Mathematics and Statistics

Mathematics and Statistics Double Major

Standard Option

Pre-Actuarial Science Option

Actuarial Science is the study of the evaluation and measurement of risk. The Actuary Science option is a pre-professional program designed to provide the background needed to enter the field. Entrance into the profession is regulated under a system of examinations run by actuarial professional societies. The curriculum for this option is designed to prepare the student to pass several of these examinations.

The nature of the actuarial profession requires its practitioners to have a broad knowledge of finance, law, mathematics, management, and statistics. This option leads to a double major in Mathematics and Statistics with either a minor in Economics or additional courses in business. Students selecting this option are requested to visit with the actuarial advisers in both the Departments of Mathematics and Statistics early and often to confirm their progress and to inform themselves of changes in the examination curriculum.

Major Requirements

Major: Mathematics & Statistics

Degree Type: B.A. or B.S.
Required Degree Credits to Graduate: 127

General Education Requirements

First Year Experience (F):

UNIV 189	Skills For Academic Success	1
Communication (C):		
ENGL 110	College Composition I	3
ENGL 120	College Composition II	3
One course in Upper Level Writing: Select one course from the current general education list		3
COMM 110	Fundamentals of Public Speaking	3
Quantitative Reasoning (R):		
MATH 165	Calculus I	4
Science & Technology (S):		10
A one-credit lab must be taken as a co-requisite with a general education science/technology course unless the course includes an embedded lab experience equivalent to a one-credit course. Select from current general education list		
Humanities & Fine Arts (A): Select from current general education list		6
Social & Behavioral Sciences (B): Select from current general education list		6
Wellness (W): Select from current general education list		2
Cultural Diversity (D): Select from current general education list		
Global Perspectives (G): Select from current general education list		
Total Credits		41

College Requirements

Bachelor of Science (BS) Degree – An additional 6 credits in Humanities or Social Sciences[*]

Bachelor of Arts (BA) Degree – An additional 12 credits Humanities and Social Sciences[*] and proficiency at the second year level in a modern foreign language.

* Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student's major.

Mathematics & Statistics Major Requirements

A grade of 'C' or better is required in all MATH and STAT prefix courses.

General Education Requirements		40
Science and Mathematics College Requirement		6-12
Math Major Core Requirements		
MATH 166	Calculus II	4
MATH 265	Calculus III	4
MATH 266	Introduction to Differential Equations	3
MATH 270	Introduction to Abstract Mathematics	3
MATH 420	Abstract Algebra I	3
MATH 429	Linear Algebra	3
MATH 450	Real Analysis I	3
MATH 451	Real Analysis II	3
MATH 491	Seminar	2
Statistics Major Requirements		
STAT 330	Introductory Statistics	3
STAT 461	Applied Regression Models	3
STAT 462	Introduction to Experimental Design	3
STAT 467	Probability and Mathematical Statistics I	3
STAT 468	Probability and Mathematical Statistics II	3
STAT 476	Actuary Exam Study II	1
or STAT 491	Seminar	
Statistics Electives	400 level other than those listed above	12
Related Required Courses:		
Computer Science		
CSCI 160	Computer Science I	4
CSCI 161	Computer Science II	4
Choose 2 courses from the following:		6
CSCI 345	Topics on Personal Computers	
CSCI 372	Comparative Programming Languages	
CSCI 373	Assembly Programming	
CSCI 458	Microcomputer Graphics	
Lecture/Lab Sequence + 2 Credit Elective: Select one of the five groups listed below. Each group includes a two credit elective.		10
Group One:		
BIOL 111 & 111L	Concepts of Biology and Concepts of Biology Lab	

BIOL 315 & 315L	Genetics and Genetics Laboratory	
Two Credit Science Elective		
Group Two:		
BIOL 126 & 126L	Human Biology and Human Biology Laboratory	
BIOL 220 & 220L	Human Anatomy and Physiology I and Human Anatomy and Physiology I Laboratory	
Two Credit Science Elective		
Group Three:		
CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory	
CHEM 122 & 122L	General Chemistry II and General Chemistry II Laboratory	
Two Credit Science Elective		
Group Four:		
CHEM 150 & CHEM 160	Principles of Chemistry I and Principles of Chemistry Laboratory I	
CHEM 151 & CHEM 161	Principles of Chemistry II and Principles of Chemistry Laboratory II	
Two Credit Science Elective		
Group Five: (this group may be used as Sci & Tech for Gen Ed)		
PHYS 251 & 251L	University Physics I and University Physics I Laboratory	
PHYS 252 & 252L	University Physics II and University Physics II Laboratory	
Total Credits		127-133

Major Requirements

Major: Mathematics & Statistics Pre-Actuarial Option

Degree Type: B.A. or B.S.
Required Degree Credits to Graduate: 132

General Education Requirements

First Year Experience (F):

UNIV 189	Skills For Academic Success (Students transferring in 24 or more credits do not need to take UNIV 189.)	1

Communication (C):

ENGL 110	College Composition I	3
ENGL 120	College Composition II	3
One Course in Upper Level Writing: Select from current general education list		3
COMM 110	Fundamentals of Public Speaking	3

Quantitative Reasoning (R):

MATH 165	Calculus I	4

Science & Technology (S):

A one-credit lab must be taken as a co-requisite with a general education science/technology course unless the course includes an embedded lab experience equivalent to a one-credit course. Select from current general education list	10

Humanities & Fine Arts (A): Select from current general education list | 6

Social & Behavioral Sciences (B):

ECON 201	Principles of Microeconomics	3
ECON 202	Principles of Macroeconomics	3
Wellness (W): Select from current general education list		2
Cultural Diversity (D): Select from current general education list		
Global Perspectives (G):		
ECON 201	Principles of Microeconomics	3
Total Credits		41

College Requirements

Bachelor of Science (BS) Degree – An additional 6 credits in Humanities or Social Sciences[*]

Bachelor of Arts (BA) Degree – An additional 12 credits Humanities and Social Sciences[*] and proficiency at the second year level in a modern foreign language.

[*] Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student's major.

Major Requirements

A grade of 'C' or better is required for all courses used toward the major.

General Education Requirements		40
Science and Mathematics College Requirements		6-12
Math Major Requirements		
MATH 166	Calculus II	4
MATH 265	Calculus III	4
MATH 266	Introduction to Differential Equations	3
MATH 270	Introduction to Abstract Mathematics	3
MATH 376	Actuarial Exam Study	1
MATH 429	Linear Algebra	3
MATH 450	Real Analysis I	3
MATH 488	Numerical Analysis I	3
MATH 451 or MATH 489	Real Analysis II Numerical Analysis II	3
Statistics Major Requirements		
STAT 330	Introductory Statistics	3
STAT 461	Applied Regression Models	3
STAT 462	Introduction to Experimental Design	3
STAT 467	Probability and Mathematical Statistics I	3
STAT 468	Probability and Mathematical Statistics II	3
STAT 476	Actuary Exam Study II	1
Statistics Electives	Courses must be at the 400 level and not listed above	9
Related Required Courses		
Computer Science:		
CSCI 160	Computer Science I	4
CSCI 161	Computer Science II	4

Lecture/Lab Sequence: Choose one sequence from the following (A-E). Sequence A-D includes a two credit science/ technology elective:		10
Sequence A:		
BIOL 111 & 111L	Concepts of Biology and Concepts of Biology Lab [*]	
BIOL 315 & 315L	Genetics and Genetics Laboratory [*]	
Two Credit Science/Technology Elective		
Sequence B:		
BIOL 126 & 126L	Human Biology and Human Biology Laboratory [*]	
BIOL 220 & 220L	Human Anatomy and Physiology I and Human Anatomy and Physiology I Laboratory [*]	
Two Credit Science/Technology Elective		
Sequence C:		
CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory [*]	
CHEM 122 & 122L	General Chemistry II and General Chemistry II Laboratory [*]	
Two Credit Science/Technology Elective		
Sequence D:		
CHEM 150 & CHEM 160	Principles of Chemistry I and Principles of Chemistry Laboratory I [*]	
CHEM 151 & CHEM 161	Principles of Chemistry II and Principles of Chemistry Laboratory II [*]	
Two Credit Science/Technology Elective		
Sequence E: Physics Courses		
PHYS 251 & 251L	University Physics I and University Physics I Laboratory [*]	
PHYS 252 & 252L	University Physics II and University Physics II Laboratory [*]	
Accounting, Business, & Economics Courses:		
ACCT 200	Elements of Accounting I	3
ACCT 201	Elements of Accounting II	3
Electives: Select three courses from the following:		9
CSCI 453	Linear Programming and Network Flows	
CSCI 454	Operations Research	
ECON 341	Intermediate Microeconomics	
ECON 343	Intermediate Macroeconomics	
ECON 410	Econometrics	
ECON 440	Game Theory and Strategy	
ECON 456	History of Economic Thought	
ECON 461	Economic Development	
ECON 465	Labor Economics	
ECON 470	Public Economics	
ECON 472	International Trade	
ECON 476	Monetary Theory and Policy	
ECON 480	Industrial Organization	
ECON 481	Natural Resource Economics	
ECON 482	Environmental Economics	

FIN 320	Principles of Finance	
FIN 410	Investment Analysis and Management	
FIN 420	Options, Futures, and Other Derivatives	
FIN 450	Money and Capital Markets	
FIN 460	Corporate Finance	
Total Credits		132-138

[*]   Will satisfy the General Education Science & Technology category requirement.

Program Notes

- Except for courses offered only as pass/fail grading, no course may be taken Pass/Fail.