MATHEMATICS (COURSE 18)

Bachelor of Science in Mathematics (Applied Mathematics Option)

General Institute Requirements (GIRs)

The General Institute Requirements include a Communication Requirement that is integrated into both the HASS Requirement and the requirements of each major; see details below.

| Summary of Subject Requirements | Subjects |
|---|----------|
| Science Requirement | 6 |
| Humanities, Arts, and Social Sciences (HASS) Requirement; at least two of these subjects must be designated as communication-intensive (CI-H) to fulfill the Communication Requirement. | 8 |
| Restricted Electives in Science and Technology (REST) Requirement [one subject can be satisfied by 18.03 in the Departmental Program] | 2 |
| Laboratory Requirement (12 units) | 1 |
| Total GIR Subjects Required for SB Degree | 17 |

Physical Education Requirement

Swimming requirement, plus four physical education courses for eight points.

Departmental Program

Choose at least two subjects in the major that are designated as communication-intensive (CI-M) to fulfill the Communication Requirement.

| Required Subject | ts | Units |
|-------------------|--|-------|
| 18.03 | Differential Equations ¹ | 12 |
| 18.04 | Complex Variables with Applications | 12 |
| or 18.112 | Functions of a Complex Variable | |
| 18.06 | Linear Algebra ² | 12 |
| 18.300 | Principles of Continuum Applied Mathematics | 12 |
| Select one of the | following: | 12-15 |
| 18.200 | Principles of Discrete Applied Mathematics (15 units, CI-M) | |
| 18.200Å | Principles of Discrete Applied Mathematics (12 units) | |

Restricted Electives

Select four additional 12-unit Course 18 subjects from 48 the following two groups with at least one subject from each group: 3

Group I—Probability and statistics, combinatorics, computer science

| Total Units Beyond the GIRs Required for SB Degree | 180 |
|---|---------|
| Units in Major That Also Satisfy the GIRs | (12) |
| Unrestricted Electives | 81-84 |
| Units in Major | 108-111 |
| Group II—Numerical analysis, physical mathematics, nonlinear dynamics | |
| | |

The units for any subject that counts as one of the 17 GIR subjects cannot also be counted as units required beyond the GIRs.

- Students may substitute one of the more advanced subjects 18.152 Introduction to Partial Differential Equations or 18.303 Linear Partial Differential Equations: Analysis and Numerics for 18.03. 18.032 Differential Equations, which places more emphasis on theory, is also an acceptable option.
- Students may substitute 18.Co6[J] Linear Algebra and Optimization, 18.700 Linear Algebra (which places more emphasis on theory and proofs), or the more advanced subject, 18.701 Algebra I.
- A list of acceptable subjects (https://math.mit.edu/academics/undergrad/ major/course18/applied.php) is available from Math Academic Services and on the department's website.

Communication-Intensive Subjects in the Major

To satisfy the requirement that students take two CI-M subjects, students must select one of the following options:

| Option A | |
|----------|-----------|
| C 1 | 641 641 . |

14.33

18.100P

| the following: |
|--|
| Seminar in Analysis |
| Undergraduate Seminar in Discrete Mathematics |
| Undergraduate Seminar in Physical Mathematics |
| Seminar in Information Theory |
| Seminar in Theoretical Computer Science |
| Seminar in Logic |
| Seminar in Algebra |
| Seminar in Number Theory |
| Project Laboratory in Mathematics |
| Seminar in Topology |
| Seminar in Geometry |
| |
| bject from Option A and one of the |
| Quantum Physics III |
| Mathematical Economic Modeling |
| |

Research and Communication in

Economics: Topics, Methods, and

Implementation

Real Analysis

MATHEMATICS (COURSE 18)

Real Analysis 18.100Q

Principles of Discrete Applied 18.200

Mathematics