

CURRICULUM GUIDE

**Data Science and Statistics, B.S. (Data Science Combination)
2022-2023**

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The schedule below is an **EXAMPLE** of how you can arrange your class schedule. You are strongly advised to meet with the Chair of the Department Mathematics & Statistics or with your academic advisor prior to registration for appropriate placement in MAT courses.

	Fall Semester		Spring Semester	
Freshman Year	SCO 100M	1	STA 340	3
	STA 270 (STA 270L recommended)	4 (1)	MAT 239	3
	° MAT 234 (fulfills Gen. Ed. 2)	4	MAT 244	4
	Gen. Ed. 1A (ENG 101)	3	Gen. Ed. 1B (ENG 102)	3
	Gen. Ed. 1C (Oral Comm.)	3	Gen. Ed. 5B (Soc. & Behav. Sci.)	3
	TOTAL	15 (° 16)	TOTAL	16
Sophomore Year	CSC 189 or 190 (pre-req for CSC 210)	3	†DSC/STA Elective	3
	Gen. Ed. 4 (Nat. Sci.)	3	PHI 130, 130S, or 362 (ONLY 130 and 130S fulfill Gen. Ed. 3-B)	3
	Gen. Ed. 6 (Diversity)	3	Gen. Ed. 4 (Nat. Sci.)	3
	Free Elective (upper division)	3	Gen. Ed. 6 (Diversity)	3
	Free Elective	3	Free Elective (or Gen. Ed. 3B if PHI 362 taken)	3
	TOTAL	15	TOTAL	15
Junior Year	CSC 210	3	ENG 300	3
	†DSC/STA Elective	3	Domain Knowledge course #2 (upper division)	3
	Gen. Ed. 3A (Arts)	3	Gen. Ed. 5A (History)	3
	Domain Knowledge course #1	3	Free Elective (upper division)	3
	Free Elective (upper division)	3	Free Elective	3
	TOTAL	15	TOTAL	15
Senior Year	CSC 581	3	‡ CSC/DSC/MAT/STA Elective	3
	STA 498W (ACCT)	3	Free Elective	3
	§†DSC/STA Elective (DSC 580 or STA 580 (fall only))	3	Free Elective	3
	Free Elective (upper division)	3	Free Elective	1-2
	Free Elective (upper division)	3		
	TOTAL	15	TOTAL	13-14
TOTAL HOURS TO DEGREE COMPLETION				120

Course Number	Course Name
GENERAL EDUCATION & UNIVERSITY REQUIREMENTS (37)	
SCO 100M	Student Success Seminar in Mathematics and Statistics (1)
CORE COURSE REQUIREMENTS (29)	
MAT 239	Linear Algebra and Matrices (3)
MAT 244	Calculus II (4)
STA 270	Applied Statistics I (4)
STA 340	Applied Regression Analysis (3)
STA 498W	Statistics Capstone (3) (writing intensive)
† PLUS NINE (9) HOURS selected from (DSC/STA electives):	
DSC 390	Sports Analytics (3)
DSC 580	R and Introductory Data Mining (3)
STA 375	Sampling Methods (3)
STA 380	Nonparametric Statistics (3)
STA 470	Applied Probability (3)
*STA 520	Mathematical Statistics I (3)
STA 521	Mathematical Statistics II (3) (spring only)
STA 570	Quality Control and Reliability (3)
STA 575	Statistical Methods Using SAS (3) (spring only)
STA 580	R and Introductory Data Mining (3) (fall only)
STA 585	Experimental Design (3)
§ MUST include at least one of DSC 580, STA 575 (spring only), or STA 580. Only courses completed with a grade of at least a "C" will count toward the major requirements.	
‡ PLUS THREE (3) HOURS of CSC/DSC/MAT/STA courses numbered 300 or above (excluding any 349 course). STA 480 will count for approved topics only.	
MAJOR ELECTIVES FOR DATA SCIENCE COMBINATION (6)	
CSC 210	Data Structures and Programming (3)
CSC 581	Machine Learning (3)
SUPPORTING COURSE REQUIREMENTS (13-18)	
CSC 170 or CSC 174 or CSC 189 or CSC 190	Intro to Game Programming (3) Introduction to Programming for Science & Engineering (3) Computing Concepts and Programming (3) Object-Oriented Programming I (3)
ENG 300 or 300S	Introduction to Technical and Professional Writing (3) (service)
° MAT 234	Calculus I (4)
° PHI 130 or ° PHI 130S or PHI 362	Beginning Ethics (3) Beginning Ethics (3) (service) Technology and Values (3)
SELECT TWO (2) COURSES from one of the following categories (Domain Knowledge Course):	
▶ ANTHROPOLOGY AND SOCIOLOGY:	
*ANT 371	Primate Ecology and Sociality (3)
*SOC 232	Social Statistics (3)
*SOC 310	Population and Society (3)
*SOC 395	Research Methods in Sociology (3) (spring only)
▶ BIOLOGY AND ENVIRONMENTAL HEALTH SCIENCES:	
*BIO 315 and *BIO 533	Genetics (4) Bioinformatics: Principles and Applications (3)
*BIO 316 and *BIO 532	Ecology (4) Conservation Biology (3) (spring only)
EHS 280 and *EHS 370	One Health: Global Environmental Public Health (3) Environmental Disease Detectives: Epidemiology (3)
▶ COMPUTER INFORMATION SYSTEMS:	
*BUS 304	Essentials of Management Information Systems (3)
*CIS 335	Database Management (3)
*CIS 430	Business Data Mining I (3)
▶ COMPUTER SCIENCE AND INFORMATICS	
*CSC 310	Data Structures (3)
*CSC 313	Database Systems (3)
*INF 314	MS Office and Data Analysis (3)
▶ GOVERNMENT	
*POL 280	Research and Writing in Political Science (3)
*POL 400W	Capstone Course in Political Science (3) (writing intensive)
*POL 440	Public Opinion and Voting Behavior (3)
▶ GEOSCIENCES	
*GEO 351	Geoscience Data and Techniques (3)
*GEO 353	Geographic Information Systems (3)
*GEO 453	Advanced GIS (3)
*GEO 456	Remote Sensing (3)
*GEO 458	Advanced Geographic Imagery (3) (spring only)
▶ PHYSICS	
*PHY 315	Electrical Circuits (4)
*PHY 406	Advanced Physics Laboratory (3)
*PHY 460	Classical Mechanics (4)
▶ PSYCHOLOGY	
*PSY 240	Scientific Literacy in Psychology (3)
*PSY 315 or *PSY 315L	Sensation and Perception (3) Sensation and Perception with Lab (4)
*PSY 340W	Research Literacy in Psychology (3) (writing intensive)
*PSY 590	Tests and Measurements (3)
▶ TWO (2) Advisor-approved courses from a department other than the Department of Mathematics and Statistics.	
FREE ELECTIVES (33-35)	

* **PREREQUISITES:** Consult with your advisor and/or the University catalog regarding prerequisites for upper division courses and Domain Knowledge Courses.

° If STA 270L is taken or if the BIO courses are taken for Domain Knowledge Courses, free electives may vary.

Upper division courses: All students are required to have a minimum of 42 hrs. upper division (300-level or above) courses distributed throughout Major/Supporting/Gen Ed/Free Electives categories. If 300 level classes are taken for Gen. Ed., they can be used to fulfill the 42 hours instead of upper division free electives.

Refer to the University Catalog at <http://www.catalogs.eku.edu/> regarding University and General Education Requirements. All baccalaureate degree seeking students who enter the University are required to successfully complete one writing intensive course following completion of ENG 102, ENG 105, or HON 102/103. Writing intensive courses are designated with the suffix "W" following the course prefix and number (e.g., HUM 300W).

Applied Critical & Creative Thinking (ACCT) Requirement: Statistics majors will fulfill ACCT with STA 498W. (Credit hours are incorporated into program requirements.)

° Denotes that 3 credit hours from this course are/can be applied to fulfill a Gen. Ed. requirement if a lower level MAT class is not taken prior to MAT 234.