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. To apply, visit math.cornell.edu/major.

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<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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Math majors must complete 9 courses for the major, as described in items 1–3 below, with a minimum grade of C–. No course may be used to satisfy more than one requirement. MATH courses numbered between 4980 and 5999 do not count.

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 3330 - Abstract Algebra*
   - MATH 3360 - Applicable Algebra*
   - MATH 4310 - Linear Algebra*
   - 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 3270 - Introduction to Ordinary 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*
   - MATH 4220 - Applied Complex Analysis*
   - MATH 4250 - Numerical Analysis and Differential Equations [also CS 4210]
   - MATH 4260 - Numerical Analysis: Linear & Nonlinear Problems [also CS 4220]
   - MATH 4280 - Introduction to Partial Differential Equations*

*See course descriptions at math.cornell.edu/upper-level-courses for information on forbidden overlaps.
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
_____ ORIE 3310 - Optimization II
_____ ORIE 3500 - Engineering Probability and Statistics II
_____ ORIE 3510 - Introduction to Engineering Stochastic Processes I [also STSCI 3510]
_____ ORIE 4350 - Introduction to Game Theory
_____ ORIE 4580 – Simulation Modeling and Analysis
_____ ORIE 4600 - Introduction to Financial Engineering
_____ ORIE 4630 - Operations Research Tools for Financial Engineering [also STSCI 4630]
_____ ORIE 4740 - Statistical Data Mining I
_____ ORIE 4741 - Learning with Big Messy Data
_____ 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]

__________________________ (approved by faculty advisor)

Transfer Credit / Study Abroad Courses Applied to the Major

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