

CURRICULUM GUIDE

Data Science and Statistics, B.S. (Statistics 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 | | Course Number | Course Name |
|---|---|------------------------------|---|--------------|---|--|
| Freshman Year | SCO 100M | 1 | STA 340 | 3 | GENERAL EDUCATION & UNIVERSITY REQUIREMENTS (37) | |
| | STA 270 | 4 | MAT 239 | 3 | SCO 100M Student Success Seminar in Mathematics and Statistics (1) | |
| | (STA 270L recommended) | (1) | MAT 244 | 4 | CORE COURSE REQUIREMENTS (29) | |
| | ^a MAT 234 (fulfills Gen. Ed. 2) | 4 | Gen. Ed. 1B (ENG 102) | 3 | MAT 239 | Linear Algebra and Matrices (3) |
| | Gen. Ed. 1A (ENG 101) | 3 | Gen. Ed. 5B (Soc. & Behav. Sci.) | 3 | MAT 244 | Calculus II (4) |
| | Gen. Ed. 1C (Oral Comm.) | 3 | | | STA 270 | Applied Statistics I (4) |
| Sophomore Year | TOTAL | 15 (^a 16) | TOTAL | 16 | STA 340 | Applied Regression Analysis (3) |
| | CSC 170, 174, 189, <u>or</u> 190 | 3 | †DSC/STA Elective | 3 | STA 498 | Statistics Capstone (3) |
| | Gen. Ed. 4 (Nat. Sci.) | 3 | PHI 130, 130S, <u>or</u> 362 (ONLY 130 and 130S fulfill Gen. Ed. 3-B) | 3 | † PLUS NINE (9) HOURS selected from (DSC/STA electives): | |
| | Free Elective (MAT 254 recommended) | 4 | Gen. Ed. 4 (Nat. Sci.) | 3 | DSC 390 | Sports Analytics (3) |
| | Free Elective (upper division) | 3 | Gen. Ed. 6 (Diversity) | 3 | DSC 580 | R and Introductory Data Mining (3) |
| | TOTAL | 16 | TOTAL | 15 | STA 375 | Sampling Methods (3) |
| Junior Year | †DSC/STA Elective | 3 | ENG 300 | 3 | STA 380 | Nonparametric Statistics (3) |
| | STA 585 | 3 | Domain Knowledge course #2 (upper division) | 3 | STA 470 | Applied Probability (3) |
| | Gen. Ed. 3A (Arts) | 3 | Gen. Ed. 5A (History) | 3 | *STA 520 | Mathematical Statistics I (3) |
| | Domain Knowledge course #1 | 3 | Free Elective (upper division) | 3 | STA 521 | Mathematical Statistics II (3) (spring only) |
| | Free Elective | 3 | Free Elective | 3 | STA 570 | Quality Control and Reliability (3) |
| | TOTAL | 15 | TOTAL | 15 | STA 575 | Statistical Methods Using SAS (3) (spring only) |
| Senior Year | [§] †DSC/STA Elective (DSC 580 <u>or</u> STA 580 (fall only)) | 3 | STA 521 (spring only) | 3 | STA 580 | R and Introductory Data Mining (3) (fall only) |
| | ‡ CSC/DSC/MAT/STA Elective (STA 520 recommended as pre-req for STA 521) | 3 | Free Elective | 3 | STA 585 | Experimental Design (3) |
| | STA 498 | 3 | Free Elective | 3-4 | § MUST include at least one of DSC 580, STA 575 (spring only), <u>or</u> STA 580. Only courses completed with a grade of at least a "C" will count toward the major requirements. | |
| | Free Elective | 3 | | | ‡ 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. | |
| | Free Elective (upper division) | 3 | | | MAJOR ELECTIVES FOR STATISTICS COMBINATION (6) | |
| | TOTAL | 15 | TOTAL | 12-13 | STA 521 | Mathematical Statistics II (3) (spring only) |
| TOTAL HOURS TO DEGREE COMPLETION# | | | | 120 | SUPPORTING COURSE REQUIREMENTS (13-18) | |
| * PREREQUISITES: Consult with your advisor and/or the University catalog regarding prerequisites for upper division courses and Domain Knowledge Courses. | | | | | | CSC 170 <u>or</u> CSC 174 <u>or</u> CSC 189 <u>or</u> CSC 190 |
| ^a If STA 270L is taken or if the BIO courses are taken for Domain Knowledge Courses, free electives may vary. | | | | | | Intro to Game Programming (3) |
| 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. | | | | | | Introduction to Programming for Science & Engineering (3) |
| Refer to the University Catalog at http://www.catalogs.eku.edu/ regarding University and General Education Requirements. | | | | | | Computing Concepts and Programming (3) |
| Produced by the College of Science, Technology, Engineering, and Mathematics 2023-24 | | | | | | Object-Oriented Programming I (3) |
| | | | | | | Introduction to Technical and Professional Writing (3) (service) |
| | | | | | | Calculus I (4) |
| | | | | | | 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 <u>and</u> *BIO 533 Bioinformatics: Principles and Applications (3) |
| | | | | | | *BIO 316 <u>and</u> *BIO 532 Ecology (4) |
| | | | | | | *BIO 532 Conservation Biology (3) (spring only) |
| | | | | | | *EHS 280 <u>and</u> *EHS 370 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 <u>or</u> *PSY 315L Sensation and Perception (3) |
| | | | | | | *PSY 340 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) |

^a 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.