

DATA SCIENCE MAJOR REQUIREMENTS: ADVISEMENT FORM BACHELOR OF SCIENCE DEGREE

Name:

UMBC username or ID:

NOTE: A grade of C or better is required in courses to fulfill major requirements.

I Core Requirements (37 credits)

MATH 151 Calculus and Analytic Geometry I	4	MATH 150
MATH 152 Calculus and Analytic Geometry II	4	MATH 151
MATH 221 Introduction to Linear Algebra	3	MATH 151
MATH 251 Multivariable Calculus	4	MATH 152
MATH 300 Introduction to Mathematical Reasoning	4	MATH 221
STAT 332 Introduction to Data Science Computations	3	MATH 221
STAT 355 Introduction to Probability and Statistics for Scientists and Engineers	4	MATH 152, 221
CMSC 201 Computer Science I	4	MATH 150, or 152, or 152. ...
CMSC 202 Computer Science II	4	CMSC 201 and MATH 151 (co-req), or higher

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II Upper Level Mathematics/Statistics (22 credits)

MATH 380 Introduction to Optimization (for Data Science)	3	MATH 221, 251, 300, STAT355, STAT 332
MATH 341 Numerical Linear Algebra for Deep Neural Networks	3	MATH 152, MATH 221, CMSC 201
CMSC 341 Data Structures	3	CMSC 201 and CMSC 203 or Math 300? If not, then elective.
STAT 451 Probability Theory for Data Science and Statistics	3	MATH 251 and STAT 355
STAT 453 Theory of Statistics and Data Science	3	STAT 332 and STAT 451
STAT 480 ETHICAL Data Science	3	STAT 350 or 351 or 355

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III Upper Level Mathematics/Statistics Elective (9 credits/3 courses)

MATH 301 Introduction to Mathematical Analysis I	4	MATH 300 and MATH 152
Math 355 - BioMath	3	MATH 152 and MATH 221
Math 385 - Introduction to Mathematical Modeling	3	MATH 225
Math 404 - Intro to PDE	3	MATH 225 and MATH 251
Math 426 - Matlab	2	MATH 221 and CMSC 201 (May bundle with Stat 432, not Math 301)
Math 441 - Numerical Analysis	3	CMSC 201, MATH 225, MATH 251, MATH 301
Math 447 - Parallel Computing	3	CMSC 201
Math 452 Stochastic Processes	3	STAT 355
MATH 465 Introduction to Neural Networks and Deep Learning	3	MATH 221, 251, 300, STAT 355
Math 469 - Mathematical Physiology	3	MATH 225 or MATH 355
Math 481 - Math Modeling	3	ENGL 100, MATH 221, MATH 225, and MATH 251
MATH 482 Nonlinear Optimization (for Data Science)	3	MATH 221, MATH 301, MATH 380, STAT 332, and STAT 355

Stat 418 - Multivariate Methods	3	MATH 221 and Stat 355
Stat 419 - Biostat	3	STAT 454
Stat 432 - updated SAS, R	1	STAT 355 (May bundle with Math 426)
STAT 433 - Statistical Computing	3	STAT 355 or STAT 453
STAT 436 - Applied Statistical Learning and Data Science	3	CMSC 201, MATH 221, MATH 251, STAT 451, and STAT 453
STAT- 454 - Applied Statistics	3	STAT 355 or STAT 453
STAT 460 - Gaussian Processes and Applications	3	STAT 332 and STAT 451

CMSC 436 - Data Visualization	3	CMSC 341
CMSC 462 - Intro to Data Science	3	CMSC 341 & STAT 355

Biol 463 - Theoretical and Quantitative Biology	4	Bio 142, Bio 302, Bio 303 and STAT 355
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Total 61

