**APPLIED MATHEMATICS DEGREE**

Applied Mathematics is a field that applies mathematical methods and theories to solve problems in various disciplines such as engineering, economics, and finance. The Applied Mathematics Degree program at Northwestern University prepares students for careers in fields requiring quantitative skills or for further study in mathematics or related fields.

Students must also complete the Undergraduate Registration Requirement and the degree requirements of their home school.

### Course Requirements (48 units)

#### Core Courses (32 units)

- 4 mathematics courses
- 4 engineering analysis and computer proficiency courses
- 4 units of basic science: Physics 135-2 and 135-3
- 2 units chosen from McCormick-approved basic science courses
- 3 design and communication courses
- 5 basic engineering courses
- 4 Courses from at least three of the following areas: Computer architecture and numerical methods, Electrical science, Fluids and solids, Materials science and engineering, Systems engineering and analysis, Thermodynamics
- 7 social sciences/humanities courses
- 5 unrestricted electives

#### Major Program (16 units)

- 7 engineering sciences and applied mathematics courses:
  - ES_APPM 311-1: Methods of Applied Mathematics
  - ES_APPM 311-2: Methods of Applied Mathematics
  - ES_APPM 312-0: Complex Variables
  - or MATH 325-0: Complex Variables
  - ES_APPM 322-0: Applied Dynamical Systems
  - ES_APPM 346-0: Modeling and Computation in Science & Engineering
  - MATH 334-0: Linear Algebra: Second Course
  - ES_APPM 421-1: Models in Applied Mathematics

- 2 courses chosen from:
  - ELEC_ENG 302-0: Probabilistic Systems
  - IEMS 202-0: Probability
  - IEMS 303-0: Statistics
  - IEMS 310-0: Operations Research
  - IEMS 313-0: Foundations of Optimization
  - MATH 310-1: Probability and Stochastic Processes
  - MATH 310-2: Probability and Stochastic Processes
  - MATH 310-3: Probability and Stochastic Processes

- 1 mathematical modeling course chosen from:
  - ES_APPM 399-0: Projects
  - ES_APPM 495-0: Selected Topics in Applied Mathematics (subject to department approval)

#### Other modeling course subject to department approval

4 courses in engineering or the sciences at the 300 level or higher leading to an approved concentration in one of the following areas:

- Engineering
- Mathematical social sciences (e.g., economics)
- Mathematics (e.g., discrete mathematics or analysis)
- Numerics
- The sciences

2 technical electives at the 300 level or higher in engineering, science, or mathematics

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1. See general requirements for details.
2. Maximum of 3 basic science units may come from any one area.
3. PHYSICS 140-2 Fundamentals of Physics may substitute for PHYSICS 135-2 General Physics. PHYSICS 140-3 Fundamentals of Physics may substitute for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 136-2 General Physics Laboratory and PHYSICS 136-3 General Physics Laboratory.