

# DATA SCIENCE AND STATISTICS, BACHELOR OF SCIENCE (B.S.)

## Program Objectives

Upon successful completion of this program, the graduate will:

1. be able to apply data science and statistical techniques to real-world problems and interpret the results;
2. be able to produce high-quality visualizations; and
3. be able to communicate data science and statistical results to a diverse audience.

## Program Requirements

CIP Code: 27.0501

### Major

Only courses completed with a grade of at least a "C" will count toward the major requirements.

Code	Title	Hours
<b>University Graduation Requirements</b>		
General Education ( <a href="https://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/">https://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/</a> ) 36		
<i>Foundations of Learning</i>		
GSD 101	Foundations of Learning	3
Upper division courses (42 hours distributed throughout Major/Supporting/Gen Ed/Free Electives categories)		
<b>Major Requirements</b>		
<i>Core Courses</i>		
CSC 174	Introduction to Programming for Science & Engineering	3
or CSC 190	Object- Oriented Programming I	
ENG 300	Introduction to Technical and Professional Writing	3
MAT 239	Linear Algebra and Matrices	3
MAT 244	Calculus II	4
STA 270	Applied Statistics	4
STA 340	Applied Regression Analysis	3
STA 498	Data Science & Statistics Capstone	3
DSC 580	R and Introductory Data Mining	3
or STA 580	R and Introductory Data Mining	
STA 575	Statistical Methods Using SAS	3
Choose from three hours of the following: <sup>3</sup>		3
DSC 390	Sports Analytics	
STA 375	Sampling Methods	
STA 380	Nonparametric Statistics	
STA 470	Applied Probability	
STA 520	Mathematical Statistics I <sup>1</sup>	
STA 521	Mathematical Statistics II <sup>1</sup>	
STA 570	Quality Control & Reliability	
STA 585	Experimental Design	

Choose from three hours of CSC, DSC, MAT, STA courses numbered 300 or above<sup>3</sup> 3

### Major Electives

Choose from one of the following combinations:<sup>4</sup> 6

#### Data Science:

CSC 210 Data Structures and Programming

CSC 581 Machine Learning

#### Discrete Mathematics:

MAT 306 Discrete Mathematics

STA 470 Applied Probability

Statistics (recommended for students who want to attend graduate school):

STA 521 Mathematical Statistics II<sup>1</sup>

STA 585 Experimental Design

Choose two courses from one of the following categories: 6-8

#### Accounting:

BUS 209 Fundamentals of Financial and Managerial Accounting

or ACC 200 Survey of Accounting

ACC 350 Accounting Information System Risk and Security

#### Agriculture:

AGR 374 Genetics of Livestock Improvement

AGR 501 Independent Study in Agriculture:\_\_\_

or AGR 509 Agriculture Research Methods and Interpretation

#### Anthropology and Sociology:

ANT 371 Primate Ecology & Sociality

SOC 232 Social Statistics

SOC 310 Population and Society

SOC 395 Research Methods in Sociology

#### Biology and Environmental Health Sciences:

EHS 280 One Health: Global Environmental Public Health & EHS 370 and Environmental Disease Detectives: Epidemiology

BIO 315 Genetics & BIO 533 and Bioinformatics: Principles and Applications<sup>1</sup>

BIO 316 Ecology & BIO 532 and Conservation Biology<sup>1</sup>

#### Management Information Systems:

MIS 335 Database Management

MIS 430 Business Data Mining

or BUS 304 Essentials of MIS

#### Computer Science and Informatics:

CSC 310 Data Structures<sup>1</sup>

CSC 313 Database Systems<sup>1</sup>

INF 314 MS Office & Data Analysis<sup>1</sup>

#### Finance:

FIN 201 Personal Money Management

FIN 304 Financial Institutions

or FIN 311 Personal Financial Planning

or FIN 324 Principles of Investments

#### Global Supply Chain Management:

BUS 306 Essentials of Supply Chain Management

MGT 442 Supply Chain Planning

or MGT 444 Strategic Sourcing		
Government:		
POL 280	Research and Writing in Political Science <sup>1</sup>	
POL 400	Capstone Course in Political Science	
POL 440	Public Opinion & Voting Behavior	
Geosciences:		
GEO 351	Geoscience Data and Techniques <sup>1</sup>	
GEO 353	Geographic Information Systems	
GEO 453	Advanced GIS	
GEO 456	Remote Sensing	
GEO 458	Advanced Geographic Imagery	
Marketing:		
MKT 301	Principles of Marketing (NB)	
MKT 455	Marketing Research and Analysis	
or MKT 457 Experimental Design for Marketing		
Physics:		
PHY 315	Electrical Circuits <sup>1</sup>	
PHY 406	Advanced Physics Laboratory <sup>1</sup>	
PHY 460	Classical Mechanics <sup>1</sup>	
Psychology:		
PSY 240	Scientific Literacy in Psychology <sup>1</sup>	
PSY 315	Sensation and Perception	
PSY 340	Research Literacy in Psychology	
PSY 590	Tests and Measurements	
Risk Management and Insurance:		
RMI 370	Principles of Risk and Insurance	
or RMI 374 Fundamentals of Life and Health Insurance		
or RMI 376 Excess & Surplus Lines		
or RMI 382 Claim Handling Principles and Practices		
RMI 378	Risk Management	
Advisor-Approved:		
Two advisor-approved courses from a department other than the Department of Mathematics and Statistics		
Supporting Course Requirements		
MAT 234	Calculus I <sup>G,4</sup>	4
PHI 130	Beginning Ethics <sup>G</sup>	3
<i>Free Electives</i>		
Choose from 31-35 hours of free electives		31-35
<b>Total Hours</b>		<b>120</b>

<sup>1</sup> Requires a pre-requisite course<sup>2</sup> Excluding: any 349 courses and MAT 303 . STA 480 Seminar in \_\_\_ will count for only approved topics.<sup>3</sup> Courses will not count in different categories.<sup>4</sup> Three hours count toward Element 2<sup>G</sup><sup>G</sup> Course also satisfies a General Education element. Hours are included within the 36 hours in General Education.