PURE MATHEMATICS CONCENTRATION

Mathematics, Bachelor of Science with a Concentration in Pure Mathematics Requirement s

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 General Education requirement		
^Course requires pre-requisite(s)		
Mathematics Major with a Concentration in Pure 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 Pure Mathematics Concentration courses		**9**
MATH 4050	LINEAR ALGEBRA	
MATH 4110	ABSTRACT ALGEBRA I	
MATH 4230	MATHEMATICAL ANALYSIS I	
Select three of the following Pure Mathematics Concentration courses* [1]		**9**
MATH 3640	MODERN GEOMETRY	
MATH 4010	INTRODUCTION TO THE THEORY OF RECURSIVE FUNCTIONS	
MATH 4120	ABSTRACT ALGEBRA II	
MATH 4150	GRAPH THEORY & APPLICATIONS	
MATH 4240	MATHEMATICAL ANALYSIS II	
MATH 4270	COMPLEX ANALYSIS	
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS	
MATH 4350	ORDINARY DIFFERENTIAL EQUATIONS	
MATH/CSCI 4560	NUMBER THEORY & CRYPTOGRAPHY	
MATH 4610	INTRODUCTION TO TOPOLOGY	
MATH 4900	INDEPENDENT STUDIES	
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 hour		
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 approved by the Mathematics Academic Advisor/Coordinator. Students can also choose a UNO Minor to satisfy their cognate requirement; however, this Cognate minor cannot double-count as the Option 1 minor for the College of Arts & Sciences College Breadth Requirement. A Computer Science Minor cannot satisfy the Cognate requirement for Mathematics. No more than 6 credits of cognate coursework may double-count within the general education requirements.		
ELECTIVES		
Elective hours as required to reach a total of 120 hours		

[1] *Students who plan to apply for a Ph.D. program in Mathematics should choose their three courses above from those with the numbered superscripts, with #1 signifying highest priority.

Mathematics, Bachelor of Science with a Concentration in Pure Mathematics , Even Year Admit 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
Humanities/Fine Arts Course with Global Diversity		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
Humanities/Fine Arts Course		3
Natural/Physical Science with Lab		4
Elective		1
	Credits	**15**

Sophomore

Fall

MATH 1970	CALCULUS III	4
MATH 2050	APPLIED LINEAR ALGEBRA (*)	3
MATH 2230	INTRODUCTION TO ABSTRACT MATH (**)	3
Humanities/Fine Arts & US Diversity Course***		3
Social Science		3

*MATH 2050: Requires MATH 1960

**MATH 2230: Requires MATH 1960

***HFA Must be in 2nd discipline.

	Credits	**16**

Spring

MATH 2350	DIFFERENTIAL EQUATIONS (*)	3
MATH 3230	INTRODUCTION TO ANALYSIS (**)	3
MATH 4050	LINEAR ALGEBRA (***)	3
Social Science		3
Advanced Writing Requirement^		3

*MATH 2350: Requires MATH 1960. MATH 2050 Recommended but not required.

**MATH 3230: Requires MATH 2230

***MATH 4050: Requires MATH 2050 and MATH 2230. Offered only Spring of even-numbered years.

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

	Credits	**15**

Junior

Fall

MATH 4110	ABSTRACT ALGEBRA I (*)	3
Cognate		3
Natural/Physical Science**		3
Coding Course***		3
Social Science#		3

*MATH 4110: Requires MATH 4050. Offered only in fall of even-numbered years.

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

***See Academic Catalog for list of Coding Course Options.

#SS must be in a 2nd discipline

	Credits	**15**

Spring

CSCI 1620 or MATH 3200	INTRODUCTION TO COMPUTER SCIENCE II or MATHEMATICAL COMPUTING II	3
Pure Mathematics Elective*		3
Cognate		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

*See Academic Catalog for list of Pure Mathematics Electives.

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

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

	Credits	**15**

Senior

Fall

HIST 1000 or Minor/2nd Major Course*		3
MATH 4230	MATHEMATICAL ANALYSIS I (**)	3
Cognate		3
Elective or Minor/2nd Major Course***		3
Elective or Minor/2nd Major Course***		3

*A&S College Requirement Options

**MATH 4230: Requires MATH 3230. Offered only in fall of odd-numbered years.

***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 select 3000/4000 level free electives and/or cognate courses to reach the 27 credit minimum.

	Credits	**15**

Spring

HIST 1010 or Minor/2nd Major Course*		3
Pure Mathematics Elective**		3
Cognate		3
Cognate		3
Elective at 3000-4000 Level/Minor/2nd Major Course***		3

*A&S College Requirement Options

**See Academic Catalog for list of Pure Mathematics Electives.

***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 select 3000/4000 level free electives and/or cognate courses to reach the 27 credit minimum.

	Credits	**15**
	Total Credits	**120**

Mathematics, Bachelor of Science with a Concentration in Pure Mathematics , Odd Year Admit 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

Humanities/Fine Arts Course and Global Diversity		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
Elective		1
Humanities/Fine Arts Course		3
Natural/Physical Science with Lab		4
	Credits	**15**
Sophomore		
Fall		
MATH 1970	CALCULUS III	4
MATH 2050	APPLIED LINEAR ALGEBRA (*)	3
MATH 2230	INTRODUCTION TO ABSTRACT MATH (**)	3
Humanities/Fine Arts & US Diversity Course***		3
Social Science		3
*MATH 2050: Requires MATH 1960		
**MATH 2230: Requires MATH 1960		
***HFA Must be in a 2nd discipline.		
	Credits	**16**
Spring		
HIST 1000 or Minor/2nd Major Course*		3
MATH 2350	DIFFERENTIAL EQUATIONS (**)	3
MATH 3230	INTRODUCTION TO ANALYSIS (***)	3
Advanced Writing Requirement^		3
Social Science		3
*A&S College Requirement Options		
**MATH 2350: Requires MATH 1960. MATH 2050 Recommended but not required.		
***MATH 3230: Requires MATH 2230		
^Advanced Writing Requirement can be: CIST 3000 Advanced Composition for IS&T, ENGL 3050 Writing for the Workplace, ENGL 3980 Technical Writing Across the Discipline, or PHIL 3000 Philosophy Writing Seminar..		
	Credits	**15**
Junior		
Fall		
MATH 4230	MATHEMATICAL ANALYSIS I (*)	3
Coding Course**		3
Cognate		3
Natural/Physical Science***		3
Social Science^		3
*MATH 4230: Requires MATH 3230. Offered only in fall of odd-numbered years.		
**See Academic Catalog for list of Coding Course Options.		
***N&PS Course must be in a 2nd discipline		
^SS must be in a 2nd discipline.		
	Credits	**15**
Spring		
MATH 4050	LINEAR ALGEBRA (*)	3
Cognant		3
Pure Mathematics Elective**		3
Cognate		3
Additional Humanities/Fine Arts Course for A&S or Minor/2nd Major Course***		3
*MATH 4050: Requires MATH 2050 and MATH 2230. Offered only Spring of even-numbered years.		
**See Academic Catalog for list of Pure Mathematics Electives.		
***A&S College Requirement Options. Additional HFA Must be in a 3rd discipline.		
	Credits	**15**
Senior		
Fall		
HIST 1010 or Minor/2nd Major Course*		3
MATH 4110	ABSTRACT ALGEBRA I (**)	3
Pure Mathematics Elective***		3
Additional Social Science Course for A&S or Minor/2nd Major Course^		3
Elective or Minor/2nd Major Course#		3
*A&S College Requirement Options		
**MATH 4110: Requires MATH 4050. Offered only in fall of even-numbered years.		
***See Academic Catalog for list of Pure Mathematics Electives.		
^A&S College Requirement Options. Additional SS must be in a 3rd discipline.		
#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 select 3000/4000 level free electives and/or cognate courses to reach the 27 credit minimum.		
	Credits	**15**
Spring		
Pure Mathematics Elective*		3
Cognate		3
Cognate		3
Elective at 3000-4000 Level/Minor/2nd Major Course**		3
Elective at 3000-4000 Level/Minor/2nd Major Course**		3
*See Academic Catalog for list of Pure Mathematics Electives.		
**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 select 3000/4000 level free electives and/or cognate courses 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