Progress Toward Completion of the Mathematics Major

Operations Research Concentration

Arts and Sciences students may be admitted to the math major after successfully completing a semester of multivariable calculus, a semester of linear algebra, and a 3- or 4-credit computer programming course. Visit math.cornell.edu/major for more information.

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<tr>
<th>Student's Name</th>
<th>Net ID</th>
<th>Faculty Advisor</th>
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Courses needed to complete the major

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<th>Course</th>
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Math majors must complete 9 courses for the major, as described in items 1–3 below, with a minimum grade of C–. MATH courses numbered 5000–5999 do not count. No course may be used to satisfy more than one requirement.

_____ At least two of the MATH courses taken must be at the 4000 level (or above).

1. Two Courses in Algebra. (___ transfer credit applied, see reverse)

_____ MATH 3320  Introduction to Number Theory
_____ MATH 3340* Abstract Algebra          _____ MATH 3360* Applicable Algebra
_____ MATH 4310* Linear Algebra            _____ MATH 4315* Linear Algebra with Supplements
_____ MATH 4330* Honors Linear Algebra
_____ MATH 4340* Honors Introduction to Algebra
_____ MATH 4370  Computational Algebra
_____ MATH 4500  Matrix Groups
_____ MATH 4560  Geometry of Discrete Groups

2. Two Courses in Analysis. (___ transfer credit applied, see reverse)

_____ MATH 3110* Introduction to Analysis
_____ MATH 3210  Manifolds & Differential Forms
_____ MATH 3230* Introduction to Differential Equations
_____ MATH 4130* Honors Intro Analysis I
_____ MATH 4140  Honors Intro Analysis II
_____ MATH 4180* Complex Analysis
_____ MATH 4200* Differential Equations and Dynamical Systems
_____ MATH 4210* Nonlinear Dynamics and Chaos [also MAE 5790]
_____ MATH 4220* Applied Complex Analysis
_____ MATH 4250  Numerical Analysis and Differential Equations [also CS 4210]
_____ MATH 4260  Numerical Analysis: Linear & Nonlinear Equations [also CS 4220; co-meets w/CS 5223]
_____ MATH 4280* Introduction to Partial Differential Equations

*Forbidden Overlaps: Due to an overlap in content, students will receive credit for only one course in each group:
(1) MATH 3110, 4130; (2) MATH 3230, 4280; (3) MATH 3340, 3360; (4) MATH 3340, 4340; (5) MATH 4180, 4220; (6) MATH 4200, 4210; (7) MATH 4310, 4315, 4330; (8) MATH 4710, ECON 3130, BTRY 3080; (9) MATH 4720, ECON 3130, BTRY 4090; (10) MATH 4810, 4860.
3. **Concentration in Operations Research.**  (___ transfer credit applied, see below)

Five additional courses from (xiv) and (xv) below.

(xiv) At least one MATH course numbered 3000 or above:

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(xv) At least three courses in ORIE in which the primary focus involves mathematical techniques:

_____ ORIE 3300 Optimization I [co-meets w/ORIE 5300]
_____ ORIE 3310 Optimization II [co-meets w/ORIE 5310]
_____ ORIE 3500 Engineering Probability and Statistics II [co-meets w/ORIE 5500]
_____ ORIE 3510 Introduction to Engineering Stochastic Processes I

[also STSCI 3510; co-meets w/ORIE 5510]

_____ ORIE 4150 Economic Analysis of Engineering Systems [co-meets w/ORIE 5150]
_____ ORIE 4350 Introduction to Game Theory
_____ ORIE 4520 Introduction to Engineering Stochastic Processes II
_____ ORIE 4600 Introduction to Financial Engineering
_____ ORIE 4630 Operations Research Tools for Financial Engineering [also STSCI 4630]
_____ ORIE 4740 Statistical Data Mining I
_____ ORIE 5600 Financial Engineering with Stochastic Calculus I
_____ ORIE 5610 Financial Engineering with Stochastic Calculus II
_____ ORIE 5640 Statistics for Financial Engineering [also STSCI 5640]

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(approved by faculty advisor)

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**Transfer Credit / Study Abroad Courses Applied to the Major**

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<tr>
<th>Course Number &amp; Title</th>
<th>Institution</th>
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