Applied and Computational Mathematics, Actuarial Science Emphasis, BS

Program Description

The Bachelor of Science Degree in Applied and Computational Mathematics ACM provides students with a new reason to major in mathematical sciences by emphasizing applied mathematics and mathematical modeling. Students will learn to apply mathematics to real world problems arising in various settings, as they master new mathematical techniques. ACM students will have the option to specialize in a desired field through emphases in Actuarial Science, Data Analytics, or Scientific Computing. The Actuarial Science emphasis will provide an interdisciplinary approach by collaborating with programs in Mathematics, Business, Economics, and Finance. Students will prepare for Actuarial Exams P/1 and FM/2, and develop the knowledge and skills necessary for a wide range of job opportunities such as mathematicians, actuaries, operations research analysts, and statisticians. More information is available at Be an Actuary website (https://www.beanactuary.org/actuarial-exams/preliminary-exams/).

Professional Licensure/Certification (PLC) Requirements

The curriculum for programs at Utah Tech University leading to professional licensure are designed to prepare students for Utah licensure and certification requirements. Admission into programs for professions requiring licensure and certification does not guarantee that students will obtain a license or certificate. Licensure and certification requirements are set by agencies that are not controlled by or affiliated with the University, and licensure and certification requirements can change at any time.

Licensure boards in each state establish requirements for licensure and certification for their respective state. States vary by which professions are required to be licensed and how licensure functions, and such requirements may change at any time. The terms related to licensure and certification, among others, also vary by state as well.

Students and prospective students are strongly encouraged to contact the state licensure entity in the state where they intend to work to review all licensure and certification requirements imposed by the student's state(s) of choice. The University cannot provide verification of a student's ability to meet licensure or certification requirements unrelated to its educational programming. Some states require individuals to complete additional requirements that are unrelated to educational prerequisites. For more information, visit the State Authorization and Professional Licensure (https://academics.utahtech.edu/state-authorization/) web page and select the program, or speak to the director of the program.

Utah Tech University shall not be held liable if a student is unable to qualify for licensure or certification in any jurisdiction.

This disclosure is made pursuant to 34 CFR §668.43(a)(5)(v)(C).

Program Curriculum

120 credits

Utah Tech General Education Requirements

All Utah Tech General Education requirements must be fulfilled. A previously earned degree may fulfill those requirements, but courses must be equivalent to Utah Tech's minimum General Education standards in American Institutions, English, and Mathematics.

General Education Core Requirements (https://catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)

Code	Title	Hours
English		3-7
Mathematics		3-5
American Institutions		3-6
Life Sciences		3-10
Physical Sciences		3-5
Fine Arts		3

Literature/Humanities	3
Social & Behavioral Sciences	3

Applied and Computational Mathematics Core Requirements

Code	Title	Hours
CS 1400	Fundamentals of Programming	3
CS 1410	Object Oriented Programming	3
MATH 1210	Calculus I (MA)	4
MATH 1220	Calculus II (MA)	4
MATH 2200	Discrete Mathematics	3
or CS 2100	Discrete Structures	
MATH 2210	Multivariable Calculus (MA)	4
MATH 2270	Linear Algebra	3
MATH 2280	Ordinary Differential Equations	3
MATH 3400	Probability & Statistics	3
MATH 3700	Mathematical Modeling I	4
MATH 4250	Programming for Scientific Computation	4
MATH 4800	Industrial Careers in Mathematics	3
MATH 4890R	Independent Research	1
MATH 4900	Senior Capstone Seminar (ALUR)	3

Applied and Computational Mathematics Elective Requirements

Code	Title	Hours
Choose 4 of the following courses:		
ECON 3010	Managerial Economics	3
ECON 3020	Intermediate Macroeconomics	3
ECON 3500	International Economics	3
FIN 4380	Financial Modeling and Decision Making	3
MGMT 4040	Quantitative Decision Analysis	3
MATH 3050	Stochastic Modeling and Applications	3
MATH 3120	Transition to Advanced Mathematics	3
MATH 3150	Introduction to Partial Differential Equations	3
MATH 3200	Introduction to Analysis I	3
MATH 3100	Euclidean / Non-Euclidean Geom	3
MATH 3500	Numerical Analysis	3
MATH 3900	Number Theory	3
MATH 3905	Cryptography and Codes	3
MATH 4000	Abstract Algebra I	3
MATH 4005	Quantum Computing and Cryptography	3
MATH 4200	Introduction to Complex Analysis	3
MATH 4010	Abstract Algebra II	3
MATH 4100	Introduction to Topology	3
MATH 4330	Linear Algebra II	3
MATH 4550	Scientific Computation	3
MATH 4890R	Independent Research	1-3

Actuarial Science Emphasis Requirements

Code	Title	Hours
ACCT 2010	Principles of Accounting I	3
ACCT 2020		
ISA 2010	Introduction to Business Data Analytics	3
COMM 1020	Public Speaking	3

CS 2420	Introduction to Algorithms and Data Structures	3
ECON 2010	Micro Economics (SS, GC)	3
ECON 2020	Macro Economics (SS, GC)	3
FIN 3150	Managerial Finance I	3
ISA 3020	SQL & Python for Analytics	3
MATH 3410	Actuarial Exam P/1 Preparation	1
MATH 3450	Statistical Inference	3
MATH 4400	Financial Mathematics	3
MATH 4410	Actuarial Exam FM/ 2 Preparation	1
STAT 2040	Business Statistics	3

Graduation Requirements

1. Complete a minimum of 120 college-level credits (1000 and above).
2. Complete at least 40 upper-division credits (3000 and above).
3. Complete at least 30 upper-division credits at Utah Tech for institutional residency
4. Grade C or higher (not C-) required in each Core Discipline Requirement, Mathematics Required Elective, and Mathematics Program Requirement course.