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

BS Mathematics / MS Biostatistics
Accelerated Dual-Degree Program

Description

This 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 Bachelors 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 to complete 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 twelve 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 students 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 course work; (2) at least 9 of these credit hours are in upper division courses; and (3) the overall GPA and the GPA in all upper division course work are both 3.0 or better. Foreign students must also submit a TOEFL score of at least 570. Students who have been granted admission to the Graduate Program may begin taking the graduate course work.

All students, regardless of admission status, are required to maintain a GPA of 3.0 or greater in all course work completed. The 136 credit hours submitted to satisfy the requirements of this Program may not include more than 8 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.

Course Outline

Table I. Undergraduate Courses Counted Toward the BS	Hours
General Education Requirement (Students in this program must meet all the General Education requirements. The Capstone requirement for the BS Degree is satisfied by the thesis required for the MS Degree)	
Core Area I. Symbolic and Oral Communication	9-19
Core Area II. Natural Science .	8
The physical science must be one of the following: • Chemistry 1315 General Chemistry (L) • Chemistry 1425 General Chemistry for Majors (L) • Physics 1205 Physics I for Sciences Majors (L) • 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	6
• Core Area III. Social Sciences	12
• Core Area IV. Humanities	
Major Support Requirement (One of the Following) • Zoology 2124 Human Physiology (requires ZOO 1121) • Zoology 2343 Human Heredity (offered irregularly) • Microbiology 2815 Introduction to Microbiology (L)	3-5

Major Requirements in Mathematics (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 I or MATH 4433 Introduction to Analysis • MATH 4033 Applied Matrix Models or MATH 4073 Numerical Analysis I or MATH 4083 Numerical Analysis II • MATH 5803 Theory of Probability or BSE 5703 Theory of Probability • MATH 5723 Introduction to Mathematical Statistics or BSE 5733 Principles of • Mathematical Statistics I	30
Elective Courses in Mathematics (Two of the Following) 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	6
Unrestricted Elective Courses Note: Must be approved by advisory committee	20-30
Total Undergraduate Hours (counted toward the BS)	100

Table II. Undergraduate and Graduate Courses Toward BS and MS	Hours
Required Courses in Biostatistics and Epidemiology • BSE 5113 Principles of Epidemiology • BSE 5163 Biostatistical Methods I • BSE 5001 Statistical Computer Methods I • BSE 5173 Biostatistical Methods II • BSE 5193 Intermediate Epidemiologic Methods • BSE 5980 Research for Masters Thesis (3 hours) Note: The thesis also satisfies the Senior Capstone Requirement. It may be necessary to enroll in more than 3 hours of BSE 5980; however only 3 hours may apply to the minimum 136 hours required for the Program.	16
Required Core Course (<u>One</u> of the Following) • HAP 5453 U.S. Health Care System • OEH 5013 Environmental Health • HPS 5213 Social & Behavioral Sciences in Public Health	3
Elective Courses (<u>Two</u> of the Following) Note: Only courses that were <u>not</u> selected to meet the undergraduate major requirements in mathematics <u>OR</u> the undergraduate elective courses in mathematics may be selected to meet this 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 <u>or</u> BSE 6663 Analysis of Multivariate Data • MATH 5783 Regression Analysis <u>or</u> BSE 6643 Regression Analysis • MATH 5773 Nonparametric Methods <u>or</u> BSE 5653 Nonparametric Methods	6
Total Hours Counted Toward Both Degrees Note: The hours listed in this section total 25 but only 24 of these may be applied to the minimum 136 hours required for this Program.	24

Table III. Graduate Courses Counted Toward MS	Hours
One elective, non-methods course in Epidemiology	3
Elective Courses in Biostatistics (Two of the Following) These may be selected here if they have not been used to satisfy one of the requirements above • MATH 5733 Nonparametric Methods or BSE 5663 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	6
Remaining Elective Courses (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, BSE 5950, or BSE 6950)	3-9
Total Hours Counted Only Toward the MS	12

Table IV. Credit Hour Summary	Hours
Total Undergraduate Hours Counted toward the BS	100
Total Hours Counted Toward Both Degrees	24
Total Hours Counted Only Toward the MS	12
Minimum Hours Required for the Program	136

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 this Program may be changed at any time by joint action of the Department of Mathematics and the Department of Biostatistics and Epidemiology.

Awarding of Degrees

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