Biostatistics Graduate Certificate

The Biostatistics Graduate Certificate is awarded to those who have demonstrated specialized knowledge in a scientific field, but not to the level required by a postgraduate master's degree. The certificate program requires individuals to acquire focused knowledge in statistical theory, with an emphasis on application.

Upon completion of the Biostatistics Graduate Certificate, the student should be prepared to apply many of the common statistical methods to complement his or her every day job duties. Therefore, the student must have a basic understanding of the statistical theory and practice and should be proficient in the application of common statistical methods to one or more areas application. At the completion of the Biostatistics Graduate Certificate the student should be able to:

1. demonstrate a basic knowledge and understanding of the statistical theory and practice as applicable to his or her field.
2. function as a collaborator on a research team.
3. critically evaluate the literature where statistical applications are used.
4. participate in the design and implementation of a research project.
5. assume responsibility for the design and implementation of analyses for a research project.
6. serve as an advocate for proper statistical design and interpretation of results in his or her field.

The application for the Biostatistics Graduate Certificate is an online process. Detailed instructions on how to apply are posted on the Department of Biostatistics & Data Science (https://www.kumc.edu/school-of-medicine/academics/departments/biostatistics-and-data-science/academics/graduate-certificates/biostatistics-graduate-certificate/admissions.html) website.

Admission Requirements:

- A bachelor's degree from a regionally accredited institution documented by submission of an official transcript indicating the degree has been conferred before entering the program. Official transcripts from institutions attended post-baccalaureate are also required.
  - Students with degrees from outside the U.S. may be subject to transcript evaluation indicating the degree is equivalent to a U.S. degree and meets the minimum cumulative GPA requirements.
- A cumulative grade-point average (GPA) of at least a 3.0 on a 4.0 scale for the bachelor's degree.
- Applicants who are not native speakers of English, whether domestic or international, must demonstrate they meet the Minimum English Proficiency Requirement (https://www.kumc.edu/academic-and-student-affairs/departments/office-of-international-programs/inbound-programs/information-for-students/academic-english-requirements.html).
- A background check (https://www.kumc.edu/academic-and-student-affairs/student-resources/criminal-background-checks-for-students.html) is required during the admission process; it may affect the student's eligibility to enter the program.
- An official copy of the Graduate Record Examination (GRE) score sent from Educational Testing Service (ETS) to University of Kansas Medical Center - ETS institutional 6895.

- Letter grade of B or better in calculus I – III (or equivalent.)
- Successful completion of at least one of the following courses: linear algebra, differential equations, numerical analysis.
- Successful completion of a course in any computer programming language or demonstration of mastery via credentials or work experience.
- Contact information for three references who are familiar with the applicant's work and character and who have agreed to write letters of recommendation.
- Students currently enrolled in graduate programs at KUMC or KU must be in good standing (3.0 or higher GPA) and have a letter of approval from their current graduate program director and/or department chair indicating support to enroll in the certificate program.

Applicants will be assessed based on these requirements.

Admission requirements are subject to change. In most cases, use the catalog of the year student entered the program. *Other years' catalogs».*

Certificate Program Information: (https://catalog.ku.edu/graduate-studies/kumc/#certificatestext)

No student may work toward a graduate certificate without being accepted as a graduate certificate student in a specific graduate certificate program. Graduate certificates are not granted retroactively. An individual who is not currently a degree-seeking graduate student at KU must apply and may be admitted directly to a graduate certificate program.

The graduate certificate program is not a means of entry into a graduate degree program. If students admitted to a graduate certificate program are later admitted to a graduate degree program as degree-seeking, applicable courses taken for the graduate certificate program may, upon recommendation of the department and within general guidelines, be approved by the Office of Graduate Studies to be counted toward the degree.

While the courses comprising a graduate certificate may be used as evidence in support of a student's application for admission to a graduate degree program, the certificate itself is not considered to be a prerequisite and does not guarantee admission into any graduate degree program. The certificate program is not intended to serve as a default system for students in a degree program who find that they are not able to complete the degree for academic or other reasons. Should a student drop out of a degree program and seek admission to a certificate program, all certificate admission requirements must be followed for admission and conferral.

The Biostatistics Graduate Certificate program consists of a minimum of 15 credit hours of statistical coursework that is comprised of 9 credit hours of required coursework and 6 credit hours of elective coursework.

Certificate requirements:

- Certificate requirements are normally completed within one (1) year of admission to the program although a maximum of 4 years is allowed.
- Cumulative grade-point average (GPA) of at least a 3.0 for all KU graduate certificate coursework.
- Enrollment in a minimum of (1) credit hour the semester program is completed. Graduate certificates may not be granted retroactively.
- Completion of a minimum of 15 credit hours.
- Successful completion of the following Biostatistics courses:

Code	Title	Hours
BIOS 830	Experimental Design	3
BIOS 840	Linear Regression	3
BIOS 871	Mathematical Statistics	3

- Successful completion of two (2) elective courses from the following list:

Code	Title	Hours
BIOS 820	SAS Programming I	3
BIOS 821	SAS Programming II	3
BIOS 823	Introduction to Programming and Applied Statistics in R	3
BIOS 825	Nonparametric Methods	3
BIOS 833	Measurement for Statisticians	3
BIOS 835	Categorical Data Analysis	3
BIOS 845	Survival Analysis	3
BIOS 850	Multivariate Statistics	3
BIOS 855	Statistical Methods in Genomics Research	3
BIOS 872	Mathematical Statistics II	3
BIOS 880	Data Mining and Analytics	3

Graduate credit from another institution may not be transferred to a graduate certificate program.

Certificate requirements and course descriptions are subject to change. Any courses taken as an equivalent must be approved by the Graduate Director and the Office of Graduate Studies. In most cases, use the catalog of the year student entered the program. *Other years' catalogs».*

Typical Plan of Study

Year 1

Fall	Hours	Spring	Hours	Summer	Hours
BIOS 840 (required course)	3	BIOS 830 (required course)	3	Choose elective courses from the following list:	
BIOS 871 (required course)	3	Choose elective courses from the following list:		BIOS 821 (elective course)	
Choose elective courses from the following list:		BIOS 825 (elective course)		BIOS 823 (elective course)	
BIOS 820 (elective course)		BIOS 845 (elective course)		BIOS 833 (elective course)	
BIOS 835 (elective course)		BIOS 872 (elective course)		BIOS 855 (elective course)	
BIOS 850 (elective course)		BIOS 880 (elective course)			
	6		**3**		**0**

Total Hours 9

This Plan of Study shows the 9 credit hours of required courses and shows which semester a specific elective is offered. In addition to the required courses, select two (2) elective courses for a minimum of 6 credit hours in order to meet the 15 credit hour minimum requirement for completion of the Biostatistics Graduate Certificate program.

Because the Graduate Certificates in Biostatistics, Biostatistical Applications, Applied Statistics, Applied Data Science, and Health Data Science signify that the holder is prepared for entry into the practice of biostatistics research, it follows that students awarded the Graduate Certificates must have the knowledge and skills necessary to function in a broad range of academic and research situations. The **Technical Standards** include those physical, cognitive and behavioral standards that are required for the satisfactory completion of all aspects of the curriculum and the development of professional attributes required by all students at upon completion of the Graduate Certificate. The following abilities and expectations must be met by all students **with or without accommodations** admitted to the Certificates:

1. **Observation.** A student must be able to observe and evaluate class demonstrations and field experiences relevant to the field of statistics. He or she must be able to read and comprehend text, numbers, tables and graphs, both in print and displayed electronically. Observation necessitates the functional use of the senses of vision and hearing.

2. **Communication.** A student must be able to communicate effectively and efficiently in English in oral, written, and electronic form with other students, faculty, staff, researchers, and the public. Effective communication includes: the ability to understand assigned readings, lectures, and technical and professional materials; the ability to analyze information; the ability to present results of such analyses verbally and in writing; the ability to independently prepare papers and presentations; and the ability to follow verbal and written instructions. Use of computers and other technology is imperative to this communication.

3. **Motor.** A student must have sufficient motor function to attend classes, prepare assignments, use electronic media, and deliver lectures and public presentations. Class requirements may also include work in a variety of collaborative environments.

4. **Intellectual, conceptual, integrative and quantitative abilities.** A student must possess the ability to understand and read and understand documents written in English, to understand and work with measurements and calculations, and to engage in reasoning, analysis, synthesis and critical thinking. A student must be able to exercise sufficient judgment to recognize and correct performance deviations, and be able to draw on all the above mentioned abilities to be an effective problem solver, researcher, and communicator.

5. **Behavioral and social attributes.** A student must have the emotional health required for the full use of his or her intellectual ability. A student must be able to exercise sound judgment, and to act ethically and with integrity. He or she must develop mature, sensitive, and effective professional relationships with others. A student must be self-motivated, reliable and responsible to complete assigned tasks in a timely manner with no supervision. Students must be able to give attention to detail and have the flexibility to function in a research setting, including adapting to changes in time, place and structure of academic and research settings. The student must have the ability to work with diverse groups.

NOTE: Reasonable accommodations will be considered and may be made to qualified students who disclose a disability, so long as such accommodation does not significantly alter the essential requirements of the curriculum and the training program, or significantly affect the safety of patient care. Students who disclose that they have a disability are considered for the program if they are otherwise qualified. Qualified

students with a disability who wish to request accommodations should provide the appropriate documentation of disability and submit a request for accommodation to the University's Office for Academic Accommodations.