APPLIED AND COMPUTATIONAL MATHEMATICS CONCENTRATION

Mathematics, Bachelor of Arts with a concentration in Applied and Computational Mathematics Requirements

Code	Title	Credits
GENERAL EDUCATION REQUIREMENTS - 46 Hours Required		
Minimum of "C-"required		
Fundamental Academic Skills		**15**
ENGL 1150	ENGLISH COMPOSITION I	
ENGL 1160	ENGLISH COMPOSITION II	
Writing in the Discipline Course		
CMST 1110	PUBLIC SPEAKING FUNDS	
or CMST 2120	ARGUMENTATION AND DEBATE	
MATH 1120	INTRODUCTION TO MATHEMATICAL AND COMPUTATIONAL THINKING	
or MATH 1100	DATA LITERACY AND VISUALIZATION	
or MATH 1130	QUANTITATIVE LITERACY	
or MATH 1140	QUANTITATIVE REASONING FOR HEALTHCARE PROFESSIONALS	
or MATH 1300	COLLEGE ALGEBRA WITH SUPPORT	
or STAT 1100	DATA LITERACY AND VISUALIZATION	
or STAT 1530	ELEMENTARY STATISTICS	
Distribution Requirements		**31**
Natural Science - From two disciplines and at least one lab - 7 hrs		
Social Science - From two disciplines - 9 hrs		
Humanities and Fine Arts - From two disciplines- 9 hrs		
Global Diversity - 3 hrs		
US Diversity - 3 hrs		
MAJOR REQUIREMENTS		
**Course will satisfy UNO's Geneal Education requirement		
^Course requires pre-requisite(s)		
Mathematics Major with a Concentration in Applied Mathematics- 46 Hours Required		
Required Coursework:		**25**
MATH 1950	CALCULUS I (^)	
MATH 1960	CALCULUS II (^)	
MATH 1970	CALCULUS III (^)	
MATH 2050	APPLIED LINEAR ALGEBRA (^)	
MATH 2230	INTRODUCTION TO ABSTRACT MATH (^)	
MATH 2350	DIFFERENTIAL EQUATIONS (^)	
MATH 3230	INTRODUCTION TO ANALYSIS (^)	
Select one of the following		**3**
CIST 1400	INTRODUCTION TO COMPUTER SCIENCE I (^)	
MATH 4200	NUMERICAL ANALYSIS (^)	

Code	Title	Credits
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS (^)	
Select all of the following Applied and Computational Mathematics Concentration courses		**9**
MATH/CSCI 3100	APPLIED COMBINATORICS (^)	
MATH/CSCI 4200	NUMERICAL ANALYSIS (^)	
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS (^)	
Select three of the following Applied and Computational Mathematics Concentration courses		**9**
MATH 3400	THEORY OF INTEREST (^)	
MATH/CSCI 4150	GRAPH THEORY & APPLICATIONS (^)	
MATH/CSCI 4300	DETERMINISTIC OPERATIONS RESEARCH MODELS (^)	
MATH/CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS (^)	
MATH/CSCI 4320	COMPUTATIONAL OPERATIONS RESEARCH (^)	
MATH 4350	ORDINARY DIFFERENTIAL EQUATIONS (* ^)	
MATH 4400	THE FINITE ELEMENT METHOD (* ^)	
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I (* ^)	
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II (* ^)	
MATH 4760	TOPICS IN APPLIED MATHEMATICS (* ^)	
MATH 4900	INDEPENDENT STUDIES (* ^ must be related to applied and computational mathematics)	
MATH 4970	SEMINAR IN APPLIED MATHEMATICS (* ^ must be related to applied and computational mathematics)	
*These courses are highly recommended for this concentration.		
College Breadth (choose one option)		**15-30+**
Option 1: Complete any UNO minor or undergraduate certificate - 15+ hours		
Option 2: Additional General Education Requirements - 19+ hours		
Additional quantitative literacy - 3 hours		
Additional Social Science Gen. Ed. from 3rd Discipline - 3 hours		
Additional Humanities Gen. Ed. from 3rd Discipline - 3 hours		
HIST 1000 and HIST 1010 - 6 hours		
Additional Nat. and Physical Science w/ Lab - 4-5 hours		
Option 3: CAS comprehensive major (50+ hours) OR any second UNO major (30+ hours)		
Bachelor of Arts Language Requiement		**16**
FREN, GERM, Or SPAN, 1110**, 1120, 2110, 2120		
ELECTIVES		
Elective hours as required to reach a total of 120 hours		

Mathematics, Bachelor of Arts with a concentration in Applied and Computational Mathematics Four Year Plan

Freshman

Fall

		Credits
CMST 1110 or CMST 2120	PUBLIC SPEAKING FUNDS or ARGUMENTATION AND DEBATE	3
ENGL 1150	ENGLISH COMPOSITION I (*)	3
MATH 1950	CALCULUS I (**)	5
Foreign Language Course 1110***		5

*ENGL 1150 Required EPPE

**MATH 1950 Required Math Placement Exam or ACT or SAT scores

***Level 1110 foreign language courses count as a Humanity/Fine Arts course, Global Diversity, and toward thestudent's BA requirement. If student is fulfilling the BA requirement via alternative methods, then 16 additionalcredits including a HFA and Global Diversity will need to be factored in to this degree plan.

	Credits	16

Spring

		Credits
ENGL 1160	ENGLISH COMPOSITION II	3
MATH 1960	CALCULUS II	4
Foreign Language Course 1120		5
Humanities/Fine Arts Course		3

	Credits	15

Sophomore

Fall

		Credits
MATH 1970	CALCULUS III	4
MATH 2050	APPLIED LINEAR ALGEBRA (*)	3
Natural/Physical Science with Lab		4
Foreign Language Course 2110		3

*MATH 2050 Requires MATH 1960

	Credits	14

Spring

		Credits
MATH 2230	INTRODUCTION TO ABSTRACT MATH	3
MATH 2350	DIFFERENTIAL EQUATIONS (*)	3
Social Science with U.S. Diversity		3
Humanity/Fine Arts Course		3
Foreign Language Course 2120		3

*MATH 2350 It is recommended you take MATH 2050 first, but not required

	Credits	15

Junior

Fall

		Credits
HIST 1010	WORLD HISTORY SINCE 1500 (or Minor/2nd Major Course *)	3
MATH 3230	INTRODUCTION TO ANALYSIS (**)	3
Social Science		3
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS	3
Coding Course^		3

*A&S College Requirement Options

**MATH 3230 Requires MATH 2230

***MATH 4330: Requires MATH 1970 and MATH 2230.+ Offered only in Fall of odd-numbered years.

^See Academic Catalog for list of Coding Course Options.

	Credits	15

Spring

		Credits
HIST 1000	WORLD HISTORY TO 1500 (or Course for Minor/2nd Major*)	3
MATH 3100	APPLIED COMBINATORICS (**)	3
Applied Math Elective 2***		3
Advanced Writing Requirement^		3
Social Science#		3

*A&S College Requirement Options

**MATH 3100 Requires MATH 2230

***See Academic Catalog for list of Applied Math Electives.

^Advanced Writing Requirement can be CIST 3000 Advanced Composition for IS&T, ENGL 3050 Writing for theWorkplace, ENGL 3980 Technical Writing Across the Discipline, or PHIL 3000 Philosophy Writng Seminar

#SS Must be in a 2nd discipline

	Credits	15

Senior

Fall

		Credits
Applied Math Elective*		3
MATH 4200	NUMERICAL ANALYSIS	3
Natural/Physical Science**		3
Additional Social Science for A&S or Course towards Minor/2nd Major***		3
Additional Humanities and Fine Arts for A&S or Course towards Minor/2nd Major^		3

*See Applied Catalog for list of Applied Math Electives.

**N&PS Course must be in a 2nd discipline

***A&S College Requirement Options. SS Must be in a 3rd discipline

^A&S College Requirement Options. Additional HFA for A&S must be in 3rd discipline.

	Credits	15

Spring

	Credits
ELECTIVE	3
ELECTIVE	3
Elective or Minor/Double Major Course***	3
Elective at 3000-4000 Level or Minor/2nd Major Course***	3
Elective at 3000-4000 Level or Minor/2nd Major Course***	3

*MATH 4760: Requires MATH 3100

**MATH 4970: Requires MATH 3100

***Students need at least 120 credits and a minimum of 27 upper level credits throughout the entire degree,with at least 18 credits of upper level coursework taken within the major/concentration. May need to select3000/4000 level free electives to reach the 27 credit minimum.

	Credits	15
	Total Credits	120

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance

This plan is not a contract and curriculum is subject to change

Additional Information About this Plan:University Degree Requirements: The minimum number of hours for a UNO undergraduate degree is 120 credit hours. Please review the requirements for your specific program to determine all requirements for the program. In order to graduate on-time (four years for an undergraduate degree), you need to take 30 hours each year.

Placement Exams: For Math, English, Foreign Language, a placement exam may be required. More information on these exams can be found at https://www.unomaha.edu/enrollment-management/testing-center/placement-exams/information.php

**Transfer credit or placement exam scores may change suggested plan of study