College of Natural Sciences and Mathematics

DEPARTMENT OF MATHEMATICS

MATHEMATICS BACHELOR OF ARTS

CLASS OF 2022

CONCENTRATION IN APPLIED MATHEMATICS COMPUTATIONAL

Mathematics B.A.

TERM 1	TERM 2	TERM 3	TERM 4	TERM 5	TERM 6	TERM 7	TERM 8
MATH 150A (GE B.4) 4 units	MATH 150B 4 units	MATH 250A 4 units	MATH 250B 4 units	MATH 306 3 units	MATH 340 3 units	MATH 370 3 units	MATH 406 or MATH 470 3 units
CNSM 101 (Cognate I ^a) 3 units	MATH 107 (Cognate II ^b) 4 units	MATH 180 or Math 210 (Cognate III ^b) 3 units	MATH 280 3 units	MATH 307 3 units	MATH 350 3 units	MATH 440 3 units	
MATH 151A 1 unit	MATH 151B 1 unit	MATH 380 (Upper Division Writing) 3 units	Math 320 (Computer Programming) 3 units	MATH 335 3 units	MATH 310 3 units		
GE A.1 3 units	GE A.2 3 units	MATH 251A 1 unit	GE C.2 3 units	GE B.5 3 units	GE D.1 3 units	GE B.3 1 units	GE C.1 3 units
GE A.3 3 units	GE B.2 3 units	GE B.1 3 units	HISTORY 110B GE D.2 3 units	GE D.3 3 units		GE D.4 3 units	Electives to complete 120 units
		HISTORY 110A GE C.4 3 units			Upper Division GE D.5 3 units	Upper Division GE E 3 units	Upper Division GE C.3 3 units
14 units	15 units	17 units	16 units	15 units	15 units	13 units	15 units

a. CNSM 101 may be used as a "wild card" replacement course for any cognate
b. Other cognates are also available – see reverse side

40	GE lower division
9	GE upper division
56	Mathematics Required Courses
3	Mathematics Supporting Courses
6	Pick 2 of 3 Courses
6	Electives
120	**TOTAL UNITS**

INSTRUCTIONS FOR COMPLETING THE MATHEMATICS BACHELOR OF ARTS

1. Meet with your assigned faculty advisor each semester to plan and review your academic progress.
2. Visit your College of Natural Sciences and Mathematics Student Success Team in MH 488 to review GE and graduation requirements.
3. Complete GE courses in areas A1, A2, and A3 with a C- or higher. Complete a total of 12 units in GE Area B. One course from GE Area Z can also fulfill a requirement in categories D1, C4, or D4. Check your Titan Degree Audit for courses that appear in both categories.
4. **All** Mathematics courses must be completed with a grade of C or higher.
5. Apply for Graduation through your Student Center at the start of Term 7.

Revised 18 June 2018

MATHEMATICS BACHELOR OF ARTS
APPLIED MATHEMATICS COMPUTATIONAL Concentration

The Math Major is for students who are preparing to (1) enter a graduate study in mathematics, (2) seek math-related careers in business, industry or government, or (3) pursue a career in teaching.

MATHEMATICS CORE AND SUPPORTING COURSES

- **Complete the courses listed below:**

Course	Course Title
MATH 150A	Calculus I
MATH 151A	Calculus I Workshop
MATH 150B	Calculus II
MATH 151B	Calculus II Workshop
MATH 250A	Calculus III
MATH 251A	Calculus III Workshop
MATH 250B	Intro to Linear Algebra and Differential Equations
MATH 280	Strategies of Proof
MATH 307	Linear Algebra
MATH 350	Advanced Calculus I

- **Applied Computational Concentration Requirements (21 units total)**

Applied Mathematics Computational Required Courses (15 units)

MATH 306	Vector and Tensor Analysis (3)
MATH 310	Ordinary Differential Equations (3)
MATH 335	Mathematical Probability (3)
MATH 340	Numerical Analysis (3)
MATH 370	Mathematical Model Building (3)

Applied Mathematics Computational Elective Courses (6 units)

MATH 406	Intro to Partial Differential Equations (3)
MATH 440	Advanced Numerical Analysis (3)
MATH 470	Advanced Mathematical Model Building (4)

COGNATE OPTIONS

Each student is required to select one of the following cognates:

Chemistry	10 Units
CHEM 120A	General Chemistry (5)
CHEM 120B	General Chemistry (5)

Civil Engineering	9 Units
EGCE 201	Statics (3)
EGCE 301	Mechanics of Materials (3)
EGCE 302 **OR** EGCE 325	Dynamics (3) Structural Analysis (3)

Computer Science	10 Units
CPSC 131	Data Structures Concepts (3)
CPSC 223H **OR** CPSC 223J **OR** CPSC 223N	Visual BASIC Programming (3) Java Programming (3) Visual C# Programming (3)
CPSC 240 **OR** CPSC 332	Computer System Architecture I (3) File Structures and Database Systems (3)
CPSC 253U	Operating System Workshop in Unix (1)

Economics	9 Units
ECON 201	Principles of Microeconomics (3)
ECON 202	Principles of Macroeconomics (3)
ECON 310 **OR** ECON 320 **OR** ECON 440 **OR** ECON 441	Intermediate Microeconomics Analysis (3) Intermediate Macroeconomics Analysis (3) Econometrics (3) Mathematical Economics (3)

Finance	9 Units
FIN 320	Financial Management (3)
Two of the following three course options:	
FIN 340	Introduction to Investments (3)
FIN 360	Principles of Insurance (3)
ISDS 473	Applied Business Forecasting (3)

Intro to Math	10 Units
CNSM 101	Think Like Einstein (3)
MATH 107	Intro to Computational Linear Algebra (4)
MATH 180 OR MATH 210	Strategies of Problem Solving (3) Intro to Laplace Transforms and Fourier Series (3)

ISDS	9 Units
Three of the following course options:	
ISDS 422	Surveys and Sampling Design and Applications (3)
ISDS 465	Linear Programming in Management Science (3)
ISDS 467	Statistical Quality Control (3)
ISDS 472	Design of Experiments (3)
ISDS 474	Data Mining (3)
ISDS 475	Multivariate Analysis (3)

Physics	11 Units
PHYS 225	Mechanics (3)
PHYS 225L	Fundamental Physics: Laboratory (1)
PHYS 226	Fundamental Physics: Electricity Magnetism (3)
PHYS 226L	Fundamental Physics: Laboratory (1)
PHYS 227	Fundamental Physics: Waves, Optics and Modern Physics (3)

Mathematics	9 Units
Three upper-division Mathematics courses from one of four Mathematics major concentrations other than student's concentration.	

Research	9 Units
MATH 491	Research Seminar (1)
MATH 497	Undergraduate Research (3,3)
MATH 498	Senior Thesis (2)

*The research cognate is intended for students that would benefit more from research and a thesis than a standard cognate. Student should begin this cognate no later than their junior year.

UNIVERSITY & GE REQUIREMENTS

- **Upper Division Writing Requirement**

To meet the upper-division baccalaureate writing requirement, students must pass with a "C" (2.0) or better MATH 380.

- **Computer Programming Requirement**

To meet the elementary computer programming requirement, students must pass with a "C" (2.0) or better MATH 320, CPSC 120 or CPSC 121.

GENERAL EDUCATION REQUIREMENTS

- **Area A Core Competencies** – 9 units

Subarea	Title
A1	Oral Communication
A2	Written Communication
A3	Critical Thinking

- **Area B Scientific and Quantitative Reasoning** – 12 units

Subarea	Title
B1	Physical Science
B2	Life Science
B3	Laboratory Experience
B4	Mathematics/Quantitative Reasoning
B5	Implications & Explorations NSM (upper div)

- **Area C Arts and Humanities** – 12 units

Subarea	Title
C1	Introduction to the Arts
C2	Introduction to the Humanities
C3	Origins of World Civilizations
C4	Explorations in the Arts and Humanities (upper div)

- **Area D Social Sciences** – 15 units

Area	Title
D1	Introduction to the Social Sciences
D2	American History, Institutions, and Values
D3	American Government
D4	Explorations in the Social Sciences (upper div)

- **Area E Lifelong Learning and Self Development** – 3 units of your choosing

- **Area Z Cultural Diversity**. Area Z should be completed with a course that will fulfill Area C4 and Area Z OR Area D1 and Area Z OR Area D4 and Area Z.