# 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.  

### 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

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

#### 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

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**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

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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.