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.

<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–. 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 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 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 (formerly ECON 3200)
_____ ORIE 4740 Statistical Data Mining I
_____ STSCI 3100 Statistical Sampling [also BTRY 3100, IRLST 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, IRLST 4100]
_____ STSCI 4110 Categorical Data [also BTRY 4110, IRLST 4110]
_____ STSCI 4140 Applied Design [also BTRY 4140, IRLST 4140]
_____ STSCI 4520 Statistical Computing [also BTRY 4520]
_____ STSCI 4550 Applied Time Series Analysis [also IRLST 4550, ORIE 5550]
_____ STSCI 4740 Data Mining and Machine Learning

------------------------------------------------------------- (approved by faculty advisor)

**Note:** ORIE/STSCI 3510 may not be counted toward (xviii) if MATH 4740 is used for (xvii). At most one regression course (ECON 3140 or STSCI/BTRY4030) 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>
<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.