CURRICULUM GUIDE
Data Science and Statistics, B.S. (*Data Science Combination*)
2021-2022
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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		†DSC/STA Elective	3
	(189 or 190 recommended)	3	PHI 130, 130S, *or* 362 *(ONLY 130 and 130S fulfill Gen. Ed. 3-B)*	3
	Gen. Ed. 4 *(Nat. Sci.)*	3	Gen. Ed. 4 *(Nat. Sci.)*	3
	Gen. Ed. 6 *(Diversity)*	3	Gen. Ed. 6 *(Diversity)*	3
	Free Elective *(upper division)*	3	Free Elective *(or Gen. Ed. 3B if PHI 362 taken)*	3
	Free Elective	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
	Ψ†DSC/STA Elective (DSC 580, STA 575, *or* STA 520 *(fall only)*	3	Free Elective	3
	Free Elective *(upper division)*	3	Free Elective	3
	Free Elective *(upper division)*	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 MAT/STA courses in core major as well as courses marked with *.*
✿*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 the 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 498. (Credit hours are incorporated into program requirements).*

Produced by the College of Science, Technology, Engineering, and Mathematics   2021-22

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)*
†PLUS SIX (9) HOURS selected from *(DSC/STA elective):*	
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)*
STA 570	**Quality Control and Reliability** *(3) (spring only)*
STA 575	**Statistical Methods Using SAS** *(3)*
STA 580	**R and Introductory Data Mining** *(3)*
STA 585	**Experimental Design** *(3)*

Ψ*MUST include at least one of DSC 580, STA 575 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, MAT 303, STA 500*)*. 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*	**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** *(service) (3)*
G MAT 234	**Calculus I** *(4)*
G PHI 130 *or*	**Beginning Ethics** *(3)*
G PHI 130S *or*	**Beginning Ethics** *(service) (3)*
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 395	**Research Methods in Sociology** *(3) (spring only)*
*SOC 465	**Demography** *(3)*

▶ **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:**

*CIS 335	**Database Management** *(3)*
*CIS 430	**Electronic Business Technologies and Tools** *(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** *(writing intensive) (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 340W	**Research Literacy in Psychology** *(3)*
*PSY 590	**Tests and Measurements** *(3)*

| **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.*