CURRICULUM GUIDE
Data Science and Statistics, B.S. (*Discrete Mathematics Combination*)
2023-2024
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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	4	MAT 239	3
	(STA 270L recommended)	(1)	MAT 244	4
	ᴳ MAT 234 *(fulfills Gen. Ed. 2)*	4	Gen. Ed. 1B (*ENG 102*)	3
	Gen. Ed. 1A (*ENG 101*)	3	Gen. Ed. 5B (*Soc. & Behav. Sci.*)	3
	Gen. Ed. 1C (*Oral Comm.*)	3		
	TOTAL	15 (⚘16)	**TOTAL**	16
Sophomore Year	CSC 170, 174, 189 *or* 190	3	MAT 306	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		
	Free Elective (*upper division*)	3	Gen. Ed. 4 (*Nat. Sci.*)	3
	Free Elective	3	Gen. Ed. 6 (*Diversity*)	3
			Free Elective (*or Gen. Ed. 3B if PHI 362 taken*)	3
	TOTAL	15	**TOTAL**	15
Junior Year	†DSC/STA Elective	3	ENG 300	3
	†DSC/STA Elective	3	STA 470	3
	Gen. Ed. 3A (*Arts*)	3	Domain Knowledge course #2 (*upper division*)	⚘3
	Domain Knowledge course #1	⚘3		
	Free Elective (*upper division*)	3	Gen. Ed. 5A (*History*)	3
			Free Elective (*upper division*)	3
	TOTAL	15	**TOTAL**	15
Senior Year	STA 498	3	‡ CSC/DSC/MAT/STA Elective	3
	§†DSC/STA Elective (DSC 580 *or* STA 580 (*fall only*))	3	Free Elective	3
	Free Elective (*upper division*)	3	Free Elective	3
	Free Elective (*upper division*)	3	Free Elective	3
	Free Elective	3	Free Elective	1-2
	TOTAL	15	**TOTAL**	13-14
			TOTAL HOURS TO DEGREE COMPLETION	120

* 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.

Produced by the College of Science, Technology, Engineering, and Mathematics   2023-24

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 498	**Statistics Capstone** *(3)*
†**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 DISCRETE MATHEMATICS COMBINATION *(6)*	
MAT 306	**Discrete Mathematics** *(3) (spring only)*
STA 470	**Applied Probability** *(3) (spring only)*
SUPPORTING COURSE REQUIREMENTS *(13-18)*	
CSC 170 *or*	**Intro to Game Programming** *(3)*
CSC 174 *or*	**Introduction to Programming for Science & Engineering** *(3)*
CSC 189 *or*	**Computing Concepts and Programming** *(3)*
CSC 190	**Object-Oriented Programming I** *(3)*
ENG 300 *or* **300S**	**Introduction to Technical and Professional Writing** *(3) (service)*
ᴳ **MAT 234**	**Calculus I** *(4)*
ᴳ **PHI 130** *or*	**Beginning Ethics** *(3)*
ᴳ **PHI 130S** *or*	**Beginning Ethics** *(3) (service)*
PHI 362	**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*	**Genetics** *(4)*
*****BIO 533**	**Bioinformatics: Principles and Applications** *(3)*
*****BIO 316** *and*	**Ecology** *(4)*
*****BIO 532**	**Conservation Biology** *(3) (spring only)*
EHS 280 *and*	**One Health: Global Environmental Public Health** *(3)*
*****EHS 370**	**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 400**	**Capstone Course in Political Science** *(3)*
*****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*	**Sensation and Perception** *(3)*
*****PSY 315L**	**Sensation and Perception with Lab** *(4)*
*****PSY 340**	**Research Literacy in Psychology** *(3)*
*****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)*	

ᴳ *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.*