Mathematical Sciences
Mathematical Economics

LSA MATHEMATICS UNIVERSITY OF MICHIGAN

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 412	Math 465 Math 493	2. _____
Select **one** of the following **Analysis** courses: (*Students in Mathematical Economics should choose Math 351 or 451 as their Analysis course.*)	Math 351 Math 451	Math 354 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.

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III. Program Options: Mathematical Economics (3 courses)

A student in the **Mathematical Sciences Program** must choose one of the eight options and complete at least three 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.

One definition of economics is the study of the optimal allocation of scarce resources. Several mathematical techniques are fundamental to this study. To ensure coverage of these topics, students choosing the Mathematical Economics option will usually choose Math 423, Stat 426, Econ 452, as courses from the options list; and Econ 401 and a mathematics course at the 400-level or above as their related courses. A student who completes this option should find opportunities in business, government, and research organizations that collect, analyze, and model data with economic, social, and political parameters.

Instructions	Course(s)		Student Elections (enter your course selections here)
Select **three** of the following courses:	Math 420 - Adv. Linear Algebra Math 423 - Math of Finance Math 424 - Compound Interest & Life Ins Math 452 - Advanced Calc II Math 462 - Math Models Math 471 - Intro Num Methods Math 472 - Num Meth w/FinAp	Math 474 - Intro Stochastic Analysis for Fin Math 523 - Risk Theory Math 561 - Linear Program I Math 562 - Cont. Optimiz Math Math 623 - Comput. Finance ECON 409 - Game Theory ECON 452 - Intro Econometrics STATS 426 - Intro to Thry Stats	*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:	*Selected with approval from a mathematical sciences advisor*	*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.