

Statistics and Data Science - B.S.

College of
Arts and Sciences

The ability to reason and communicate with data – skills that fall under the umbrella of “data literacy” – is a key competency for those seeking employment in almost all professional sectors of the job market. Beyond this competency requirement, however, there is a sizable and growing demand from employers for individuals with specialized training in statistics and data science.

Employers are looking to hire statisticians and data scientists who are able collect and curate large volumes of data, bring statistical and machine learning methods to bear on new questions, and create data pipelines and workflows that transform digital information into actionable insights.

Perhaps most importantly, employers are looking for individuals who are equipped with the foundational training needed to ensure that the young professionals they hire into these roles are readily able to learn and critically assess new tools as they become available.

120 hours (minimum)

Any student earning a Bachelor of Science (BS) degree must complete a minimum of 60 hours in natural, physical, mathematical, and computer science. A complete description of College requirements for a Bachelor of Science degree, including a specific listing of courses applicable to the 60-hour requirement, can be found in the *Arts and Sciences* section of the 2024-2025 Undergraduate Catalog.

UK Core Requirements

See the *UK Core* section of the 2024-2025 Undergraduate Bulletin for the complete UK Core requirements. The courses listed below are (a) recommended by the college, or (b) required courses that also fulfill UK Core areas. Students should work closely with their advisor to complete the UK Core requirements.

I. Intellectual Inquiry in Arts and Creativity

Choose one course from approved list.....3

II. Intellectual Inquiry in the Humanities

Choose one course from approved list.....3

III. Intellectual Inquiry in the Social Sciences

Choose one course from approved list.....3

IV. Intellectual Inquiry in the Natural, Physical, and Mathematical Sciences

Choose one course from approved list.....3

V. Composition and Communication I

CIS/WRD 110 Composition and Communication I3

VI. Composition and Communication II

CIS/WRD 111 Composition and Communication II3

VII. Quantitative Foundations

MA 113 Calculus I
or
MA 137 Calculus I with Life Science Application4

VIII. Statistical Inferential Reasoning

STA 296 Statistical Methods and Motivations.....3

IX. Community, Culture and Citizenship in the USA

Choose one course from approved list.....3

X. Global Dynamics

Choose one course from approved list.....3

UK Core hours: 31

Graduation Composition and Communication Requirement (GCCR)

STA 495 Statistics and Data Science in Context: A Practicum.....3

Graduation Composition and Communication Requirement hours (GCCR) 3

College Requirements

I. Foreign Language (*placement exam recommended*) 0-14

II. Disciplinary Requirements

a. Natural Science.....3
b. Social Science.....3
c. Humanities.....3

III. Laboratory or Field Work.....3

IV. Race and Ethnicity Requirement.....3

V. Electives.....6

College Requirement hours: 18-32

Premajor Requirements

MA 113 Calculus I
or
MA 137 Calculus I with Life Science Application4
MA 114 Calculus II
or
MA 138 Calculus II with Life Science Application.....4
Premajor Requirement hours: 8

Major Requirements

STA 296 Statistical Methods and Motivations.....3
STA 305 Introduction to Data Science.....4
STA 310 Introduction to Probability and Inference.....3
STA 315 Applied Statistical Modeling and Experimental Design.....3
MA 322 Matrix Algebra and Its Applications.....3
STA 300 Data Visualization.....3
STA 415 Predictive Modeling and Introductory Machine Learning.....4
STA 425 Computational Bayesian Statistics.....3
STA 495 Statistics and Data Science in Context: A Practicum.....3

Major Requirement hours: 29

– CONTINUED –

The University of Kentucky is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award associate, baccalaureate, masters, educational specialist, and doctorate degrees. The University of Kentucky also may offer credentials such as certificates and diplomas at approved degree levels. Questions about the accreditation of the University of Kentucky may be directed in writing to the Southern Association of Colleges and Schools Commission on Colleges at 1866 Southern Lane, Decatur, GA 30033-4097, by calling (404) 679-4500, or by using information available on SACSCOC’s website (www.sacscoc.org).

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Specialization Through Other Courses Work Required for Major (12 or more credit hours)

In addition to the core courses, students have the option to further specialize their training in statistics and data science. Twelve (or more) credit hours must be proposed by the student and approved by the Director of Undergraduate Studies. This flexible specialization will allow students from a variety of backgrounds to complete the major with an approved specialty of their choosing and will make it easier for students to double major.

Specialization Requirement hours: **12**

Free Electives

6 hours of free electives – that do not count toward any other requirement – must be taken. Additional electives may be required to reach the required minimum of 120 hours.

Free Elective hours: **minimum of 6**

Total Minimum Hours

Required for Degree **120**