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. Applications are available in 310A Malott Hall.

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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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initials ______________

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date ______________

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 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 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:

___

___

(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
___ ORIE 4300 Optimization Modeling
___ ORIE 4320 Nonlinear Optimization
___ ORIE 4330 Discrete Models
___ ORIE 4350 Introduction to Game Theory
___ ORIE 4360 A Mathematical Examination of Fair Representation
___ ORIE 4520 Introduction to Engineering Stochastic Processes II
___ ORIE 4600 Introduction to Financial Engineering
___ ORIE 4710 Applied Linear Statistical Models (half course)
___ ORIE 4712 Regression (half course)
___ 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]

___ (approved by faculty advisor)

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

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