

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

Program Objectives

Upon successful completion of this program, the graduate will:

1. understand the applications and use of data science and statistics in everyday life;
2. be able to apply a wide variety of statistical techniques;
3. be able to analyze large, complex data sets;
4. use computer packages to perform statistical analyses;
5. be well qualified for employment in industry, government, and the actuarial profession; and
6. be prepared to pursue graduate work in data science or statistics.

Program Requirements

CIP Code: 27.0501

Summary Checklist for General Education

Code	Title	Hours
Element 1		
A:	Written Communication (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-1/)	3
B:	Written Communication (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-1/)	3
C:	Oral Communication (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-1/)	3
Element 2		
	Quantitative Reasoning (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-2/)	3
Element 3		
A:	Arts (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-3/)	3
B:	Humanities (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-3/)	3
Element 4		
	Natural Sciences (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-4/)	6
Element 5		
A:	Historical Science (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-5/)	3
B:	Social Behavioral Science (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-5/)	3
Element 6		

Diversity of Perspectives Experiences (http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-6/)	6
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Total Hours 36

Students are expected to complete Elements 1 and 2 within their first 60 hours of college credit.

Major

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

Code	Title	Hours
University Graduation Requirements		
General Education		36
<i>Student Success Seminar</i>		
SCO 100M	Student Success Seminar in Mathematics and Statistics (waived for transfers with 30+ hrs.)	1
Upper division courses (42 hours distributed throughout Major/Supporting/Gen Ed/Free Electives categories)		
Major Requirements		
<i>Core Courses</i>		
MAT 239	Linear Algebra and Matrices	3
MAT 244	Calculus II	4
STA 270	Applied Statistics	4
STA 340	Applied Regression Analysis	3
STA 498W	Statistics Capstone	3
Choose from nine hours of the following:		9
DSC 390	Sports Analytics	
DSC 580	R and Introductory Data Mining ¹	
STA 375	Sampling Methods	
STA 380	Nonparametric Statistics	
STA 470	Applied Probability	
STA 520	Mathematical Statistics I ²	
STA 521	Mathematical Statistics II ²	
STA 570	Quality Control & Reliability	
STA 575	Statistical Methods Using SAS ¹	
STA 580	R and Introductory Data Mining ¹	
STA 585	Experimental Design	
Choose from three hours of CSC, DSC, MAT, STA courses numbered 300 or above ³		3
<i>Major Electives</i>		
Choose from one of the following combinations: ⁴		6
Data Science:		
CSC 210 & CSC 581	Data Structures and Programming and Machine Learning	
Discrete Mathematics:		
MAT 306 & STA 470	Discrete Mathematics and Applied Probability	
Statistics:		
STA 521	Mathematical Statistics II ²	
STA 585	Experimental Design	
<i>Supporting Course Requirements</i>		
Choose from one of the following:		3
CSC 170	Intro to Game Programming	

CSC 174	Introduction to Programming for Science & Engineering	
CSC 189	Computing Concepts and Programming	
CSC 190	Object- Oriented Programming I	
ENG 300 or ENG 300S	Introduction to Technical and Professional Writing Intro to Tech/Prof Writing	3
MAT 234	Calculus I (Element 2) ^{G,5}	4
Choose from one of the following:		0-3
PHI 130	Beginning Ethics (Element 3B) ^G	
PHI 130S	Beginning Ethics (Element 3B) ^G	
PHI 362	Technology and Values	
<i>Domain Knowledge Component</i>		
Choose two courses from one of the following categories:		6-7
<i>Anthropology and Sociology:</i>		
ANT 371	Primate Ecology & Sociality	
SOC 232	Social Statistics	
SOC 310	Population and Society	
SOC 395	Research Methods in Sociology	
<i>Biology and Environmental Health Sciences:</i>		
EHS 280 & EHS 370	One Health: Global Environmental Public Health and Environmental Disease Detectives: Epidemiology	
BIO 315 & BIO 533	Genetics and Bioinformatics: Principles and Applications ²	
BIO 316 & BIO 532	Ecology and Conservation Biology ²	
<i>Computer Information Systems:</i>		
CIS 335	Data Base Management ²	
CIS 430 or BUS 304	Business Data Mining Essentials of MIS	
<i>Computer Science and Informatics:</i>		
CSC 310	Data Structures ²	
CSC 313	Database Systems ²	
INF 314	MS Office & Data Analysis ²	
<i>Government:</i>		
POL 280	Research and Writing in Political Science ²	
POL 400W	Capstone Course in Political Science ²	
POL 440	Public Opinion & Voting Behavior	
<i>Geosciences:</i>		
GEO 351	Geoscience Data and Techniques ²	
GEO 353	Geographic Information Systems	
GEO 453	Advanced GIS	
GEO 456	Remote Sensing	
GEO 458	Advanced Geographic Imagery	
<i>Physics:</i>		
PHY 315	Electrical Circuits ²	
PHY 406	²	
PHY 460	Classical Mechanics ²	
<i>Psychology:</i>		
PSY 240	Scientific Literacy in Psychology ²	
PSY 315 or PSY 315L	Sensation and Perception Sensation and Perception Lab	
PSY 340W	Research Literacy in Psychology	

PSY 590	Tests and Measurements	
<i>Advisor-Approved:</i>		
Two advisor-approved courses from a department other than the Department of Mathematics and Statistics		
<i>Free Electives</i>		
Choose from 32-35 hours of free electives		32-35
Total Hours		120

1

Must include at least one of DSC 580 R and Introductory Data Mining or STA 575 Statistical Methods Using SAS or STA 580 R and Introductory Data Mining

2

Requires a pre-requisite course

3

Excluding: any 349 courses, MAT 303 Mathematical Models and Applications, STA 500 . STA 480 Seminar in ___ will count for only approved topics.

4

Courses will not count in both the Core and Major Electives categories.

5

Three hours count toward Element 2^G

G

Course also satisfies a General Education element. Hours are included within the 36 hours in General Education.