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.

Student's Name   **Net ID**   **Faculty Advisor**

_____   _____   _____

Courses needed to complete the major

_____   initials _____

_____   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 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:

_____ _____

_____ _____

(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 4300 Optimization Modeling
_____ ORIE 4330 Discrete Models
_____ 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
_____ 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

Course Number &Title	Institution	Requirement

*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.