

Majoring in Mathematics at Saint Michael's

If you are considering majoring in Mathematics, then this document will help you to see what courses you would take and what your different options would be. At the end it includes a form for making up a plan of study. You can use that form for exploring what your program might look like. If you decide to become a Math major, then with an advisor (and with the approval of the Department) you would use that form to select a sequence of courses that is best for you.

If you are seriously considering joining the major then please feel free to talk about it with anyone in the Mathematics Department. If you have a department member in a course, ask them. If you prefer, you could instead contact the department chair, George Ashline, whose office is Jeanmarie 261.

One Program, Two Tracks

We offer two ways to major in mathematics.

Our Traditional Track is a pre-established plan of study similar to ones offered by most other schools across the country. Our Interdisciplinary Track lets you design your own plan, within a framework, to combine a solid background in mathematics with a coherent collection of courses from another area.

As a Mathematics Major you will select which track you will do by developing a plan of study, with your advisor. You will submit that plan for approval by the Department. You must submit it by the beginning of your fifth semester (if you join the major after that then you submit at the time that you join).

Traditional Track

This track offers a backbone of required courses, most of which are four credits, including the Calculus sequence, Probability, Abstract Algebra, and Analysis, so that you will know your core mathematics. It adds to that a number of three-credit electives that let you work on a variety of advanced topics, such as Number Theory, Foundations, and Statistics, so that you can explore some areas of Mathematics that appeal to you.

These are the requirements for the Traditional Track:

1. Mathematics 109, 111, 211, 213, 251, 303, 401, 406, 410
2. Computer Science 111
3. Four more mathematics courses at or above the 200 level (of at least three credits each), at least one of which is at the 400 level

In addition, we strongly recommend the Physics 210-212 sequence and Computer Science 113.

This is a strong program. It will leave you well-prepared to go on to a successful career, for instance to work in industry, or to teach secondary school, or to go to graduate school.

Interdisciplinary Track

This track gives you extra latitude to combine your mathematics with another area. Two recent examples are students who combined mathematics with elementary education, and mathematics with finance.

In considering this option, please note that it involves a trade-off. A program that exactly matches your interests certainly is appealing. However, the Traditional Track described above has, through the experience of the Mathematics Department, been developed and tested over time. In particular, you should be aware of the possibility that in exactly fitting your major to your current interests you are passing up some generality that could help you later. Nonetheless, if you have, after reflection and consultation with your advisor, decided that this individualized track fits your needs, then follow the guidelines below.

These are the requirements for the Interdisciplinary Track:

1. Mathematics 109, 111, 211, 213, 410
2. Computer Science 111
3. At least fourteen more credits of Mathematics courses at or above the 200's level. At least one of these courses, of at least three credits, must be at or above the 300's level.

Please note that these are minimum requirements. Your plan must show evidence of sufficient depth in mathematics to be approved by the Department.

4. At least eighteen credits from a field outside of mathematics. At least twelve of these credits must be at or above the 200's level. This work should be chosen to give you sufficient depth in another discipline, and to understand the uses of mathematics in that field.

If you decide to use this track, then the proposal that you submit to the Department should include an explanation of your goals, especially as they have driven your choices in the outside discipline. It should document how your plan differs from, and is superior to, any relevant existing major or major/minor combination. It should also document that you have investigated whether the courses that you have chosen will be offered in the semesters that you have indicated.

Some of the factors that the Department will consider in evaluating an Interdisciplinary proposal include:

- (i) strength of the proposal, especially in comparison to the Traditional Track,
- (ii) your Grade Point Average in the College as a whole and in Mathematics, and the likelihood that you can accomplish the plan, and most importantly
- (iii) the intellectual coherence of the proposal.

Example Programs

These plans are samples, to give you some idea of how a person might proceed. Notice that in the first two years all of them contain the same math courses. So, you don't need to know exactly what you'd like to do with math when you start. Anyone in the department would be glad to help you explore your interests, and to talk to you about developing your plans, as you get to know more.

Traditional Track

This first program is for a future high school teacher, who has student teaching in spring of the senior year. (If you are thinking about a secondary education career, you should discuss your choices with your advisor as soon as possible in your program.)

	<i>Fall</i>	<i>Spring</i>
<i>FY</i>	MA 109 CS 111	MA 111 MA 214 MA 381
<i>SO</i>	MA 211 MA 251 PY 210 ED 231	MA 213 MA 303 ED 271
<i>JR</i>	MA 304 MA 401	MA 403 MA 410 ED 343 ED 361
<i>SR</i>	MA 308 MA 406 ED 370	ED 417 ED 424 ED 430

The next program fits someone considering a career as an actuary.

	<i>Fall</i>	<i>Spring</i>
<i>FY</i>	MA 109 CS 111	MA 111 MA 216 CS 113
<i>SO</i>	MA 211 MA 207 CS 211	MA 213 MA 303
<i>JR</i>	MA 251 MA 406 PY 210	MA 305 MA 417
<i>SR</i>	MA 401	MA 410

The third plan fits someone considering graduate school.

	<i>Fall</i>	<i>Spring</i>
<i>FY</i>	MA 109 CS 111	MA 111 MA 216 CS 113
<i>SO</i>	MA 211 MA 207 PY 210	MA 213 MA 303 PY 212
<i>JR</i>	MA 251 MA 401	MA 214 MA 403
<i>SR</i>	MA 315 MA 406	MA 407 MA 410

Interdisciplinary Track

This person will study the applications of mathematics in finance.

	<i>Fall</i>	<i>Spring</i>
<i>FY</i>	MA 109 EC 101	MA 111 BU 101 EC 103
<i>SO</i>	MA 211 BU 111 BU 141	MA 213 MA 303 BU 143
<i>JR</i>	MA 251 BU 303 BU 305	BU 315 BU 319
<i>SR</i>	MA 401 BU 331 EC 335	MA 410 BU 369

This person will teach elementary school.

	<i>Fall</i>	<i>Spring</i>
<i>FY</i>	MA 109 CS 111	MA 111 BI 108 ED 231
<i>SO</i>	MA 211 MA 251 ED 251	MA 213 MA 303 MA 381 ED 300
<i>JR</i>	MA 406 ED 241 ED 325	MA 214 MA 410 ED 331
<i>SR</i>	MA 304 ED 340 ED 357	ED 401, ED 415, ED 421, ED 429

Your Plan

On the next page is the form for your plan as a Mathematics major. Work it out with your advisor and when you are ready, submit it to the Department Chair for approval by the Department. You must submit by the start of your fifth semester (if you join the major later than that, then you submit when you join).

To do the Traditional Track, just fill out the year-by-year table and the checklist with the courses that you will take. If you plan to do the Interdisciplinary Track, fill out the table and the checklist, and also attach a typed justification for your proposal. This proposal should describe your goals and how they guided your selection of courses, as explained earlier.

Should your proposal not be approved then you must revise it and submit again. If you need to amend your plan then do that with your advisor as soon as you become aware of the need.

Some notes

1. If you are in Education also, either elementary or secondary, then your list of requirements of course goes beyond what is listed above. You must carefully work out your plan in consultation with your Education advisor as well as your Mathematics advisor as soon as possible. You might also consider taking student teaching in a ninth semester.
2. If you intend to study abroad then you must begin planning for that as early as possible. Consult with your advisor immediately.
3. Normally, you can take at most one internship course in your program.

