Progress Toward Completion of the Mathematics Major

Mathematical Physics 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 for more information.

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<th>Student's Name</th>
<th>Net ID</th>
<th>Faculty Advisor</th>
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Courses needed to complete the major

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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 Mathematical Physics.** (___ transfer credit applied, see below)

Five additional courses from (xii) and (xiii) below.

(xii) At least one MATH course numbered 3000 or above.

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(xiii) At least three physics courses that make significant use of advanced mathematics:

___ PHYS 3316 Basics of Quantum Mechanics

___ PHYS 3317 Applications of Quantum Mechanics

___ PHYS 3318 Analytical Mechanics

___ PHYS 3327 Advanced Electricity and Magnetism

___ PHYS 4230 Statistical Thermodynamics [also AEP 4230]

___ PHYS 4443 Intermediate Quantum Mechanics

___ PHYS 4444 Introduction to Particle Physics

___ PHYS 4445 Introduction to General Relativity [also ASTRO 4445]

___ PHYS 4454 Introductory Solid State Physics [also AEP 4500]

___ PHYS 4481 Quantum Information Processing [also CS 4812; co-meets with PHYS 7681]

___ PHYS 4488 Statistical Mechanics [co-meets with PHYS 6562]

___ AEP 4340 Fluid and Continuum Mechanics

___ AEP 4400 Nonlinear and Quantum Optics

_________________________________________________________________________________

(批准 by faculty advisor)

Note: Double majors with physics may count eligible physics courses toward both the physics major and the math major’s math physics concentration; however, Physics will not approve outside concentrations in the same area as a student’s second major.

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**Transfer Credit / Study Abroad Courses Applied to the Major**

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<th>Course Number &amp;Title</th>
<th>Institution</th>
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