

**The University of Oklahoma
College of Public Health
Department of Biostatistics and Epidemiology**



Bachelor of Science / Master of Science (BS/MS) in Biostatistics

BS Mathematics/MS Biostatistics Accelerated Dual-Degree Program

The program is a modification of an existing Bachelors of Science in Mathematics degree program. It permits students entering the University as freshman to earn both a Bachelor's of Science degree in Mathematics and a Master of Science degree in Biostatistics within four to five years. This time period is one or more years shorter than the time normally required completing both degrees. The program is structured so that 24 credit hours of work can be applied to both degree programs.

During the first three years, the students will take a variety of courses in the humanities, in the sciences that relate to biomedical science, and in mathematics. The 12 required courses in mathematics include calculus, linear algebra, probability theory, and other subjects that provide a foundation for the understanding and use of statistics.

Approximately one and a half years of the program will be spent at the Health Sciences Center where the student will take specialized courses involving methods and applications of statistical analysis, data analysis, principles of epidemiology, and public health issues. A research project will culminate in a thesis.

This program will prepare the student for careers in health agencies and medical institutions, for consultation in the biomedical fields, and for biostatistics research. Students may seek to continue their studies at the Health Sciences Center by applying for admission to the Doctor of Philosophy program in Biostatistics.

Admission

The requirements for admission to the program are the same as those for admission to the College of Arts and Sciences. These requirements are listed in the Bulletin and class schedule of the University of Oklahoma.

Students may apply for admission to the Graduate Program provided they have completed (1) at least 45 credit hours of coursework; (2) at least nine of these credit hours are in upper division courses; and (3) the overall GPA and the GPA in all upper division coursework are both 3.00 or better. International students must also submit a TOEFL score of at least 570 paper-based or 88 IBT. Students who have been granted admission to the Graduate Program may begin taking the graduate coursework.

All students, regardless of admission status, are required to maintain a GPA of 3.00 or greater in all coursework completed. The 136 credit hours submitted to satisfy the requirements of the program may not include more than eight credit hours with a grade of C. Moreover, the 136 credit hours submitted to satisfy the requirements of this program

may not include any credit hours in courses numbered 4000 or above for which a grade lower than a C was given.

Undergraduate Courses Counted Toward the BS Degree

General Education Requirement

Core Area I Symbolic and Oral Communication 9 – 19 credit hours

Core Area II Natural Science 8 credit hours

The physical science must be one of the following:

Chemistry 1315 General Chemistry (Lower)
Chemistry 1425 General Chemistry for Majors (Lower)
Physics 1205 Physics I for Sciences Majors (Lower)
Physics 1214 Physics for Life Science Majors
Physics 2514 Physics for science and Engineering Majors

The biological science must be one of the following:

Zoology 1114 Introductory Zoology
Zoology 2404 Ecology and Environmental Quality

Core Area III Social Sciences 6 credit hours

Core Area IV Humanities 12 credit hours

Major Support Requirement (One of the following) 3 – 5 credit hours

Zoology 2124 Human Physiology (requires ZOO 1121)
Zoology 2343 Human Heredity (offered irregularly)
Microbiology 2815 Introduction to Microbiology (Lower)

Major Requirements in Mathematics 30 credit hours

(A grade of C or better is required in each course numbered below 4000. A grade of B or better is required in each course numbered 4000 or higher)

MATH 1823 Calculus/Analytic Geometry I
MATH 2423 Calculus/Analytic Geometry II
MATH 2433 Calculus/Analytic Geometry III
MATH 3443 Calculus/Analytic Geometry IV
MATH 3333 Linear Algebra I
MATH 3513 Foundations of Analysis
MATH 4323 Higher Algebra or MATH 4433 Introduction to Analysis
MATH 4033 Applied Matrix Models or MATH 4073 Numerical Analysis
or MATH 4083 Numerical Analysis II
MATH 5803 Theory of Probability or BSE 5703 Theory of Probability
MATH 5723 Introduction to Math Statistics or BSE 5733 Principles of Math Statistics I

Elective Courses in Mathematics (Two of the following) 6 credit hours

(Students may elect to take 5000 level versions if the course is listed as a 4000/5000 level course.)

MATH 4033 Applied Matrix Models
MATH 4073 Numerical Analysis I

MATH 4083 Numerical Analysis II
 MATH 4113 Boundary Value Problems
 MATH 4193 Introduction to Mathematics Modeling
 MATH 4323 Higher Algebra I
 MATH 4333 Higher Algebra II
 MATH 4373 Abstract Linear Algebra
 MATH 4433 Introduction to Analysis I
 MATH 4443 Introduction to Analysis II
 MATH 4853 Introduction to Topology
 MATH 4733 Multivariate Statistical Methods or BSE 6663 Analysis of Multivariate Data
 MATH 5783 Regression Analysis or BSE 6643 Regression Analysis
 MATH 5773 Nonparametric Methods or BSE 5653 Nonparametric Methods

Unrestricted Elective Courses approved by Advisory Committee 20 – 30 credit hours

Total Undergraduate Courses Counted toward the BS Degree 100 credit hours

Graduate Courses Counted toward MS

One elective, non-methods course in epidemiology 3 credit hours

Elective courses in Biostatistics (Two of the following) 6 credit hours

These may be selected here if they have not been used to satisfy one of the requirements above)

MATH 5733 Nonparametric Methods or BSE 5653 Nonparametric Methods
 BSE 5663 Analysis of Frequency Data
 BSE 6643 Survival Data Analysis
 MATH 4733 Multivariate Statistical Methods or BSE 6663 Analysis of Multivariate Data

Remaining Elective Courses 3 – 9 credit hours

Any course in BSE which has not been used to satisfy any of the above requirements may be selected except the following which may not be used: BSE 5103 or 6950.

Total Graduate Courses Counted Toward the MS Degree 12 credit hours

Undergraduate and Graduate Courses Toward BS & MS

Required Courses in Biostatistics and Epidemiology 16 credit hours

BSE 5113 Principles of Epidemiology
 BSE 5163 Biostatistics Methods I
 BSE 5001 Problems in Biostatistics and Epidemiology
 BSE 5173 Biostatistics Methods II
 BSE 5193 Intermediate Epidemiologic Methods
 BSE 5980 Research for Master's Thesis (3 credit hours)

Note: The thesis also satisfies the Senior Capstone Requirement. It may be necessary to enroll in more than 3 credit hours of BSE 5980; however, only 3 credit hours may apply to the minimum 136 credit hours required for the program.

A student who has not previously completed MPH core courses or earned MPH degree will be required to complete the overview course in public health in the first academic year of enrollment

- BSE 5960 Overview of Public Health 3 credit hours

Elective Courses, Two of the following: 6 credit hours

Note: only courses that were not selected to meet the undergraduate major requirements in mathematics or the undergraduate elective courses in mathematics may be selected to meet the requirement.

- MATH 4033 Applied Matrix Models
- MATH 4073 Numerical Analysis I
- MATH 4083 Numerical Analysis II
- MATH 4113 Boundary Value Problems
- MATH 4193 Introduction to Mathematics Modeling
- MATH 4323 Higher Algebra I
- MATH 4333 Higher Algebra II
- MATH 4373 Abstract Linear Algebra
- MATH 4433 Introduction to Analysis I
- MATH 4443 Introduction to Analysis II
- MATH 4853 Introduction to Topology
- MATH 4733 Multivariate Statistical Methods or BSE 6663 Analysis of Multivariate Data
- MATH 5783 Regression Analysis or BSE 5643 Regression Analysis
- MATH 5773 Nonparametric Methods or BSE 5653 Nonparametric Methods

Total undergrad and graduate courses toward the BS and MS degrees 25 credit hours

Note: The credit hours listed in this section total 25 but only 24 of these may be applied to the minimum 136 credit hours required for this program.

Credit hour summary

Total undergraduate credit hours counted toward the BS degree	10 credit hours
Total credit hours counted toward the MS degree	12 credit hours
Total credit hours counted toward BS and MS degrees	24 credit hours
Minimum credit hours required for the program	136 credit hours

From time to time, curriculum reviews may indicate that some courses need to be modified, deleted, or replaced. The specific courses listed above as requirements or electives for the program may be changed at any time by joint action of the Department of Mathematics and the Department of Biostatistics and Epidemiology.

The BS and MS degrees will be awarded simultaneously after the completion of all requirements.

This degree program is subject to the policies and procedures printed in the University of Oklahoma College of Public Health Bulletin.