# 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
- **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
- **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
- **PHYS 322**: Vibrations and Waves
- **PHYS 323**: Optics
- **PHYS 405**: Quantum Mechanics I
- **PHYS 408**: Electromagnetic Fields and Waves I
- **PHYS 412**: Solid State Physics
- **PHYS 417**: Nonlinear Dynamical Systems

### 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.
Applied Mathematics Concentration

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.