APPLIED AND COMPUTATIONAL MATHEMATICS CONCENTRATION

Mathematics, Bachelor of Science 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 2200	MATHEMATICAL COMPUTING I (^)	
MATH 3250	INTRODUCTION TO NUMERICAL METHODS (^)	
Select all of the following Applied 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 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 Science Cognate Requirement		**15**
The Bachelor of Science Degree requires at least 15 hours of related Cognate coursework that must be approvedby the Mathematics Academic Advisor/Coordinator. Students can also choose a UNO Minor to satisfy theircognate requirement; however, this Cognate minor cannot double-count as the Option 1 minor for the Collegeof Arts & Sciences College Breadth Requirement. A Computer Science Minor cannot satisfy the Cognaterequirement for Mathematics. No more than 6 credits of cognate coursework may double-count within thegeneral education requirements.		
ELECTIVES		
Elective hours as required to reach a total of 120 hours		

Mathematics, Bachelor of Science 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
Social Science		3
*ENGL 1150: Requires placement.		
**MATH 1950: Requires Math Placement Exam or ACT or SAT scores.		
	Credits	**14**
Spring		
ENGL 1160	ENGLISH COMPOSITION II	3
MATH 1960	CALCULUS II	4
Natural/Physical Science with Lab		4
Humanities/Fine Arts Course with Global Diversity		3
Elective		1
	Credits	**15**
Sophomore		
Fall		
MATH 1970	CALCULUS III	4
MATH 2050	APPLIED LINEAR ALGEBRA	3
Humanities/Fine Arts Course		3
Social Science		3
Natural/Physical Science*		3
*N&PS course must be in a 2nd discipline		
	Credits	**16**
Spring		
MATH 2230	INTRODUCTION TO ABSTRACT MATH	3
MATH 2350	DIFFERENTIAL EQUATIONS (*)	3
Humanities/Fine Arts Course**		3
Social Science & U.S. Diversity Course***		3
Advanced Writing Requirement^		3
*MATH 2350: It is recommended you take MATH 2050 first, but not required		
**HFA must be in a 2nd discipline		
***SS must be in a 2nd discipline		
^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 Writing Seminar.		
	Credits	**15**
Junior		
Fall		
MATH 3230	INTRODUCTION TO ANALYSIS (*)	3
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS	3
Coding Course***		3
Additional Humanities/Fine Arts Course for A&S or Minor/2nd Major Course^		3
Additional Social Science Course for A&S or Minor/2nd Major Course#		3
*MATH 3230: Requires MATH 2230		
**MATH 4330: Requires MATH 1970 and MATH 2250		
***See Academic Catalog for list of Coding Course Options.		
^A&S College Requirement Options. Additional HFA course must be in a 3rd discipline		
#A&S College Requirement Options. Additional SS course must be in a 3rd discipline		
	Credits	**15**
Spring		
HIST 1000	WORLD HISTORY TO 1500 (or Minor/2nd Major Course*)	3
MATH 3100	APPLIED COMBINATORICS (**)	3
Applied Math Elective***		3
Cognate Course		3
Cognate Course		3
*A&S College Requirement Options		
**MATH 3100: Requires MATH 2230		
***See Academic Catalog for list of Applied Math Electives.		
	Credits	**15**
Senior		
Fall		
HIST 1010	WORLD HISTORY SINCE 1500 (or Minor/2nd Major Course*)	3
MATH 4200	NUMERICAL ANALYSIS	3
Data Science Elective/Elective**		3
Cognate Course		3
Cognate Course		3
*A&S College Requirement Options		
**See Academic Catalog for list of Applied Math Electives.		
	Credits	**15**
Spring		
Elective		3
Elective		3
Elective at 3000-4000 Level/Minor/2nd Major Course***		3
Elective at 3000-4000 Level/Minor/2nd Major Course***		3
Cognate 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