Progress Toward Completion of the Mathematics Major
(Mathematical Physics Concentration)

_____   _____   _____
Student's Name   **Net ID**   **Faculty Advisor**

Courses Needed to Complete the Major	**Filled Out By**
_____	Initials _____
_____	Date _____

Students must complete nine courses, as described in items 1– 3 below, under the following constraints:

- At least two of the MATH courses taken must be at the 4000 level (or above).
- A course may be counted toward the major only if it is taken for a letter grade and a grade of C– or better is received for the course.
- No course may be used to satisfy more than one requirement for the major.
- 2-credit courses count as half courses.
- MATH courses numbered between 5000 and 5999 do not count toward the major.

1. Two Courses in Algebra.   Transfer Credit: _____

_____ MATH 3320 Introduction to Number Theory
_____ MATH 3360 Applicable Algebra
_____ MATH 4310 Linear Algebra / _____ 4330 Honors Linear Algebra
_____ MATH 4320 Introduction to Algebra / _____ 4340 Honors Introduction to Algebra
_____ MATH 4370 Computational Algebra
_____ MATH 4500 Matrix Groups

2. Two Courses in Analysis.   Transfer Credit: _____

_____ MATH 3110* Introduction to Analysis
_____ MATH 3210 Manifolds and Differential Forms
_____ MATH 3230* Introduction to Differential Equations
_____ MATH 4130* Honors Introduction to Analysis I
_____ MATH 4140 Honors Introduction to Analysis II
_____ MATH 4180* Introduction to the Theory of Functions of One Complex Variable
_____ MATH 4200 Differential Equations and Dynamical Systems
_____ MATH 4220* Applied Complex Analysis
_____ MATH 4240 Wavelets and Fourier Series
_____ MATH 4250 Numerical Analysis and Differential Equations [also CS 4210]
_____ MATH 4260 Numerical Analysis: Linear and Nonlinear Problems [also CS 4220]
_____ MATH 4280* Introduction to Partial Differential Equations

*Overlapping content: Students will receive credit for only one course in each group: (1) MATH 3110, 4130; (2) MATH 3230, 4280; (3) MATH 4180, 4220; (4) MATH 4310, 4330; (5) MATH 4320, 4340; (6) MATH 4710, ECON 3130 (formerly 3190), BTRY/ILRST/STSCI 3080 (formerly 4080); (7) MATH 4720, ECON 3130 (formerly 3190), BTRY 4090.

3. Concentration in Mathematical Physics.   Transfer Credit: _____

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

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

_____ _____

_____ _____

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

_____ PHYS 3314 Intermediate Mechanics

_____ PHYS 3316 Basics of Quantum Mechanics

_____ PHYS 3318 Analytical Mechanics

_____ PHYS 3323 Intermediate Electricity and Magnetism

_____ PHYS 3327 Advanced Electricity and Magnetism

_____ PHYS 3341 Thermodynamics and Statistical Physics

_____ 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 4480 Computational Physics [co-meets with ASTRO 7690, PHYS 7680]

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

_____ AEP 4340 Continuum Physics

_____ AEP 4400 Quantum and Nonlinear Optics

> **Note:** If you will also complete a physics major with an outside concentration, the physics courses checked off here may <u>not</u> be counted toward both majors. Please consult with your physics advisor.

_____ _____ (approved by faculty advisor)

Transfer Credit / Study Abroad Courses Applied to the Major

Course Number &Title	Institution	Requirement

*__Overlapping content:__ Students will receive credit for only one course in each group: (1) MATH 3110, 4130; (2) MATH 3230, 4280; (3) MATH 4180, 4220; (4) MATH 4310, 4330; (5) MATH 4320, 4340; (6) MATH 4710, ECON 3130 (formerly 3190), BTRY/ILRST/STSCI 3080 (formerly 4080); (7) MATH 4720, ECON 3130 (formerly 3190), BTRY 4090.