7 years was a demand for more upper-level biochemistry courses. As part of the College’s 2008 Howard Hughes grant, we requested a faculty line in Chemical Biology to expand our teaching capacity in biochemistry, allowing us to develop and offer more upper level courses in biochemistry. This course will likely appeal to both Biochemistry majors and Biology majors who are interested in biomedical research or the practice of medicine. The course is intended to improve student skill in reading the primary literature, in using their backgrounds in biology and chemistry to understand issues of fundamental importance in human health, in thinking critically about published work, in understanding how to construct a scientific argument, and in presenting scientific findings to an audience of peers.

The proposed course has been taught as a special topics course in Spring of 2010 and 2012 to an audience of 12-14 students. Both times, it was taught as a 1-credit course. Students felt that the course should meet twice as often so we would not be so rushed in covering material. The format of the course was a 1 hour overview of the disease by the instructor, and then the following week, student groups presented papers to the class on that disease. Grades in the course were based on participation, on presentations, and on a final exam. By expanding the course to 2 hours/week, we hope to be able to involve guest lecturers from MUSC.

### V. STUDENT LEARNING OUTCOMES and ASSESSMENT

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>What will students know and be able to do when they complete the course?</td>
<td><strong>Final exam addresses student understanding of scientific principals; all students are assessed at the end of the course. A pre-test will be administered prior to the start of the course to monitor growth in the subject area. Thus far, students have had a high success rate on the final exam.</strong></td>
</tr>
<tr>
<td>To develop an understanding of biological pathways and mechanisms that are faulty in selected diseases</td>
<td><strong>CURE online survey questions on “understanding how science is constructed”; expect high scores here, between 4-5, indicating substantial improvement as result of course</strong></td>
</tr>
<tr>
<td>To illustrate how scientific knowledge is constructed by using examples from the medical and scientific literature</td>
<td><strong>Final exam addresses student understanding of role</strong></td>
</tr>
<tr>
<td>To evaluate how biological and chemical tools can be</td>
<td></td>
</tr>
</tbody>
</table>
applied to the study of disease

of research tools

To develop oral presentation skills appropriate for a professional scientist.

CURE survey question on skill in how to give an effective oral presentation; expect high scores here, between 4-5, indicating substantial improvement as result of course

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

"The BS Biochemistry major will demonstrate proficiency in one or more of the more narrowly defined sub-disciplines of Chemistry, which include Analytical, Biochemistry, Inorganic, Organic, or Physical chemistry"

Chem 356 forces a student to draw upon their previous course work in biology and biochemistry to understand these current research problems in medicine, and the course can therefore be expected to contribute to a student's proficiency in the Biochemistry sub-discipline. The course is a "demonstration" course.

VII. IMPACT ON EXISTING PROGRAMS and COURSES: Please briefly document the impact of this new/changed/deleted course on other programs and courses; if deleting a course—list all programs that include the course; if adding/changing a course—explain any overlap with existing courses in the same or different departments.

We hope that the course attracts Biology majors as well as Biochemistry majors. At the moment, the course would be an elective.

VIII. COSTS ASSOCIATED WITH THE ACTION REQUESTED: List all of the new costs or cost savings, (including new faculty/staff requests, library or equipment, etc.) associated with the action requested.

There is no cost for the lecture course, other than it requires a roster faculty member to teach. We note that this will be a low-enrollment course because of its focus on oral presentations.

IX. APPROVAL AND SIGNATURES

1. Signature of Department Chair or Program Director:

   [Signature]
   Date: 9-17-12

2. Signature of Academic Dean:

   [Signature]
   Date: 9/21/12

3. Signature of Provost:

   [Signature]
   Date: 10/17/12
4. Signature of Curriculum Committee Chair:

_________________________________________ Date: ____________

5. Signature of Faculty Senate Secretary:

_________________________________________ Date: ____________

Date Approved by Faculty Senate: ________________________________________

Following Senate approval, the Faculty Senate Secretary will forward the entire packet to the Registrar.
Chemistry 583
Molecular Basis of Disease
Spring 2010
Mondays at 1 pm
Room 300, new science center

Instructor:
Dr. Riggs-Gelasco
320 New Science Center, 953-7182
gelascop@cofc.edu

Office Hours:
Monday, 2:00-3:00
Tuesday, 2:00-3:00
Thursday, 2:00-3:00
or by appointment

Class Materials:
All reading for this course will be from the literature and posted on WebCT

Topics:
Antibiotic Resistance
Diabetes
Alzheimer's
Obesity
Cardiovascular Disease
Cancer

Design of Course:
Each topic will be discussed for two weeks. Either I (or possibly a guest speaker) will introduce the topic in the first week. Students will be responsible for reading some assigned review articles on the topic prior to attending the introductory lecture. The following week, students will present assigned research articles on the topics. All students will be responsible for reading the research articles PRIOR to coming to class.

Evaluation of the Course:
Oral presentations of a journal article: 40%
Class participation: 25%
Final Exam: 35%

Oral Presentation Guidelines:
Each student will present an article twice to the class. The presentation should last ~20 minutes. Students will work in pairs for each presentation. One student will be responsible for presenting the background material and the methods for the article and one student will present the research results and the interpretation for the article. You are expected to work together on the presentation so that it is logic and coherent. Both
students should be equally prepared to change places if necessary or to present the entire article solo if necessary.

The presentation itself should be done in powerpoint. Students are responsible for making sure that their presentation will load onto the computer in our classroom. This means you need to check it prior to the Monday afternoon you are presenting. You will only have a week to ten days to prepare the presentation after the articles have been selected. When presenting an article, it may be necessary for you to do outside reading in order to adequately explain the article to the class. For example, if your article uses a technique like MALDI, you would want to do some background reading on the technique to explain what it does. You don’t have to be an expert, but you want to be knowledgeable about your article.

Presenters will also make a 1-2 page figure summary for the class. This can be as simple as copying the figures you will be discussing (in miniature form), so that your classmates have a reference sheet to study from for the final exam. This summary form needs to be handed in to me or sent electronically (in PDF form) by Monday at 9am and I will make sure the copies are made and distributed to the class.

**Participation Guidelines:**

Your participation grade will have three components

1) **preview questions (10%)**: Prior to each article presentation, each student will have read the articles being presented and you will compose several questions for the presenters prior to coming to class. Before the presentations begin, you will turn in your questions to me. You may or may not get your questions answered during the presentation by your classmates. There will be ~5 minutes afterwards for discussion/questions after each article presentation. You may ask your questions at this time if you would like and this would contribute to your “attitude, respect, and attentiveness” grade. You do not have to turn in preview questions if you are a presenter that week.

2) **exam questions (10%)**: After listening to both my introductory lecture and your classmates’ presentations on research articles, each student is to write four questions that would be appropriate for a final exam for this course. You need to write both the question and the answer to your four questions. This will be turned in electronically to me prior to the next class. If you do a good job on this, your final exam might include your questions and those of your classmates. If you write a thoughtful multiple choice question, your question is more likely to show up on the final.

3) **attentiveness, respect, and attitude (5%)**: It is always a nerve-wracking experience to make oral presentations. I expect you to be courteous to your classmates and to me. I expect you to act like you are interested in the material, even if you are not. One way to show interest is to ask thoughtful questions and to participate in the discussion. If you do these things, you will receive all of the points for this area of participation. If you text, look asleep, giggle or chat, you will not be getting these points.
Tips for Oral Presentations (adapted from the URCA website)

* Know what you did AND why you did it.
* Organize your talk in a logical manner (Introduction, Historical Background, Clearly Stated Aim, Description of Methods, Presentation of Results, Summary Statement, Future Work, Acknowledgements) and THANK YOUR AUDIENCE.
* Start with an overview of your talk; give the audience a brief framework for the presentation.
* Keep it simple (both the message and the presentation materials); avoid distracting animations, fades, etc. Let your information be the focus of attention.
* Proofread your material (three times is not too many). Use a spellchecker.
* Find out how much time you are allotted and how much of that should be left for questions. Do not get defensive about the questions asked, and if you cannot answer or understand a question, do not be afraid to say you do not the answer, or to ask for clarification. Remember, your actual presentation will take longer than your practice.
* Count on spending about one to two minutes per slide; do not overload your presentation with too many slides (About 6 or 7 good slides per 10 minutes may be optimal.) Do not overload your slides with information; keep your slides simple, and use large font.
* Practice your talk, formally, many times in front of your mentor and others.
* If you use a computer, test run your presentation on multiple platforms and versions of operational software.
* Carry a backup (thumb drive, CD, DVD, etc.)
* A picture is worth 1000 words. Try to have a picture or figure on each slide INSTEAD of words. No one likes going to a presentation when there are only words on a slide. Use a figure instead and YOU provide the words orally.
FACULTY CURRICULUM COMMITTEE COURSE FORM

Contact Name: Pam Riggs-Gelasco   Email: gelascop@cofc.edu   Phone: 3-7455

Department or Program Name: Chemistry   School name: School of Science and Math

Course Prefix, Number, and Title: Chem 583, Advanced Special Topics in Chemistry and Biochemistry

I. CATEGORY OF REVIEW (Check all that apply)
(Note: For changes to course, if you check more than two separate changes, you must create a new course.)

- □ New Course (attach syllabus)
- □ Change Number
- □ Change Title
- □ Change Credits/Contact hours
- □ Prerequisite Change
- □ Edit Description
- □ Re-activate Course
- □ Delete Course

□ Approve for Cross-listing (attach rationale and written permission from relevant department)

□ Intended to fulfill a General Education requirement (new courses only). If this box is checked, the course must also be submitted for review by the General Education Committee using this form.

Date (Semester/Year) the course will first be offered: Fall 2013

What are the prerequisites AND OTHER RESTRICTIONS (e.g., class level, major, co-requisite, credit for a mutually exclusive course)?

These will depend on the nature of the topic. The “583” level would probably have a Chem 232 pre-req, a Chem 351 pre-req, or a Chem 341 pre-req (i.e. junior or senior level chemistry).

Will this course be added to the Degree Requirements of a Major, Minor, Concentration or List of Approved Electives?

a) □ Yes   √ No

b) If yes, complete and attach the CHANGE DEGREE REQUIREMENT form(s) for each affected program. List the name(s) of each program affected below:

II. NUMBER OF CREDITS and CONTACT HOURS per week

A. Contact Hours

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lab</th>
<th>Seminar</th>
<th>Ind. Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>0-3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

B. Credit Hours

| 1-3     | 0-1 | 0       | 0          |

Is this course repeatable? √ yes   no  If so, how many credit hours may the student earn in this course? 12
III. CATALOG DESCRIPTION Limit to 50 words EXACTLY as you want it to appear in the catalog; include prerequisites, co-requisites, and other restrictions.

Chemistry 583, Advanced Special Topics in Chemistry and Biochemistry
Pre-requisite: Permission of Instructor

This course covers a special topic in chemistry or biochemistry, usually in an emerging area of research, in an area of industrial importance, or in an interdisciplinary field, at a level appropriate for a junior or senior level chemistry student.

IV. RATIONALE or JUSTIFICATION: If course change or deletion—please provide reasons for change(s) to or deletion of a course. If a new course—briefly address the goals/objectives for the course, how the course supports a major or minor program, etc. For non-major courses address how the course supports the liberal arts tradition and the mission of the institution.

Chemistry and Biochemistry has a single Special Topics Course, Chem 583, which has been used as a catch-all course number for ANY course being taught outside the normal curriculum. This proposal to rename and re-describe this course is part of an overhaul in this system that has, in the past, allowed students to get 500-level credit for a course with minimal pre-reqs. In addition, the current course description of Chem 583 is completely inaccurate for how these courses have been conducted in the past dozen years. The current course description talks about offering topics in thirds and that students enroll in one or multiple sub-courses. This no longer makes sense.

V. STUDENT LEARNING OUTCOMES and ASSESSMENT

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<tr>
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<tbody>
<tr>
<td>What will students know and be able to do when they complete the course?</td>
<td>How will each outcome be measured? Who will be assessed, when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>1. assess the role of chemistry in solving problems of industrial and/or interdisciplinary importance</td>
<td>Traditional exams and writing assignments appropriate to the topic discussed. Approval of new courses at the departmental level will require an assessment plan and more specific learning outcomes</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>2. assess the importance of an emerging sub-field in chemistry or biochemistry</td>
<td>Traditional exams and writing assignments appropriate to the topic discussed. Approval of new courses at the departmental level will require an assessment plan and more specific learning outcomes</td>
</tr>
</tbody>
</table>

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

"The BS Biochemistry major will demonstrate proficiency in one or more of the more narrowly defined sub-disciplines of Chemistry, which include Analytical, Biochemistry, Inorganic, Organic, or Physical chemistry"

Chemistry special topics courses usually emphasize a particular sub-discipline in chemistry (i.e. polymer chemistry reinforces topics in organic). A student taking the course would be more proficient in that area after taking a course that expands on one of the core curriculum courses. Examples from the past include a Pharmacology Course that reinforced topics in Biochemistry and Organic Chemistry.
VII. IMPACT ON EXISTING PROGRAMS and COURSES: Please briefly document the impact of this new/changed/deleted course on other programs and courses; if deleting a course—list all programs that include the course; if adding/changing a course—explain any overlap with existing courses in the same or different departments.

Some of these courses might be interdisciplinary in nature, for example, a “nanoscience” course. Such a course might draw interest from students in other departments. Even in cases where the course might appear to be similar to another department’s course offering or special topics course, a special topics course in chemistry would most likely emphasize chemical structure or mechanism and is therefore likely to be fundamentally different in its content.

VIII. COSTS ASSOCIATED WITH THE ACTION REQUESTED: List all of the new costs or cost savings, (including new faculty/staff requests, library or equipment, etc.) associated with the action requested.

Any time a special topics course is offered there is the potential that the faculty member teaching it will be removed from the roster of regular courses that still need to be covered. This might lead to the need for an additional adjunct to cover a lab section. Because our pool of interested students is fairly small and because Chem/Biochem students have very little flexibility in their schedule, it is unlikely that we would offer more than two special topics courses in any given semester. In many cases in the past, faculty taught special topics as an overload, so there was no additional cost associated with the course. We anticipate that most special topics courses would be lecture based courses, so that lab expenses are not likely to be involved. We have listed a possible lab component (0-3 contact hours) in case this might be a crucial component in the future.

IX. APPROVAL AND SIGNATURES

1. Signature of Department Chair or Program Director:

   [Signature] Date: 9-17-12

2. Signature of Academic Dean:

   [Signature] Date: 9/26/12

3. Signature of Provost:

   [Signature] Date: 10/17/12

4. Signature of Curriculum Committee Chair:

   [Signature] Date: 

5. Signature of Faculty Senate Secretary:

   [Signature] Date: 

Date Approved by Faculty Senate: 

Following Senate approval, the Faculty Senate Secretary will forward the entire packet to the Registrar.
**Clinical Pharmacology**  
Spring 2006

**Instructor:** Dr. Dawne M. Taylor  
**Office:** 65 Coming St. Rm. 105  
**Phone:** 953-5052  
**e-mail:** taylorc@cofc.edu  
**Web page:** www.cofc.edu/~taylorc

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**SAMPLE CHEM 583 COURSE**

**Schedule and Office hours:**

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 - 11:50 am Chem 111 Lecture</td>
<td><strong>Office Hours</strong></td>
<td>9:00 - 10:30 am Office Hours</td>
<td>11:00 - 11:50 am Chem 111 Lecture</td>
<td>11:00 - 11:50 am Chem 111 Lecture</td>
</tr>
<tr>
<td>2-4 pm Office Hours</td>
<td><strong>By Appointment</strong></td>
<td>11:00 - 11:50 am Chem 111 Lecture</td>
<td>1-3 pm Office Hours</td>
<td>Office Hours</td>
</tr>
<tr>
<td>5:00-5:50 pm Pharmacology 6:6:50 pm Advanced Organic</td>
<td><strong>Only</strong></td>
<td>1-4 pm Chem 111 Lab SCIC 320</td>
<td>3:30-6:30 pm Chem 111 Lab SCIC 320</td>
<td>By Appointment</td>
</tr>
<tr>
<td>Advanced Organic</td>
<td><strong>Advanced Organic</strong></td>
<td>5:00-5:50 pm Pharmacology 6:6:50 pm Advanced Organic</td>
<td>7-10 pm Organic Lab SCIC 303</td>
<td>Only</td>
</tr>
</tbody>
</table>

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**Text:** There is NO required text for this course. I will have notes posted on my website for you.

**Attendance and Participation:**  
This is an elective course and you are taking it because you are interested in the subject matter. Attendance is NOT mandatory but if you miss an exam or a quiz there are no make-ups after the set date. I expect everyone to participate in class.

**Dissemination of information:**  
Notes, Homework and Schedule will be posted on my website www.cofc.edu/~taylorc. You will want to check that before coming to class. I will do my best to make sure that the information is accurate and up to date. Your Edisto email account is the email address we have on file and what I will use if I need to get in touch with you, so you will want to make sure that you check that or have it forwarded to a more frequently used account. http://www.cofc.edu/about/undergrad/7.HTM. Any graded material handed from the instructor to the student directly.

**Grading:**  
Your final grade will be calculated by the following formula:

- **Quiz:** 20%
- **Exams:** 30%
- **Debate:** 15%
- **Drug Monograph:** 20%
- **Case Study:** 15%

**Grading Scale:**

- **A** 90-100%
- **B+** 87-89%
- **B** 80-86%
- **C+** 77-79%
- **C** 70-76%
- **D** 65-69%
- **F** Below 65%

**Cheating of any kind will not be tolerated and can result in failure of this course.**

**Students Rights and Responsibilities:** http://www.cofc.edu/about/undergrad/7.HTM

**College of Charleston Honor Code:** http://www.cofc.edu/~agrestm/honor.html

**Chemistry Department Statement of Integrity:** http://www.cofc.edu/%7Echem/advising/integ.pdf
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday Jan 9th</td>
<td>Introduction and Syllabus</td>
</tr>
<tr>
<td>Wednesday Jan 10th</td>
<td>History of Pharmacology and Basis for Drug Action</td>
</tr>
<tr>
<td>Monday Jan 16th</td>
<td>NO CLASS---------MARTIN LUTHER KING DAY(Last day for drop/ add Jan 15th)</td>
</tr>
<tr>
<td>Wednesday Jan 18th</td>
<td>Top 35 Drugs assigned and Debate explained</td>
</tr>
<tr>
<td>Monday Jan 23rd</td>
<td>Drug absorption, distribution and elimination</td>
</tr>
<tr>
<td>Wednesday Jan 25th</td>
<td>Concepts of Drug Dosing</td>
</tr>
<tr>
<td>Monday Jan 30th</td>
<td>Quiz 1/ Autonomic Nervous System</td>
</tr>
<tr>
<td>Wednesday February 1st</td>
<td>Autonomic Nervous System</td>
</tr>
<tr>
<td>Monday Feb 6th</td>
<td>Adderall/ Psychiatric Debates</td>
</tr>
<tr>
<td>Wednesday Feb 8th</td>
<td>Adderall/ Psychiatric Debates</td>
</tr>
<tr>
<td>Monday Feb 13th</td>
<td>Quiz 2/ Cardiovascular Drugs</td>
</tr>
<tr>
<td>Wednesday Feb 15th</td>
<td>Cardiovascular Drugs</td>
</tr>
<tr>
<td>Monday Feb 20th</td>
<td>Quiz 3/ Antibiotics</td>
</tr>
<tr>
<td>Wednesday Feb 22nd</td>
<td>Antibiotics (Last day to withdrawal is Tuesday February 21st)</td>
</tr>
<tr>
<td>Monday Feb 27th</td>
<td>Cancer Agents</td>
</tr>
<tr>
<td>Wednesday March 1st</td>
<td>Exam 1</td>
</tr>
<tr>
<td>Monday March 6th</td>
<td>NO CLASS---------SPRING BREAK</td>
</tr>
<tr>
<td>Wednesday March 8th</td>
<td>NO CLASS---------SPRING BREAK</td>
</tr>
<tr>
<td>Monday March 13th</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Wednesday March 15th</td>
<td>Diabetes/ Parkinson’s</td>
</tr>
<tr>
<td>Monday March 20th</td>
<td>Quiz 4/ Psychiatric Meds</td>
</tr>
<tr>
<td>Wednesday March 22nd</td>
<td>Psychiatric Meds</td>
</tr>
<tr>
<td>Monday March 27th</td>
<td>Drug Monographs Due/ Steroids and Hormone related medications</td>
</tr>
<tr>
<td>Wednesday March 29th</td>
<td>Steroid and hormone related medications</td>
</tr>
<tr>
<td>Monday April 3rd</td>
<td>Quiz 5/ Herbal Remedies</td>
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<tr>
<td>Wednesday April 5th</td>
<td>Herbal Remedies</td>
</tr>
<tr>
<td>Monday April 10th</td>
<td>Quiz 6/ Pain Medications</td>
</tr>
<tr>
<td>Wednesday April 12th</td>
<td>Commonly Abused Medications</td>
</tr>
<tr>
<td>Monday April 17th</td>
<td>Allergy/ decongestants/ Script writing</td>
</tr>
<tr>
<td>Wednesday April 19th</td>
<td>Case Study presentations</td>
</tr>
<tr>
<td>Monday April 24th</td>
<td>Exam 2 (Non-Cumulative)</td>
</tr>
</tbody>
</table>