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 410	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	
Tracks		
Select courses from one of the following tracks. [1,2]		12
Track A		
MATH 335	Graph Theory	
MATH 341	Theory of Numbers	
MATH 406	Linear Algebra III	
MATH 411	Complex Analysis II	
MATH 414	Introduction to Analysis III	
MATH 416	Differential Equations II	
MATH 418	Partial Differential Equations	
MATH 435	Discrete Mathematics with Applications I	
MATH 437	Game Theory	
MATH 452	Numerical Analysis II	
MATH 453	Numerical Optimization	
MATH 460	Senior Project Applied Seminar	
MATH 461 & MATH 462	Senior Project I and Senior Project II	
MATH 476	Advanced Topics in Applied Mathematics	
MATH 482	Abstract Algebra II	
MATH 483	Abstract Algebra III	
Track B		
DATA 301	Introduction to Data Science	
DATA 401 & DATA 403	Data Science Process and Ethics and Data Science Projects Laboratory [3]	
MATH 335	Graph Theory	
or MATH 435	Discrete Mathematics with Applications I	
or MATH 453	Numerical Optimization	
Approved Electives		12
Select three courses in one of the following categories, with at least one course at the 300-level or above. [4,5]		
Physics Category:		
ASTR 301	Planetary Systems	
ASTR 302	Stars and Galaxies	
ASTR 326	Cosmology	
PHYS 142	General Physics II	
or PHYS 143	General Physics III	
PHYS 211	Modern Physics I	
PHYS 301	Thermal Physics I	
PHYS 305	Classical Mechanics I	
PHYS 306	Classical Mechanics II	
PHYS 313	Introduction to Atmospheric Physics	
PHYS 314	Ocean Dynamics	
PHYS 318	Special Theory of Relativity	
PHYS 323	Optics	
PHYS/CPE 345	Quantum Computing	
PHYS 405	Quantum Mechanics I	
PHYS 408	Electromagnetic Fields and Waves I	
PHYS 425	Solid State Physics	
PHYS 428	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	
CPE 345	Quantum Computing	
CSC 349	Design and Analysis of Algorithms	
CSC/CPE 357	Systems Programming	
CSC 365	Introduction to Database Systems	
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 Mathematics concentration who are pursuing a Data Science minor should select Track B.

[2]   Students who select Track B should select Approved Electives from the Statistics Category that will fulfill prerequisites for courses in the Data Science minor.

[3]   DATA 401 and DATA 403 must be taken concurrently with DATA 402.

[4]   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.

[5]   Other choices are also possible, and should be pre-approved in consultation with an academic advisor. Approved Electives are to be taken oustide of the Mathematics department and should have significant applications to mathematics.