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

<table>
<thead>
<tr>
<th>Student’s Name</th>
<th>Net ID</th>
<th>Faculty Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Courses needed to complete the major

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 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]
   _____ 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
- CS 4700 - Foundations of Artificial Intelligence
- CS 4780 - Introduction to Machine Learning
- CS 4786 - Machine Learning for Data Science
- ECON 3140 - Econometrics
- ECON 4110 - Cross Section and Panel Econometrics
- ORIE 4740 - Statistical Data Mining I
- ORIE 4741 - Learning with Big Messy Data
- 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]
- STSCI 4060 - Python Programming and its Applications in Statistics
- 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]
- STSCI 4740 - Data Mining and Machine Learning
- STSCI 4780 - Bayesian Data Analysis: Principles and Practice
- _________________________________________________________ (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**

<table>
<thead>
<tr>
<th>Course Number &amp; Title</th>
<th>Institution</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*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.