## Applied Mathematics Concentration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 304</td>
<td>Vector Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MATH 344</td>
<td>Linear Analysis II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 350</td>
<td>Mathematical Software</td>
<td>4</td>
</tr>
<tr>
<td>or CSC/CPE 202</td>
<td>Data Structures</td>
<td></td>
</tr>
<tr>
<td>MATH 408</td>
<td>Complex Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 413</td>
<td>Introduction to Analysis II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 416</td>
<td>Differential Equations II</td>
<td>4</td>
</tr>
<tr>
<td>or MATH 418</td>
<td>Partial Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MATH 451</td>
<td>Numerical Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Statistics I</td>
<td>4</td>
</tr>
<tr>
<td>or STAT 305</td>
<td>Introduction to Probability and Simulation</td>
<td></td>
</tr>
<tr>
<td>or STAT 425</td>
<td>Probability Theory</td>
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</tbody>
</table>

### 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 and 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

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.