Combined 5-Year B.S./M.S. in Mathematics

November 22, 2013

1 Purpose

Outstanding and motivated mathematics majors can earn graduate credit during their senior year and earn a Master degree in mathematics in a shorter time. Students enrolled in this program typically complete their M.S. degree within one calendar year (and in some cases within two academic semesters) after receiving their B.S.. The combined degree is designed to integrate undergraduate and graduate-level research and to give the selected students an outstanding preparation for entering a Ph.D. program in mathematics or related fields.

2 Eligibility

- A minimum GPA of 3.5 in mathematics courses.
- Two letters of recommendation from the College of Charleston’s Department of Mathematics faculty. Completion of Math 203, 303, 323 and 311 plus one additional course from the 300 level or above.
- Applications for admission to the program should be made by one calendar year before completing one’s bachelor degree.

3 Organization and Requirements

- Each student in the program is assigned an academic advisor to help devising a study plan. Once the student selects a research topics in collaboration with a faculty member, he/she will become the student’s advisor for the duration of the program.
- Students in the combined BS/MS may apply for admission to Graduate School and permission to have up to 12 credit hours of graduate-level course work count toward the Masters of Science in Mathematics degree.
  Such a request must be approved by the Chair or Associate Chair and director the Graduate Programs of the Mathematics Department. They in turn will recommend this course of action to the Graduate School.
After the student receives their bachelor’s degree, the student may be officially admitted into the MS program in Mathematics. After admission to the MS program, the designated courses in which the student earned grades of B or better may be applied toward the requirements of that degree.

- Students should complete at least six credit hours of graduate-level courses by the end of their fourth year. Up to 12 credit hours of graduate credit may be used for both undergraduate and graduate credit.

- The remaining 18-24 graduate credits should include 6 thesis credit hours, ideally in the same area or in an area related to the senior thesis.

- Below are two sample programs of study showing how a student following this program of study could complete the five year B.S./M.S. degree.
## 4 Sample Programs of Study

Table 1: Pure Mathematics Emphasis: 73 Credit Hours

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Details</th>
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<tbody>
<tr>
<td><strong>Freshman Year</strong></td>
<td></td>
</tr>
<tr>
<td>Math 120 (Calculus I)</td>
<td>Math 220 (Calculus II)</td>
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<tr>
<td><strong>Sophomore Year</strong></td>
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<tr>
<td>Math 221 (Calculus III)</td>
<td>Math 323 (Differential Equations)</td>
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<tr>
<td>Math 203 (Linear Algebra)</td>
<td>Math 295 (Intro. Abstract Math)</td>
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<tr>
<td><strong>Junior Year</strong></td>
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<tr>
<td>Math 311 (Advanced Calculus I)</td>
<td>Math 411 (Advanced Calculus II)</td>
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<tr>
<td>Math 340 (Axiomatic Geometry)</td>
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<tr>
<td><strong>Senior Year</strong></td>
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<tr>
<td>Math 530 (Mathematical Statistics I)</td>
<td>Math 503 (Applied Algebra I)</td>
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<tr>
<td>Math 315 (Complex Variables)</td>
<td>Math 515 (Complex Variables)</td>
</tr>
<tr>
<td>Math 502 (Advanced Linear Algebra)</td>
<td>Math 499 (Bachelor’s Essay)</td>
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<tr>
<td><strong>Fifth Year</strong></td>
<td></td>
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<tr>
<td>Math 502 (Advanced Linear Algebra)</td>
<td>Math 700: M.S. Thesis</td>
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<tr>
<td>Math 511 (Real Analysis I)</td>
<td>Math 607 (Discrete Mathematics)</td>
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<tr>
<td>or Math 601 (General Topology)</td>
<td>or Math 580 (ST: Applied Math)</td>
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Table 2: Applied Mathematics Emphasis: 70-73 Credit Hours

**Freshman Year**

Math 120 (Calculus I)  
Math 220 (Calculus II)

**Sophomore Year**

Math 221 (Calculus III)  
Math 203 (Linear Algebra)  
Math 323 (Differential Equations)  
Math 295 (Intro. Abstract Math)

**Junior Year**

Math 245/46 (Numerical Methods/Computing)  
Math 303 (Abstract Algebra I)\(^1\)  
Math 311 (Advanced Calculus I)  
Math 470 (Math Models)

**Senior Year**

Math 530 (Mathematical Statistics I)  
Math 502 (Advanced Linear Algebra)  
Math 315 (Complex Variables)  
Math 515 (Complex Variables)  
Math 499 (Bachelor’s Essay)

**Fifth Year**

Math 511 (Real Analysis I)  
Math 523 (PDE’s I)  
Math 551 (Linear Programming)  
Math 531 (Mathematical Statistics II)  
Math 515 (Complex Variables)  
Math 550 (Operations Research)  
Math 623 (PDE’s II)  
Math 700: M.S. Thesis

\(^1\)We require Abstract Algebra for all of our incoming graduate students