September 30, 2015

Faculty Curriculum Committee
RE: MATH 229

Dear Members of the Faculty Curriculum Committee:

The purpose of this proposal is to modify the course catalog description and requirements of the course MATH 229, Vector Calculus with Chemical Applications. This course is relatively new, first offered in Fall 2014, and the proposed modifications consist of:

- Removal of the “Placement or” phrase from the Restrictions. This was a mistake on the initial New Course proposal.
- Minor changes to the course description that accurately reflect the delivered content of the course. These changes result from executing three iterations of the course and detailed discussions with the faculty of the Department of Chemistry and Biochemistry.

I sincerely appreciate your efforts in reviewing the proposal. If you have any questions regarding this proposal, please feel free to contact me via telephone at 1 (843) 953 1016 or via email at howelljs@cofc.edu.

Sincerely,

Jason S. Howell
Assistant Professor
Department of Mathematics
College of Charleston
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.
Name: Jason Howell Phone: 953-1016 Email: howelljs@cofc.edu
Department or Program: Mathematics School: SSM
Subject Acronym and Course Number: MATH 229
Catalog Year in which changes will take effect: FALL 2016

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.
☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☒ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
☐ Course Number (you must submit a course deactivation request for the old course number)
☐ Course Name
☐ Course Description
☐ Credit/Contact Hours
☒ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☐ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

The initial Course Form that created Math 229, submitted to the Faculty Curriculum Committee in December 2013, approved by the Faculty Senate in February 2014, contained an error in the listing of acceptable prerequisites. The placement testing system employed by the Department of Mathematics is appropriate for placement of students into 100-level MATH courses (up to and including MATH 120) but is not intended to place students into 200-level (or above) MATH courses. This form seeks to correct that error by removing the phrase "Placement or" from the list of acceptable prerequisites.

Additionally, after three executions of the course and in concert with faculty from the Department of Chemistry and Biochemistry, this form also adjusts the course catalog description to precisely describe the delivered content of the course.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

This change will not impact other courses or elements of any degree program offered by the Department of Mathematics. As this course is an acceptable prerequisite for CHEM 341 and CHEM 342, this proposal contains a written acknowledgement from the Department of Chemistry and Biochemistry in support of the proposed modification.

This form was last updated on 12/13/13 and replaces all others.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Mathematics   School: SSM   Subject Acronym: MATH   Course Number: 229

Credit hours: 5 lecture __ lab __ seminar __ independent study
Contact hours: __ lecture __ lab __ seminar __ independent study.

Course title: Vector Calculus with Chemical Applications

Course description (maximum 50 words, exactly as it appears in the catalog): Multidimensional coordinate systems, vectors, matrices, matrix and vector operations, eigenvalues and eigenvectors, matrix groups and commutators, vector-valued functions, partial derivatives, directional derivatives, multiple integrals, line and surface integrals, vector calculus, Taylor series, Fourier series and transforms, a survey of ordinary and partial differential equations motivated by applications in chemistry.

Restrictions (pre-requisites, co-requisites, majors only, etc.): Placement or C- or better in MATH 120 or HONS 115

Cross-listing, if any:

Is this course repeatable? ☑ yes  ☐ no  If yes, how many total credit hours may the student earn? 

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: Mathematics   School: SSM   Subject Acronym: MATH   Course Number: 229

Credit hours: 5 lecture __ lab __ seminar __ independent study
Contact hours: __ lecture __ lab __ seminar __ independent study

Course title: Vector Calculus with Chemical Applications

Course description (maximum 50 words, exactly as it appears in the catalog): Multidimensional coordinate systems, vectors, matrices, matrix and vector operations, eigenvalues and eigenvectors, matrix groups and commutators, vector-valued functions, partial derivatives, differential operators, multiple integrals, change of variables in multiple integrals, vector calculus.

Restrictions (pre-requisites, co-requisites, majors only, etc.): C- or better in MATH 120 or HONS 115

If this is a newly-created course, is it intended to be the equivalent of an existing course?  ☑ yes  ☐ no
If so, which course? 

If equivalent, will the newly-created course replace the existing course?  ☑ yes  ☐ no
Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): 
Note: Cross-listed courses are equivalent.

Is this course repeatable?  ☑ yes  ☐ no  If yes, how many total credit hours may the student earn? 

Is there an activity, lab, or other fee associated with this course?  ☑ yes  ☐ no  What is the fee? $
Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

No costs are associated with the modification of the restrictions and course description.

H. 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.</td>
<td></td>
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<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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</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?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? □ yes □ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.
J. CHECKLIST.

☒ I have completed all relevant parts of the form.

☒ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☒ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☒ I have submitted one Signature Form that lists all of the different forms I am submitting.
Bob and Jason,

The Department of Chemistry and Biochemistry is fully in support of the minor pre-requisite and course description changes you propose. Thanks for all of your work on providing this unique course for this department!

Pam

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Dr. Pamela Riggs-Gelasco  
Professor and Chair  
Department of Chemistry and Biochemistry  
College of Charleston  
66 George St.  
Charleston, SC  29424

843-953-5587
FACULTY CURRICULUM COMMITTEE
SIGNATURE PAGE

- In section A, list ALL of the forms covered by this signature page. If you submit a form that is not listed in A, your proposal will be held back until we receive a new, updated signature page.
- You must obtain the signature of your department chair and dean before submitting your proposal.

A. FORMS COVERED BY THIS SIGNATURE PAGE. List each form you are submitting—for instance, PSYC 383, Course Form; PSYC, Change of Major Form; PSYC, Change of Minor Form.

MATH 229 Course Form

B. APPROVAL AND SIGNATURES.

1. Signature of Department Chair or Program Director:

   [Signature]

   Date: 12-2-2015

2. Signature of Academic Dean:

   [Signature]

   Date: 12/5/2015

3. Signature of Provost:

   [Signature]

   Date: 1/8/16

4. Signature of Business Affairs (only for course fees):

   [Signature]

   Date: ________________

   □ fee approved on ____________
   □ BOT approval pending

5. Signature of Curriculum Committee Chair:

   [Signature]

   Date: ________________

6. Signature of Budget Committee Chair (only for new programs):

   [Signature]

   Date: ________________

7. Signature of Academic Planning Committee Chair (only for new programs):

   [Signature]

   Date: ________________

8. Signature of Faculty Senate Secretary:

   [Signature]

   Date: ________________

Date Approved by Faculty Senate: ____________________