

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..

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 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.

(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

_____ (approved 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.

Transfer Credit / Study Abroad Courses Applied to the Major

Course Number & Title	Institution	Requirement
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(7) MATH 4310, 4315, 4330; (8) MATH 4710, ECON 3130, BTRY 3080; (9) MATH 4720, ECON 3130, BTRY 4090; (10) MATH 4810, 4860.