# PURE MATHEMATICS (MS)

The Department of Mathematical Sciences offers a program of study leading to the Master of Science degree in Pure Mathematics. The program provides students with rigorous training in Pure Mathematics as well as a solid foundation for pursuing a PhD degree in Mathematics or teaching Mathematics at the college level. This is an evening program offered at the Lincoln Park campus. The program can be completed in two academic years by taking two classes per quarter or in four quarters by taking three classes per quarter.

| Program Requirements | Quarter Hours |
|---|---|
| Core Requirements | 32 |
| Concentration Requirements | 16 |
| **Total hours required** | **48** |

## Learning Outcomes

Students will be able to:

- Construct valid logical arguments and create formal mathematical proofs.
- Read and analyze professional mathematical literature.
- Identify, formulate, abstract, and solve problems in Pure Mathematics using tools from a variety of mathematical areas including linear algebra, abstract algebra, topology, and analysis.
- Communicate mathematical ideas clearly by using appropriate mathematical terminology and notation.

## Degree Requirements

### Course Requirements

At least 48 quarter hours of graduate level work in mathematics and passing two comprehensive examinations in Algebra and Analysis.

#### Core Courses

| Course | Title | Quarter Hours |
|---|---|---|
| MAT 470 | ADVANCED LINEAR ALGEBRA | 4 |
| MAT 471 | GROUP THEORY | 4 |
| MAT 472 | FIELDS AND GALOIS THEORY | 4 |
| MAT 473 | RINGS AND MODULES | 4 |
| MAT 434 | TOPOLOGY | 4 |
| MAT 435 | MEASURE THEORY | 4 |
| MAT 436 | FUNCTIONAL ANALYSIS | 4 |
| MAT 437 | COMPLEX ANALYSIS | 4 |

#### Elective Classes

| Course | Title | Quarter Hours |
|---|---|---|
| Select 16 quarter hours from the following: | | 16 |
| MAT 451 | PROBABILITY AND STATISTICS I | |
| MAT 452 | PROBABILITY AND STATISTICS II | |
| MAT 453 | PROBABILITY AND STATISTICS III | |
| MAT 481 | FOURIER ANALYSIS AND SPECIAL FUNCTIONS | |
| MAT 482 | PARTIAL DIFFERENTIAL EQUATIONS | |
| MAT 484 | MATHEMATICAL MODELING | |
| MAT 485 | NUMERICAL ANALYSIS I | |
| MAT 486 | NUMERICAL ANALYSIS II | |
| MAT 494 | GRAPH THEORY | |
| MAT 498 | PROBLEM SOLVING IN MATHEMATICS | |
| MAT 596 | ADVANCED TOPICS IN ALGEBRA | |
| MAT 597 | ADVANCED TOPICS IN ANALYSIS | |
| MAT 598 | ADVANCED PROBLEM SOLVING IN ALGEBRA AND ANALYSIS | |
| MAT 595 | GRADUATE THESIS RESEARCH (may be repeated up to a maximum of 8 credit hours total) | |

With program director's written approval two of the elective courses can be substituted with graduate courses in other areas, such as Computer Science, Physics, or Mathematical Education.

## Program Graduate Academic Student Handbook

### Academic Probation

A student will be placed on academic probation at the time when his/her cumulative GPA falls below 2.50.

### Academic Dismissal

A student may be academically dismissed under one or more of the following violations of satisfactory progress:

1. student's cumulative GPA only for the first twelve completed credit hours after being placed on academic probation is below 2.50.
2. student's cumulative GPA after completing the first 24 credit hours after being placed on academic probation is below 2.50.
3. lack of timely progress toward degree completion, including both coursework and comprehensive exams.
4. failing comprehensive exams twice.

### Conditional Admission

Applicants who have not yet completed one or more of the listed prerequisites may be admitted on a conditional basis while they complete the prerequisites at DePaul as undergraduate non-degree seeking students.

### Readmission

The same readmission standards outlined in the Graduate Student Handbook and approval of the program director are observed for students in these programs.

### Transfer Credit

A maximum of twelve quarter hours may be accepted as transfer credit upon approval of the student's program director and the associate dean for graduate studies. Credit will only be transferred for courses that have equivalents to courses offered in DePaul's graduate program as determined by the program director and provided they did not count toward the completion of another degree at DePaul or another institution.

### Undergraduate Courses

No undergraduate courses shall count toward the graduate degree.

## Graduation Requirements

Requirements include, but are not limited to, twelve graduate courses (48 credit hours) at a minimum cumulative GPA of 2.50, and passing two comprehensive examinations in Algebra and Analysis.

## Graduation with Distinction

A minimum cumulative GPA of 3.70 for coursework applied toward the pure mathematics degree and high performance on the comprehensive examinations - as determined by the Mathematical Sciences department - are required for graduation with distinction.

## Time Limitation

The degree is expected to be completed in a maximum of six years.