Individualized Mathematics Proposal (IMaP) for Math Major

Discuss your IMaP with a Math Faculty Member

| Name: | | Email: | |
|------------------------------------|-----------------|-----------------------|--|
| Graduation year: | Advisor: | | |
| Major(s) | | Concentration(s) | |
| Do you plan to get a mathematics t | eaching license | (grades 5-12)? Yes No | |

Why do you want to major in mathematics? Write a brief statement about your interest in math and possible postgraduate plans.

We hope you will want to be part of the MSCS community by attending colloquia, working for the department (as a grader, tutor, or teaching assistant), participating in contests, playing games, and more. Check out the Events link on the <u>MSCS website</u>, and list a few activities that interest you.

Basic Courses: The following three courses are required for the math major. Indicate when you took or plan to take each course, and whether you have official St. Olaf credit.

| Course | Title | Term, Year | St. Olaf Credit? | | |
|--------------|----------------|------------|------------------|----|---------------------------|
| MATH 119/120 | Calculus I | | Yes | No | |
| MATH 126/128 | Calculus II | | Yes | No | If no, then must take 226 |
| MATH 220 | Linear Algebra | | Yes | No | If no, then must take 252 |

Seven courses beyond the basic courses are required. These must include:

- Two transition courses
- At least one course from three of the following perspectives: Axiomatic/Algebraic (A), Continuous/Analytic (C), Discrete/Combinatorial (D), and Modeling/Computation (M)
- Two 300-level courses, at least one of which must have a MATH subject code
- A 200-300-level sequence of two courses, at least one of which must have a MATH subject code
- At least six courses that count toward the major must be taken at St. Olaf

A maximum of two approved courses with subject codes other than MATH may be counted toward the mathematics major. Approved courses are listed on the next page.

At any time, a student may petition to the director of the Mathematics Program for exceptions to the mathematics major requirements.

For more information on the requirements, see the <u>St. Olaf Mathematics website</u>. NOTE: Some upper-level courses are not offered every semester or even every year. Consult the <u>planning guides on the department website</u> for the most likely schedule of course offerings.

Directions: Mark at least seven courses that you plan to take to complete the math major, and indicate when you plan to take each course. Circle the perspective letters for the three courses you will use to satisfy the perspectives requirement. (Each course can only count for one perspective.)

Transition Courses: At least two are required

| Course | Title (Perspectives) | Prerequisites | Term, Year |
|----------|--------------------------------------|-----------------|------------|
| MATH 242 | Modern Computational Mathematics (M) | 220 | |
| MATH 244 | Real Analysis I (C) | 126/128 and 220 | |
| MATH 252 | Abstract Algebra I (A) | 220 | |

Other Level II Courses

| Course | Title (Perspectives) | Prerequisites | Term, Year |
|------------|---|--------------------------------|------------|
| MATH 226 | Multivariable Calculus (C) | 126/128 and 220 | |
| MATH 230 | Differential Equations (C, M) | 126/128 and 220 | |
| MATH 234 | Discrete Mathematical Reasoning (D) | 126/128 or CSCI 221; not after | |
| | | 244 or 252 | |
| MATH 236 | Mathematics of Biology (M) | 126/128 and R programming | |
| MATH 239 | Number Theory - Budapest abroad (D) | 220 | |
| MATH 257 | Noether and Kovalevskaya: Algebra/Analysis/Access | 252 or (230 and 244) | |
| | in Europe abroad (A, C) | | |
| MATH 261 | Computational Geometry (D, M) | 242 or 244 or 252 or (234 | |
| | | and CSCI 221) | |
| MATH 262 | Probability Theory (C, D, M) | 126/128 | |
| MATH 266 | Operations Research (M) | 126/128 and 220 | |
| SDS 272 or | Statistical Modeling or Introduction to Data Science | | |
| SDS 264 | (M) | | |
| SDS 341 | Algorithms for Decision Making (M) | | |
| One of | CHEM 371, ECON 384, ECON 385, PHYS 375, CSCI 353, or EDUC 350 | | |
| | [Note: You must also major in the subject of this course] | | |
| Other | Name: | Discuss with Director of Mathe | ematics |

Level III courses: At least two are required, at least one must be part of a sequence, and at least one must be labeled MATH

| Course | Title (Perspectives) | Prerequisites | Sequence | Term, Year |
|--------------|---|--------------------------|-------------|------------|
| MATH 320 | Advanced Linear Algebra (A) | 244 or 252 | 220 | |
| MATH 330 | Differential Equations II (M) | 226 and 230 | 230 | |
| MATH 332 | Graph Theory (D) | 244 or 252 | 234 | |
| MATH 340 | Complex Analysis (C) | 226 or 244 | 226 | |
| MATH 344 | Real Analysis II (C) | 244 | 244 | |
| MATH 348 | Topology (A) | 244 | 244 | |
| MATH 352 | Abstract Algebra II (A) | 252 | 252 | |
| MATH 356 | Geometry (A) | 244 or 252 | 220 | |
| MATH 364 | Combinatorics (D) | 252 | 234 | |
| MATH 382/384 | Topics in Math (varies) | varies | | |
| MATH 396 | Directed Undergraduate Research (varies) | varies | | |
| SDS 322 | Statistical Theory | 262 and SDS 272 | 262 | |
| CSCI 333 | Theory of Computation | proof writing course | | |
| Other | Name: | Discuss with Director of | Mathematics | |

| Student Signature: | _Date: |
|------------------------------------|--------|
| Math Faculty Signature: | _Date: |
| Director of Mathematics Signature: | Date: |