MATHEMATICS (BS) - APPLIED MATHEMATICS CONCENTRATION

Program Overview

The Applied Math Concentration prepares the student for a career in industry. The student in Applied Math may select from two preparation tracks - actuarial science and statistics.

Career Opportunities

Actuary, banking analyst, financial analyst, quantitative analyst, teacher (with the completion of additional preparation for certification), trade assistant

Program of Study

Code	Title	Credit Hours
Core IMPACTS Area : Institutional Priorities [1]		**4-5**
Choose one of the following communication options		3
COMM 1110	Public Speaking	
Foreign Language Course Options		
AMSL, ARAB, CHIN, FREN, GERM, GREK, ITAL, JAPN, KREN, LATIN, PORT, SPAN - 1001, 1002, 2001, 2002; SWAH - 1001, 1002.		
Take one of the following courses		1-2
ITDS 1779	Scholarship Across the Disciplines	
LEAD 1705	Introduction to Servant Leadership	
PERS 1506	Perspectives 1-hour	
PERS 1507	Perspectives 2-hour	
Core IMPACTS Area : Mathematics & Quantitative Skills [1]		**3-7**
DATA 1501	Introduction to Data Science	3
MATH 1001	Quantitative Skills and Reasoning	3
MATH 1101	Introduction to Mathematical Modeling	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
MATH 1125	Applied Calculus	3
MATH 1131	Calculus with Analytic Geometry I	4
MATH 1132	Calculus with Analytic Geometry II	4
MATH 1165	Computer-Assisted Problem Solving	3
MATH 1401	Introduction to Statistics	3
MATH 1501	Calculus I	4
MATH 2125	Introduction to Discrete Mathematics	3
STAT 1401	Elementary Statistics	3
Core IMPACTS Area : Political Science and U.S. History		**6**
HIST 2111	U. S. History to 1865	3
or HIST 2112	U. S. History since 1865	
POLS 1101	American Government	3
Core IMPACTS Area : Arts, Humanities, and Ethics		**6**
Select one Fine Arts course		3
ARTH 1100	Art Appreciation	
ARTH 2125	Introduction to the History of Art I– Prehistoric through Gothic	
ARTH 2126	Introduction to the History of Art II– Renaissance through Modern	
MUSC 1100	Music Appreciation	
THEA 1100	Theatre Appreciation	
ITDS 1145	Comparative Arts [2]	
Select one Humanities course		3
ENGL 2111	World Literature I	
ENGL 2112	World Literature II	
ITDS 1155	The Western Intellectual Tradition	
ITDS 1774	Introduction to Digital Humanities	
PHIL 2010	Introduction to Philosophy	
ITDS 1145	Comparative Arts [2]	
Core IMPACTS Area : Communicating in Writing		**6**
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
Core IMPACTS Area : Technology, Mathematics, and Sciences [1,3]		**7-11**
ANTH 1145	Human Origins	3
ASTR 1105	Descriptive Astronomy: The Solar System	3
ASTR 1106	Descriptive Astronomy: Stars and Galaxies	3
ASTR 1305	Descriptive Astronomy Lab	1
ATSC 1112	Understanding the Weather	3
ATSC 1112L	Understanding the Weather Lab	1
BIOL 1125	Contemporary Issues in Biology Non-Lab	3
BIOL 1215K	Introductory Biology	4
BIOL 1225K	Contemporary Issues in Biology with Lab	4
CHEM 1151 & 1151L	Survey of Chemistry I and Survey of Chemistry I Lab	4
CHEM 1152 & 1152L	Survey of Chemistry II and Survey of Chemistry II Lab	4
CHEM 1211 & 1211L	Principles of Chemistry I and Principles of Chemistry I Lab	4
CHEM 1212 & 1212L	Principles of Chemistry II and Principles of Chemistry II Lab	4
CPSC 1105	Introduction to Computing Principles and Technology	3
CPSC 1301K	Computer Science I	4
ENVS 1105	Environmental Studies	3
ENVS 1105L	Environmental Studies Laboratory	1
ENVS 1205K	Sustainability and the Environment	4
GEOG 2215	Introduction to the Geographic Information Systems	3
GEOL 1110	Natural Disasters: Our Hazardous Environment	3
GEOL 1121	Introductory Geoscience I: Physical Geology	3
GEOL 1121L	Introductory Geoscience I: Physical Geology Lab	1
GEOL 1122	Introductory Geo-sciences II: Historical Geology	3
GEOL 1322	Introductory Geo-sciences II: Historical Geology Lab	1
GEOL 2225	The Fossil Record	4
PHYS 1111 & PHYS 1311	Introductory Physics I and Introductory Physics I Lab	4
PHYS 1112 & PHYS 1312	Introductory Physics II and Introductory Physics II Lab	4
PHYS 1125	Physics of Color and Sound	3
PHYS 1325	Physics of Color and Sound Lab	1

PHYS 2211	Principles of Physics I	4
& PHYS 2311	and Principles of Physics I Lab	
PHYS 2212	Principles of Physics II	4
& PHYS 2312	and Principles of Physics II Lab	
Core IMPACTS Area : Social Sciences		**6**
Select one Behavioral Science course		
ECON 2105	Principles of Macroeconomics	
ECON 2106	Principles of Microeconomics	
PHIL 2030	Moral Philosophy	
PSYC 1101	Introduction to General Psychology	
SOCI 1101	Introduction to Sociology	
Select one World Cultures course		3
ANTH 1107	Discovering Archaeology	
ANTH 1105	Cultural Anthropology	
ANTH 2105	Ancient World Civilizations	
ANTH 2136	Language and Culture	
ENGL 2136	Language and Culture	
GEOG 1101	World Regional Geography	
HIST 1111	World History to 1500	
HIST 1112	World History since 1500	
ITDS 1156	Understanding Non-Western Cultures	
Core IMPACTS Total Hours		**42**
Health and Wellness		**3**
KINS 1106	Lifetime Wellness	2
or PHED 1205	Concepts of Fitness	
Select one of the following		1
Any PEDS course		
MUSC 1206	Body Mapping (Music Majors Only)	

[1] The hours applied in the Institutional Priorities; Mathematics & Quantitative Skills; and Technology, Mathematics, and Sciences areas must add to 18 credit hours.

[2] ITDS 1145 Comparative Arts, though listed under both Fine Arts and Humanities, may be taken only once.

[3] At least 4 of the credit hours in this area must be in a lab science course.

Major Requirements

Code	Title	Credit Hours
Core Requirements		
Complete the core requirements for this program		45
Core Total		45
Field of Study Requirements		
Select the following course (the extra credit is counted in Required for the Major):		3
CPSC 1301K	Computer Science I	
MATH 1131	Calculus with Analytic Geometry I [1]	
MATH 1132	Calculus with Analytic Geometry II [1]	
MATH 2115	Introduction to Linear Algebra	3
MATH 2135	Calculus with Analytic Geometry 3	4
STAT 1401	Elementary Statistics	3
Field of Study Requirements Total		13

Required for the Major

1 credit from the following (Field of Study Requirements):		1
CPSC 1301K	Computer Science I	
MATH 2125	Introduction to Discrete Mathematics	3
MATH 3155	Introduction to Mathematical Proofs	3
MATH 3175	Introduction to Probability	3
MATH 4795	Senior Seminar in Mathematics	3
MATH 5151U	Introduction to Real Analysis I	3
MATH 5175U	Mathematical Statistics	3
Select one of the following tracks (see below):		15-24
Actuarial Science Track		
Statistics Track		
Required for the Major Total		34-43
Major Electives		
Select 16-26 credits [2]		16-26
Major Electives Total		16-26
Total Credit Hours		**123**

[1] Guided elective will be selected from among freshman and sophomore level courses in science, business, and education based upon student interests and career goals and requiring the approval of a faculty advisor and the Mathematics Department Chair.

[2] Hours in Required for the Major and Major Electives must total 60 semester hours, with a total of 39 semester hours at the 3000 level or higher

Required for the Major Tracks

Actuarial Science Track

Code	Title	Credit Hours
ACCT 2101	Principles of Accounting I [1]	3
ECON 2105	Principles of Macroeconomics [1]	3
ECON 2106	Principles of Microeconomics [1]	3
MATH 3106	Mathematical Theory of Interest	3
MATH 3108	Introduction to Actuarial Science	3
MATH 5126U	Actuarial Regression and Time Series	3
FINC 3105	Principles of Finance	3
FINC 3115	Corporate Financial Analysis	3
Total Credit Hours		**24**

[1] Required unless completed in Core: IMPACTS or Field of Study Requirements.

Statistics Track

Code	Title	Credit Hours
STAT 3127	Statistical Computing	3
STAT 5176U	Statistical Design and Analysis of Experiments	3
STAT 5177U	Applied Regression Analysis	3
Select two of the following:		6
STAT 5117U	Applied Multivariate Analysis	
STAT 5118U	Applied Nonparametric Methods	

Course	Title	Credit Hours
STAT 5119U	Applied Categorical Data Analysis	
Total Credit Hours		**15**

Actuarial Program Map

Course	Title	Credit Hours
First Year		
Fall		
MATH 1113	Pre-Calculus (minimum grade of C)	4
	(Apply 3 credits to Mathematics and Quantitative Skills and 1 credit to Program Requirements.)	
ENGL 1101	English Composition I (minimum grade of C)	3
Technology, Mathematics, and Sciences	Lab Science	4
ACCT 2101	Principles of Accounting I (minimum grade of C)	3
Social Sciences	Behavioral Science, the following is recommended:	3
ECON 2105	Principles of Macroeconomics (minimum grade of C) [1]	
	Credit Hours	**17**
Spring		
MATH 1131	Calculus with Analytic Geometry I (minimum grade of C)	4
	(Apply 3 credits to Technology, Mathematics, and Sciences and 1 credit to Field of Study Requirements.)	
ENGL 1102	English Composition II (minimum grade of C)	3
CPSC 1301K	Computer Science I (minimum grade of C)	4
	(Apply 3 credits to Field of Study Requirements, 1 credit to Program Requirements.)	
STAT 1401	Elementary Statistics (minimum grade of C)	3
ECON 2106	Principles of Microeconomics (minimum grade of C) [1]	3
Institutional Priorities	ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2)	1
	Credit Hours	**18**
Second Year		
Fall		
MATH 1132	Calculus with Analytic Geometry II (minimum grade of C)	4
	(If MATH 1132 is used in Technology, Mathematics, and Sciences, the one extra hour will count in Field of Study Requirements.)	
MATH 2125	Introduction to Discrete Mathematics (minimum grade of C)	3
MATH 2115	Introduction to Linear Algebra (minimum grade of C)	3
Arts, Humanities, and Ethics	Humanities Course (Recommend ITDS 2125 Historical Perspectives on the Philosoophy of Science and Mathematics)	3
Social Sciences	World Cultures	3
	Credit Hours	**16**
Spring		
MATH 2135	Calculus with Analytic Geometry 3 (minimum grade of C)	4
MATH 3154	minimum grade of C	3
MATH 3175	Introduction to Probability (minimum grade of C)	3
Institutional Priorities	COMM 1110 Public Speaking or Foreign Language	
Arts, Humanities, and Ethics	Fine Arts Course	3
	Credit Hours	**13**
Third Year		
Fall		
MATH 5151U	Introduction to Real Analysis I (minimum grade of C)	3
MATH 5175U	Mathematical Statistics (minimum grade of C)	3
Take one of the following courses (minimum grade of C):		3
MATH 3108	Introduction to Actuarial Science	
MATH 5126U	Actuarial Regression and Time Series	
Technology, Mathematics, and Sciences	Lab Science	4
POLS 1101	American Government	3
	Credit Hours	**16**
Spring		
MATH 3106	Mathematical Theory of Interest (minimum grade of C)	3
FINC 3105	Principles of Finance (minimum grade of C)	3
Program Electives	Upper Level General Elective	3
HIST 2111 or HIST 2112	U. S. History to 1865 or U. S. History since 1865	3
KINS 1106 or PHED 1205	Lifetime Wellness or Concepts of Fitness	2
Health and Wellness	PEDS course	1
	Credit Hours	**15**
Fourth Year		
Fall		
MATH 4795	Senior Seminar in Mathematics (minimum grade of C)	3
FINC 3115	Corporate Financial Analysis (minimum grade of C)	3
Take one of the following courses (minimum grade of C):		3
MATH 3108	Introduction to Actuarial Science	
MATH 5126U	Actuarial Regression and Time Series	
Program Electives	Upper Level General Elective	3
Program Electives	General Elective	1
	Credit Hours	**13**

Spring

Course	Title	Credit Hours
Program Elective	Upper Level General Elective	3
Program Elective	General Elective	3
Program Elective	General Elective	3
Program Elective	General Elective	3
Program Elective	General Elective	3
	Credit Hours	**15**
	Total Credit Hours	**123**

Statistics Program Map

Course	Title	Credit Hours
First Year		
Fall		
MATH 1113	Pre-Calculus (minimum grade of C)	4
	(Apply 3 credits to Mathematics and Quantitative Skills, 1 credit to Program Requirements.)	
ENGL 1101	English Composition I (minimum grade of C)	3
Technology, Mathematics, and Sciences	Lab Science	4
Social Sciences	Behavioral Science, the following is recommended:	3
ECON 2105	Principles of Macroeconomics (minimum grade of C) [1]	
	Credit Hours	**14**
Spring		
MATH 1131	Calculus with Analytic Geometry I (minimum grade of C)	4
	(Apply 3 credits to Technology, Mathematics, and Sciences, 1 credit to Field of Study Requirements.)	
ENGL 1102	English Composition II (minimum grade of C)	3
CPSC 1301K	Computer Science I (minimum grade of C)	4
(Apply 3 credits to Field of Study Requirements, 1 credit to Program Requirements.)		
STAT 1401	Elementary Statistics (minimum grade of C)	3
ECON 2106	Principles of Microeconomics (minimum grade of C)(Recommended Area F Guided Elective)	3
Institutional Priorities	ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2)	1
	Credit Hours	**18**
Second Year		
Fall		
MATH 1132	Calculus with Analytic Geometry II (minimum grade of C)	4
	(If MATH 1132 is used in Technology, Mathematics, and Sciences, the 1 credit in Field of Study Requirements.)	
MATH 2125	Introduction to Discrete Mathematics (minimum grade of C)	3
MATH 2115	Introduction to Linear Algebra (minimum grade of C)	3
Arts, Humanities, and Ethics	Humanities Course (Recommend ITDS 2125 Historical Perspectives on the Philosoophy of Science and Mathematics)	3
Social Sciences	World Cultures	3
	Credit Hours	**16**
Spring		
MATH 2135	Calculus with Analytic Geometry 3 (minimum grade of C)	4
MATH 3154	minimum grade of C	3
MATH 3175	Introduction to Probability (minimum grade of C)	3
Institutional Priorities	COMM 1110 Public Speaking or Foreign Language	
STAT 3127	Statistical Computing (minimum grade of C)	3
Arts, Humanities, and Ethics	Fine Arts Course	3
	Credit Hours	**16**
Third Year		
Fall		
MATH 5151U	Introduction to Real Analysis I (minimum grade of C)	3
MATH 5175U	Mathematical Statistics (minimum grade of C)	3
STAT 5176U	Statistical Design and Analysis of Experiments (minimum grade of C)	3
Technology, Mathematics, and Sciences	Lab Science	4
POLS 1101	American Government	3
	Credit Hours	**16**
Spring		
STAT 5177U	Applied Regression Analysis (minimum grade of C)	3
Program Electives	Upper Level General Elective (minimum grade of C)	3
Program Elective	General Elective	3
HIST 2111 or HIST 2112	U. S. History to 1865 or U. S. History since 1865	3
KINS 1106 or PHED 1205	Lifetime Wellness or Concepts of Fitness	2
Health and Wellness	PEDS course	1
	Credit Hours	**15**
Fourth Year		
Fall		
MATH 4795	Senior Seminar in Mathematics (minimum grade of C)	3
Program Elective	General Elective	3
Take one of the following courses (minimum grade of C):		3
STAT 5117U	Applied Multivariate Analysis	
STAT 5118U	Applied Nonparametric Methods	
STAT 5119U	Applied Categorical Data Analysis	

Program Elective	Upper Level General Elective (minimum grade of C)	3
Program Elective	General Elective	1
	Credit Hours	**13**
Spring		
Take one of the following courses (minimum grade of C):		3
STAT 5117U	Applied Multivariate Analysis	
STAT 5118U	Applied Nonparametric Methods	
STAT 5119U	Applied Categorical Data Analysis	
Program Elective	Upper Level General Elective (minimum grade of C)	3
Program Elective	General Elective	3
Program Elective	General Elective	3
Program Elective	General Elective	3
	Credit Hours	**15**
	Total Credit Hours	**123**

[1] If not taken as a Social Sciences course in the IMPACTS core, course must be added in another semester.

The student needs to work with his/her advisor to choose appropriate elective courses to make sure that he/she meets the total hours 123 required for the program.

Admission Requirements

There are no program specific admission requirements.

Additional Program Requirements

There are no program specific academic regulations.