# Applied Mathematics Concentration

- **MATH 304** Vector Analysis 4
- **MATH 344** Linear Analysis II 4
- **MATH 350** Mathematical Software 4
- or **CSC/CPE 202** Data Structures 4
- **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 4
- **MATH 451** Numerical Analysis I 4
- **STAT 301** Statistics I 4
- or **STAT 305** Introduction to Probability and Simulation 4
- or **STAT 425** Probability Theory 4

## Tracks

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

**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** Advanced Topics in Data Science
- **MATH 335** Graph Theory
- or **MATH 453** Numerical Optimization

## Approved Electives

Select three courses in one of the following categories, with at least one course at the 300 level or above. 3

**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.