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  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
Approve Electives3  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.