

# Progress Toward Completion of the Mathematics Major

## Statistics 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
_____	_____	_____
<b>Courses needed to complete the major</b>		
_____	_____	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 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
- \_\_\_\_\_ MATH 3360\* Applicable Algebra
- \_\_\_\_\_ MATH 4315\* Linear Algebra with Supplements

### 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 Statistics.** ( \_\_\_ transfer credit applied, see below)

Five additional courses from (xvi), (xvii) and (xviii) below. **No substitutions are allowed for MATH 4710 or MATH 4720.** Students who have already taken a course with overlapping content should consult a member of the Math Majors Committee.

(xvi) Both: \_\_\_\_\_ MATH 4710\* Basic Probability \_\_\_\_\_ MATH 4720\* Statistics

(xvii) One additional MATH course numbered 3000 or above:

\_\_\_\_\_

(xviii) Two courses in other departments with significant content in statistics, complementing (xvii):

\_\_\_\_\_ BTRY 4820 Statistical Genomics: Coalescent Theory and Human Population Genomics  
[co-meets with BTRY 6820]

\_\_\_\_\_ CS 4780 Machine Learning for Intelligent Systems [co-meets with CS 5780]

\_\_\_\_\_ CS 4786 Machine Learning for Data Science [co-meets with CS 5786]

\_\_\_\_\_ ECON 3140 Econometrics

\_\_\_\_\_ ORIE 4740 Statistical Data Mining I

\_\_\_\_\_ STSCI 3100 Statistical Sampling [also BTRY 3100, ILRST 3100]

\_\_\_\_\_ STSCI 3510 Introduction to Engineering Stochastic Processes I [also ORIE 3510]

\_\_\_\_\_ STSCI 4030 Linear Models with Matrices [also BTRY 4030; co-meets with STSCI 5030]

\_\_\_\_\_ STSCI 4100 Multivariate Analysis [also BTRY 4100]

\_\_\_\_\_ STSCI 4110 Categorical Data [also BTRY 4110, ILRST 4110]

\_\_\_\_\_ STSCI 4140 Applied Design [also BTRY 4140, ILRST 4140]

\_\_\_\_\_ STSCI 4520 Statistical Computing [also BTRY 4520]

\_\_\_\_\_ STSCI 4550 Applied Time Series Analysis [also ILRST 4550, ORIE 5550]

\_\_\_\_\_ STSCI 4740 Data Mining and Machine Learning

\_\_\_\_\_ (approved by faculty advisor)

**Note:** STSCI/ORIE 3510 may not be counted toward (xviii) if MATH 4740 is used for (xvii). At most one regression course (ECON 3140 or STSCI/BTRY 4030) is allowed for (xviii). At most one of STSCI 4740, ORIE 4740, CS 4780, or CS 4786 may be used for (xviii).

**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.