## 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  Advanced Topics in 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

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.