

The **Mathematical Sciences Program** is designed to provide broad training in basic mathematics together with some specialization in an area of application of mathematics. Each student must select one of the eight Program Options as a special area. Because the program options have somewhat more specific requirements, careful planning and frequent consultation with your advisor are essential to ensure timely completion of the program. The concentration program must include at least nine courses: four basic courses (II.), three courses from one of the Program Options (III.), and two additional courses (IV.) as described below. At least two of the five (optional and additional) courses must be MATH courses.

I. Prerequisites (3 courses) {must be completed with C- or better}**

Instructions	Course(s)	Student Elections (enter your course selections here)
Select one of the following course pairs :	Math 215 & 217 Math 285 & 217 Math 205 & 217 Math 295 & 296	1. _____ 2. _____
EECS 183 or working knowledge of a high-level computer language (Fortran, C, or C++)	EECS 183 or working knowledge of a high-level computer language (Fortran, C, or C++) *Students are strongly encouraged to take EECS 280 and EECS 281 as well.	3. _____

II. Basic Courses (4 courses) {must be completed with C- or better}**

Instructions	Course(s)	Student Elections (enter your course selections here)
Select one of the following Differential Equations courses:	Math 316 Math 286	1. _____
Select one of the following Discrete Math/Modern Algebra courses:	Math 312 Math 465 Math 412 Math 493	2. _____
Select one of the following Analysis courses: (<i>Students in Mathematical Economics should choose Math 351 or 451 as their Analysis course.</i>)	Math 351 Math 354 Math 451 Math 450 Math 454	3. _____
Select one of the following Probability courses:	Math 425 Math 525	4. _____

** More advanced students, such as those who have completed Math 396, may substitute higher-level courses with the approval of a concentration advisor. All students are strongly encouraged to include in their program one of the more theoretical courses: Math 412, 451, 493, 494, or 525.

III. Program Options: Mathematical Physics (3 courses)

A student in the **Mathematical Sciences Program** must choose one of the eight options and complete at least three of the courses listed under that option. This requirement is designed to provide focus and depth to the program and can only be waived by a departmental advisor in favor of a program that provides this depth in some equivalent way. An acceptable program must include some of the more difficult courses. Advice should be sought from a departmental advisor before selecting an option.

Physics has the longest history among all the disciplines that make significant use of mathematics. Indeed, several areas of mathematics were developed to solve problems in physics. This option allows a student to pursue an interest in physics, which uses undergraduate mathematics. **It is designed to facilitate a concurrent major in Physics.** Every program must include at least two of the Physics courses from the list below. Note that although Physics 401 is a prerequisite to several of these, it does not count as one of the option courses.

Instructions	Course(s)	Student Elections (enter your course selections here)
Select three of the following courses:	Math 404 - Intermediate Diff Equations Math 433 - Intro to Diff. Geom. Math 445 - Entropy and Info. Math 454 - Bound Val. Prob for PDE Math 471 - Intro to Numerical Methods Math 555 - Intro to Complex Variables	PHYS 405 - Intermed Elec & Magnetism PHYS 406 - Stat & Thermal Phys PHYS 413 - Intro Nonlinear Dyn PHYS 435 - Gravitational Phys PHYS 452 - Methods of Theoretical Phys II PHYS 453 - Quantum Mechanics
		1. _____ 2. _____ 3. _____

IV. Advanced Courses (2 courses)

To complete the major program, each student should elect two additional advanced courses in mathematics or a related area. In all cases, **approval from a departmental advisor is required**. This is a very flexible requirement designed to accommodate special interests and may be satisfied by a broad range of courses in other departments (generally numbered 300 or above) or by mathematics courses numbered 400 or above.

Instructions	Course(s)	Student Elections (enter your course selections here)
Select two Advanced courses:	<i>Selected with approval from a mathematical sciences advisor</i>	1. _____ 2. _____

V. Requirements

At least two of the courses in III. and IV. must be MATH courses.
 At least one must be a cognate course numbered 300 or above taught outside the department that emphasizes applying significant mathematical tools (at least at the level of Math 215) in another discipline.