### Applied Mathematics Concentration

**Math Courses**

- MATH 304: Vector Analysis 4
- MATH 344: Linear Analysis II 4
- MATH 350: Mathematical Software 4
  - or CSC/CPE 202: Data Structures
- MATH 408: Complex Analysis I 4
- MATH 413: Introduction to Analysis II 4
- MATH 416: Differential Equations II 4
  - or MATH 418: Partial Differential Equations
- MATH 451: Numerical Analysis I 4

**Statistics Courses**

- STAT 301: Statistics I 4
  - or STAT 305: Introduction to Probability and Simulation
  - or STAT 425: Probability Theory

**Tracks**

Select courses from one of the following tracks. 1,2 12

#### Track A

- MATH 335: Graph Theory
- MATH 406: Linear Algebra III
- MATH 409: Complex Analysis II
- MATH 414: Introduction to Analysis III
- MATH 416: Differential Equations II
- MATH 418: Partial Differential Equations
- MATH 437: Game Theory
- MATH 452: Numerical Analysis II
- MATH 453: Numerical Optimization
- MATH 460: Senior Project Applied Seminar
- MATH 461: Senior Project I
  - & MATH 462: Senior Project II
- MATH 476: Advanced Topics in Applied Mathematics

#### Track B

- DATA 301: Introduction to Data Science
- DATA 401: Data Science
- MATH 335: Graph Theory
  - or MATH 453: Numerical Optimization

**Approved Electives** 3 12

Select three courses in one of the following categories, with at least one course at the 300 level or above. 4

#### Physics Category:

- ASTR 301: Planetary Systems
- ASTR 302: Stars and Galaxies
- ASTR 326: Cosmology
- PHYS 132: General Physics II
  - or PHYS 133: General Physics III
- PHYS 211: Modern Physics I
- PHYS 301: Thermal Physics I
- PHYS 302: Classical Mechanics I
- PHYS 303: Classical Mechanics II
- PHYS 318: Special Theory of Relativity

#### Statistics Category:

- STAT 302: Statistics II
- STAT 305: Introduction to Probability and Simulation
- STAT 323: Design and Analysis of Experiments I
- STAT 330: Statistical Computing with SAS
- STAT 331: Statistical Computing with R
- STAT 334: Applied Linear Models
- STAT 416: Statistical Analysis of Time Series
- STAT 417: Survival Analysis Methods
- STAT 418: Categorical Data Analysis
- STAT 419: Applied Multivariate Statistics
- STAT 421: Survey Sampling and Methodology
- STAT 423: Design and Analysis of Experiments II
- STAT 425: Probability Theory
- STAT 426: Estimation and Sampling Theory
- STAT 427: Mathematical Statistics

#### Computer Science Category:

- CSC/CPE 202: Data Structures
- CSC/CPE 203: Project-Based Object-Oriented Programming and Design
- CSC 225: Introduction to Computer Organization
- CSC 349: Design and Analysis of Algorithms
- CSC/CPE 357: Systems Programming
- CSC 448: Bioinformatics Algorithms

#### Mechanical Engineering Category:

- ME 211: Engineering Statics
- ME 212: Engineering Dynamics
- ME 302: Thermodynamics I
- ME 326: Intermediate Dynamics
- ME 341: Fluid Mechanics I

#### Economics Category:

- ECON 311: Intermediate Microeconomics I
- ECON 312: Intermediate Microeconomics II
- ECON 313: Intermediate Macroeconomics
- ECON 403: Industrial Organization
- ECON 408: Mathematical Economics
- ECON 409: Probability Models for Economic Decisions

**Total units:** 56

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1. Only students in the Applied Concentration who are pursuing a Data Science minor should select Track B.
2. Students who select Track B should select the Statistics Category for their approved electives.
Consultation with advisor is recommended prior to selecting approved electives; bear in mind your selections may impact pursuit of post-baccalaureate studies and/or goals.

Other choices are also possible, and should be pre-approved in consultation with academic advisor. Approved electives are to be taken outside of the Mathematics department and should have significant applications to mathematics.