

# Progress Toward Completion of the Mathematics Major

## Mathematical Biology 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](http://math.cornell.edu/major) for more information.

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 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 Mathematical Biology.** ( \_\_\_ transfer credit applied, see below)

Five additional courses from (x) and (xi) below.

(x) Three biology courses that have mathematical content and provide background necessary for work at the interface between biology and mathematics:

- \_\_\_\_\_ BIOEE 3620 Dynamic Models in Biology [also MATH 3620]
- \_\_\_\_\_ BIONB 4220 Modeling Behavioral Evolution
- \_\_\_\_\_ BME 3110 Cellular Systems Biology
- \_\_\_\_\_ BTRY 3080\* Probability Models and Inference [also ILRST/STSCI 3080]
- \_\_\_\_\_ BTRY 4090\* Theory of Statistics [also STSCI 4090]
- \_\_\_\_\_ BTRY 4820 Statistical Genomics: Coalescent Theory and Human Population Genomics  
[co-meets with BTRY 6820]
- \_\_\_\_\_ BTRY 4830 Quantitative Genomics and Genetics [co-meets with BTRY 6830]
- \_\_\_\_\_ BTRY 4840 Computational Genetics and Genomics [also CS 4775; co-meets with BTRY 6840]
- \_\_\_\_\_ NTRES 4110 Quantitative Ecology and Management of Fisheries Resources  
[co-meets with NTRES 6110]
- \_\_\_\_\_ NTRES 4120 Wildlife Population Analysis: Techniques and Models [co-meets with NTRES 6120]
- \_\_\_\_\_ \_\_\_\_\_ (approved by faculty advisor)

(xi) Two mathematics courses numbered 3000 or above. MATH 4200 and 4710\* are particularly appropriate.

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**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.