MATHEMATICS, BACHELOR OF SCIENCE

To obtain a B.S. with a major in Mathematics, a student must fulfill university, college, and departmental requirements. Minimum hour requirements follow:

46 hours of University General Education courses *(Testing out of academic skills requirements and enrolling in General Education courses that satisfy both distribution and diversity requirements are likely to reduce the total number of General Education hours to 40 or fewer.)*

12 hours college breadth requirement

61 hours of major courses

Elective hours as required to total 120 hours

TOTAL HOURS: 120

Requirements

Code	Title	Credits
Courses Required (Core Curriculum)		
MATH 1950	CALCULUS I	5
MATH 1960	CALCULUS II	4
MATH 1970	CALCULUS III	4
MATH 2050	APPLIED LINEAR ALGEBRA	3
MATH 2230	INTRODUCTION TO ABSTRACT MATH	3
MATH 2350	DIFFERENTIAL EQUATIONS	3
MATH 3230	INTRODUCTION TO ANALYSIS	3
Select one of the following courses:		3
CIST 1400	INTRODUCTION TO COMPUTER SCIENCE I	
MATH 2200	MATHEMATICAL COMPUTING I [1]	
MATH 3250	INTRODUCTION TO NUMERICAL METHODS [2]	
Additional Coursework: Concentration or No Concentration Option		
An additional 18 credits of approved upper-level MATH/STAT courses which must include at least 9 credits at the 4000 level		18
Optional Concentrations Include:		
Applied Mathematics		
Pre-Actuarial Mathematics		
Computational Mathematics		
Data Science		
Mathematics Education		
Operations Research		
Statistics		
Pure Mathematics		
B.S. Degree Additional 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.

Total Credits	**61**

1. Recommended for students in the Education, Statistics, and Pre-Actuarial Mathematics concentrations.
2. Recommended for students in the Computational Mathematics concentration.

Applied Mathematics Concentration

This concentration is recommended for students interested in inherently interdisciplinary subjects which apply to many problems that arise in the physical, biological, economic, social, and network sciences as well as in engineering. Applied Mathematics provides a set of qualitative and quantitative skills and knowledge for use in these fields.

Applied Mathematics has a profound impact on our daily lives. Whether it is weather forecasts, genetic or neural networks, search engines, climate research, evolution of species, stock market and finance, ground or air transportation, architecture, or movie recommendations, none of these would work the way they do without algorithms and tools from the mathematical sciences. The concentration in Applied Mathematics allows students to investigate the mathematics of problems arising in the physical, biological, economic, social, and network sciences as well as in engineering.

Applied Mathematics appeals to people with a variety of different interests, ranging from those with a desire to obtain a good quantitative background for use in some future career, to those who are interested in the basic techniques and approaches in themselves.

Code	Title	Credits
The 18 credits of upper-level courses must include:		
MATH 3100	APPLIED COMBINATORICS	3
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS	3
MATH 4760	TOPICS IN APPLIED MATHEMATICS	3
MATH 4970	SEMINAR IN APPLIED MATHEMATICS	3
Along with two 3 credit electives from the following:		**6**
MATH 3400	THEORY OF INTEREST	
MATH 4050	LINEAR ALGEBRA	
MATH 4150	GRAPH THEORY & APPLICATIONS	
MATH/CSCI 4200	NUMERICAL METHODS	
MATH 4300	DETERMINISTIC OPERATIONS RESEARCH MODELS	
MATH 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS	
MATH 4320	COMPUTATIONAL OPERATIONS RESEARCH	
MATH 4350	ORDINARY DIFFERENTIAL EQUATIONS	
MATH 4400	THE FINITE ELEMENT METHOD	
MATH 4560	NUMBER THEORY & CRYPTOGRAPHY	
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II	
MATH 4760	TOPICS IN APPLIED MATHEMATICS	
MATH 4900	INDEPENDENT STUDIES	

MATH 4970	SEMINAR IN APPLIED MATHEMATICS	
Total Credits		**18**

Data Science Concentration

This concentration is recommended for students interested in a career as a data science professional or pursuing graduate study in disciplines with a strong data analysis component. Data science is the art and science of transforming raw data into deliverable data products in order to help businesses or government agencies make more informed decisions.

Code	Title	Credits
Upper level Courses		
The 18 credits of upper-level courses must include:		
MATH 3200	MATHEMATICAL COMPUTING II	3
or CSCI 1620	INTRODUCTION TO COMPUTER SCIENCE II	
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I	3
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II	3
STAT 4410	INTRODUCTION TO DATA SCIENCE	3
STAT 4420	EXPLORATORY DATA VISUALIZATION AND QUANTIFICATION	3
Select one of the following elective courses:		3
MATH/CSCI 4300	DETERMINISTIC OPERATIONS RESEARCH MODELS	
MATH/CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS	
MATH/STAT 4450	INTRODUCTION TO MACHINE LEARNING AND DATA MINING	
MATH 4900	INDEPENDENT STUDIES	
STAT 4430	LINEAR MODELS	
STAT 4440	TIME SERIES ANALYSIS	
Total Credits		**18**

Mathematics Education Concentration

This concentration is recommended for students interested in pursuing a career in Secondary Education. In some cases it is possible to simultaneously earn a B.S. or a B.A. in Math and a B.S. in Secondary Education.

Code	Title	Credits
The 18 credits of upper-level courses must include:		
MATH 3640	MODERN GEOMETRY	3
MATH 3850	HISTORY OF MATHEMATICS	3
MATH 4030	MODERN ALGEBRA	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I	3
Select two of the following elective courses:		6
MATH/CSCI 3100	APPLIED COMBINATORICS	
MATH 3200	MATHEMATICAL COMPUTING II	
MATH 4050	LINEAR ALGEBRA	
MATH 4560	NUMBER THEORY & CRYPTOGRAPHY	
MATH 4610	INTRODUCTION TO TOPOLOGY	
Total Credits		**18**

Additional Requirement

Students must include the following Educator Preparation Program Requirements:

Code	Title	Credits
TED 2100	EDUCATIONAL FOUNDATIONS	3
TED 2200	HUMAN RELATIONS FOR BIAS-FREE CLASSROOMS	3
TED 2380	DEVELOPMENT AND LEARNING IN ADOLESCENCE	3
TED 2400	PLANNING FOR EFFECTIVE TEACHING	6
TED 3550	SECONDARY CLASSROOM MANAGEMENT	3
TED 3690	LITERACY AND LEARNING	3
TED 4000	SPECIAL METHODS IN THE CONTENT AREA	3
SPED 3800	DIFFERENTIATION AND INCLUSIVE PRACTICES	3
Total Credits		**27**

Code	Title	Credits
For those who want a Nebraska Math 6-12 Teaching Certificate:		
TED 4600	CLINICAL PRACTICE AND SEMINAR: ELEMENTARY OR SECONDARY LEVEL [1]	12

[1] These requirements also fulfill the College of Arts & Sciences breadth requirement.

Pre-Actuarial Mathematics Concentration

This concentration is recommended for students interested in a career as an actuary and who plan on taking the actuarial exams.

An actuary evaluates the financial impact of risk by evaluating the likelihood of future events, designing creative ways to reduce the likelihood of undesirable events, and decreasing the impact of undesirable events that do occur.

Actuaries work for insurance companies, government, and consulting firms. In the actuarial profession, you can earn while you learn. Many students receive on-the-job training while enrolled in the examination process. Employers are generally supportive and may give students study time during working hours, pay exam fees, and award raises for each exam passed. However, most employers prefer to hire people who have started the series of examinations on their own and have already passed at least two or three.

Code	Title	Credits
The 18 credits of upper-level courses must include:		
MATH 3200	MATHEMATICAL COMPUTING II	3
MATH 3400	THEORY OF INTEREST	3
MATH/CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS	3
or STAT 4430	LINEAR MODELS	
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I	3
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II	3
STAT 4440	TIME SERIES ANALYSIS	3
Total Credits		**18**

Operations Research Concentration

This concentration is recommended for students interested in a career as an operations research analyst or in pursuing a graduate degree in operations research or a related field.

The broad real-world applicability of operations research makes it an attractive choice for math majors. In operations research courses students get a solid background in mathematical modeling of decision-making problems, algorithms for solving different types of these problems, as well as experience using appropriate software tools.

Operations research is the application of advanced analytical methods to enable better decision making. A plethora of problems may be solved using operations research; among these are (1) determining the route a delivery truck should take in order to make all deliveries while traveling the fewest number of miles; (2) determining the best location for a new facility such as a fire station; (3) scheduling airline flights and crew; and (4) determining the optimal distribution of bicycles in a bike sharing system. Operations research includes problem-solving methods such as deterministic and stochastic optimization, machine learning, and simulation.

Code	Title	Credits
The 18hours of upper-level courses must include:		
MATH 3200	MATHEMATICAL COMPUTING II	3
or CSCI 1620	INTRODUCTION TO COMPUTER SCIENCE II	
MATH/CSCI 4300	DETERMINISTIC OPERATIONS RESEARCH MODELS	3
MATH/CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS	3
MATH 4320	COMPUTATIONAL OPERATIONS RESEARCH	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I	3
or STAT 3800	APPLIED ENGINEERING PROBABILITY AND STATISTICS	
Select one of the following:		3
MATH/CSCI 4150	GRAPH THEORY & APPLICATIONS	
MATH/STAT 4450	INTRODUCTION TO MACHINE LEARNING AND DATA MINING	
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II	
MATH 4900	INDEPENDENT STUDIES	
STAT 4410	INTRODUCTION TO DATA SCIENCE	
STAT 4420	EXPLORATORY DATA VISUALIZATION AND QUANTIFICATION	
STAT 4430	LINEAR MODELS	
STAT 4440	TIME SERIES ANALYSIS	
Total Credits		**18**

Statistics Concentration

This concentration is recommended for students interested in the theoretical and practical aspects of statistics, particularly those students who are interested in pursuing graduate study in statistics or biostatistics.

Statistics, the study of data, is of growing importance. Students who have the skills to properly collect, analyze, interpret, and present data are in high demand around the country.

The objectives of this concentration are: (1) to gain an understanding of the mathematical underpinnings of statistics; (2) to use appropriate statistical modeling to solve practical problems; (3) to develop an understanding of how to use statistical software; (4) to communicate statistical results to non-statisticians.

Statistics is used in a many fields, including biology, sociology, psychology, medicine, economics, quality control, and sports. This diversity, along with the growing need for people with statistical knowledge makes it an attractive choice for mathematics students.

Code	Title	Credits
The 18 credits of upper-level courses must include:		
MATH 3200	MATHEMATICAL COMPUTING II	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I	3
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II	3
Select three of the following, with at least two from group A:		9
Group A:		
STAT 4420	EXPLORATORY DATA VISUALIZATION AND QUANTIFICATION	
STAT 4430	LINEAR MODELS	
STAT 4440	TIME SERIES ANALYSIS	
Group B:		
MATH/CSCI 3100	APPLIED COMBINATORICS	
MATH/CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS	
MATH/STAT 4450	INTRODUCTION TO MACHINE LEARNING AND DATA MINING	
MATH 4900	INDEPENDENT STUDIES	
STAT 4410	INTRODUCTION TO DATA SCIENCE	
Total Credits		**18**

Computational Mathematics Concentration

This concentration is recommended for students interested in computational science, particularly those students who are interested in pursuing graduate study in applied and computational mathematics at the graduate level.

A concentration in computational mathematics may be useful in a wide range of areas including science, engineering, government, health care, business, and information technology. The specialization in computational mathematics is designed for students with a strong interest in mathematics and in mathematical applications to areas of science and engineering. By choosing elective courses carefully, students completing this specialization will be prepared for a career in a variety of computing and/or engineering areas. Students will also be prepared to continue on to a graduate program in applied mathematics.

Computational mathematics involves the use of math and computers to solve problems and predict outcomes. The concentration in computational mathematics is intended for any student who is interested in applications to solving practical and physical problems in engineering, science, and business. This concentration is also recommended for students who wish to work in the research and development area of industry. The concentration is especially intended for students seeking a career as quantitative analysts, computational scientists, and applied mathematicians, and for those thinking of continuing the study of applied and computational mathematics at the graduate level.

The 18 credits of upper-level courses must include:

Code	Title	Credits
MATH/CSCI 4200	NUMERICAL METHODS	3
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS	3
MATH 4350	ORDINARY DIFFERENTIAL EQUATIONS	3
MATH 4400	THE FINITE ELEMENT METHOD	3
Select two of the following:		6
MATH 4050	LINEAR ALGEBRA	
MATH 4230	MATHEMATICAL ANALYSIS I	
MATH 4240	MATHEMATICAL ANALYSIS II	
MATH 4320	COMPUTATIONAL OPERATIONS RESEARCH	

MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I	
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II	
MATH 4900	INDEPENDENT STUDIES	
MATH 4970	SEMINAR IN APPLIED MATHEMATICS	
Total Credits		**18**

Pure Mathematics Concentration

What do UNO Alumni Chief Operating Officer Matt Culek of Citadel Securities, Senior Industrial Logician Andrew Gacek of Rockwell Collins, Microsoft Data Scientist Daniel Miller and McGill University Post-doc Melissa Emory have in common? They sought out the strongest foundation in mathematics available here at UNO, taking the courses required for the Pure Mathematics Concentration.

This concentration is strongly recommended for students interested in a pursuing a graduate degree in mathematics, but as indicated above, is highly recommended for any student interested in getting the most out of their mathematics major.

Students pursuing a graduate degree are expected to have a strong foundation based in analysis, topology, and abstract algebra. This is what this concentration provides.

Challenging yourself has other advantages. Matt Culek credits his ability to trouble-shoot proposals brought to him by quantitative analysts at Citadel Securities to the habits of thought developed in his undergraduate course in number theory here at UNO.

Code	Title	Credits
18 credits of upper-level courses in this concentration must include the following 3 courses:		**9**
MATH 4050	LINEAR ALGEBRA (3 credits)	
MATH 4110	ABSTRACT ALGEBRA I (3 credits)	
MATH 4230	MATHEMATICAL ANALYSIS I (3 credits)	
Choose 3 of the following courses:		**9**
NOTE: Students who plan to apply for a Ph.D. program in Mathematics should choose their elective courses from those with the numbered superscripts, with #1 signifying highest priority.		
MATH 3640	MODERN GEOMETRY	
MATH 4010	INTRODUCTION TO THE THEORY OF RECURSIVE FUNCTIONS	
MATH 4120	ABSTRACT ALGEBRA II (3 credits) [2]	
MATH 4150	GRAPH THEORY & APPLICATIONS	
MATH 4240	MATHEMATICAL ANALYSIS II (3 credits) [3]	
MATH 4270	COMPLEX ANALYSIS (3 credits) [4]	
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS [5]	
MATH 4350	ORDINARY DIFFERENTIAL EQUATIONS	
MATH/CSCI 4560	NUMBER THEORY & CRYPTOGRAPHY (3 credits)	
MATH 4610	INTRODUCTION TO TOPOLOGY (3 credits) [1]	
MATH 4900	INDEPENDENT STUDIES	
Total Credits		**18**

Applied Mathematics Concentration

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 the Workplace, 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
Applied Math Elective**		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		
MATH 4760	TOPICS IN APPLIED MATHEMATICS (*)	3
MATH 4970	SEMINAR IN APPLIED MATHEMATICS (**)	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 select 3000/4000 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

Data Science Concentration

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 the Workplace, ENGL 3980 Technical Writing Across the Discipline, or PHIL 3000 Philosophy Writing Seminar.		
	Credits	**15**
Junior		
Fall		
MATH 3230	INTRODUCTION TO ANALYSIS (*)	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I (**)	3
Coding Course 1***		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 4740: Requires MATH 1970 and MATH 2230		

***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 or Minor/2nd Major Course*		3
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II (**)	3
Cognate Course		3
MATH 3200 or CSCI 1620	MATHEMATICAL COMPUTING II (***) or INTRODUCTION TO COMPUTER SCIENCE II	3
Cognate Course		3
*A&S College Requirement Options		
**MATH 4750: Requires MATH 4740		
***MATH 3200: Requires MATH 2200. CSCI 1620: Requires CIST 1400.		
	Credits	**15**
Senior		
Fall		
HIST 1010 or Minor/2nd Major Course*		3
STAT 4410	INTRODUCTION TO DATA SCIENCE (**)	3
Data Science Elective/Elective***		3
Cognate Course		3
Cognate Course		3
*A&S College Requirement Options		
**STAT 4410: Requires MATH 4740		
***Students only need one Data Science Elective. Some are offered only in Fall, others only in Spring. Fall: MATH/CSCI 4300 Deterministic Operations Research Models (prereq: MATH 2050), or STAT 4430 Linear Models (prereq: MATH 4750)		
	Credits	**15**
Spring		
STAT 4420	EXPLORATORY DATA VISUALIZATION AND QUANTIFICATION (*)	3
Data Science Elective/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
*STAT 4420: Requires MATH 4750, and CSCI 1620 or MATH 3200		
**Students only need one Data Science Elective. Some are offered only in Fall, others only in Spring. Spring: MATH/CSCI 4310 Probabilistic Operations Research Models (prereq: MATH 2050 and MATH 4740), STAT 4440 Time Series Analysis (prereq: MATH 4750 and CSCI 1620 or MATH 3200), or MATH/STAT 4450 Intro to Machine Learning & Data Mining (prereq: MATH 4740)		
***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 to reach the 27 credit minimum.		
	Credits	**15**
	Total Credits	**120**

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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

Mathematics Education Concentration

Freshman

Fall		**Credits**
ENGL 1150	ENGLISH COMPOSITION I (*)	3
MATH 1950	CALCULUS I (**)	5
Natural/Physical Science Course, with lab		4
Humanities/Fine Arts Course, Global Diversity		3
*ENGL 1150: Requires placement via AP, ACT, or EPPE.		
**MATH 1950: Requires placement.		
	Credits	**15**
Spring		
CMST 1110 or CMST 2120	PUBLIC SPEAKING FUNDS or ARGUMENTATION AND DEBATE	3
ENGL 1160	ENGLISH COMPOSITION II	3
MATH 1960	CALCULUS II	4
MATH 2050	APPLIED LINEAR ALGEBRA (*)	3
Natural/Physical Science Course**		3
*MATH 2050: Requires MATH 1950		
**Natural/Physical Science Course must be in a 2nd discipline.		
Recommended: Begin studying for Praxis CORE Academic Skills.		
	Credits	**16**
Sophomore		
Fall		
MATH 1970	CALCULUS III	4
MATH 2230	INTRODUCTION TO ABSTRACT MATH (*)	3
TED 2100	EDUCATIONAL FOUNDATIONS (**)	3
TED 2200	HUMAN RELATIONS FOR BIAS-FREE CLASSROOMS (***)	3
Social Science		3
*MATH 2230: Requires MATH 1960		
**TED 2100: Requires 2.50 GPA. Fulfills Advanced Writing Requirement.		
***TED 2200: Requires 2.50 GPA.		
Required: Apply for Educator Preparation Program at this time.		
Recommended but not required: Pass the Praxis CORE Academic Skills.		
	Credits	**16**

Spring		
MATH 3230	INTRODUCTION TO ANALYSIS (*)	3
MATH 3850	HISTORY OF MATHEMATICS (**)	3
TED 2400	PLANNING FOR EFFECTIVE TEACHING (***)	6
TED 2380	DEVELOPMENT AND LEARNING IN ADOLESCENCE (***)	3
*MATH 3230: Requires MATH 2230		
**MATH 3850 Requires: MATH 1970 and MATH 2230.		
***TED 2400 and 2380 must be taken back-to-back, in either a Morning or Afternoon block.		
Required: Pass Praxis CORE Academic Skills by the end of this semester.		
Required: Acceptance into Educator Preparation Program. Must have 2.75 GPA.		
	Credits	**15**
Junior		
Fall		
MATH 2200	MATHEMATICAL COMPUTING I (*)	3
MATH 3640	MODERN GEOMETRY (**)	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I (***)	3
Social Science		3
Humanities/Fine Arts		3
Elective		1
*MATH 2200: Requires MATH 1950		
**MATH 3640: Requires MATH 2230		
**MATH 4740: Requires MATH 1970 and MATH 2230		
	Credits	**16**
Spring		
MATH/CSCI 3100 or MATH 4560 or MATH 4050	APPLIED COMBINATORICS (*,**) or NUMBER THEORY & CRYPTOGRAPHY or LINEAR ALGEBRA	3
MATH 3200	MATHEMATICAL COMPUTING II (***)	3
TED 3550	SECONDARY CLASSROOM MANAGEMENT (^)	3
TED 3690	LITERACY AND LEARNING (^)	3
Social Science#		3
*MATH 3100 or MATH 4560: Requires MATH 2230		
**MATH 4050: Requires MATH 2050 and MATH 2230.		
***MATH 3200: Requires MATH 1970		
^TED 3550 and TED 3690 must be taken back-to-back, in either a Morning or Afternoon block.		
#Social Sciences Course must be in a 2nd discipline		
	Credits	**15**
Senior		
Fall		
MATH 2350	DIFFERENTIAL EQUATIONS (*)	3
MATH 4030	MODERN ALGEBRA (**)	3
SPED 3800	DIFFERENTIATION AND INCLUSIVE PRACTICES (***)	3
TED 4000	SPECIAL METHODS IN THE CONTENT AREA	3
Humanities/Fine Arts^		3
*MATH 2350: Requires MATH 1960.		
**MATH 4030: Requires MATH 2230		
***SPED 3800: Must be taken concurrently with TED 4000 or TED 3550		
^Humanities/Fine Arts course must be in a 2nd discipline		
Recommended but not required: Pass Praxis II.		
	Credits	**15**
Spring		
TED 4600	CLINICAL PRACTICE AND SEMINAR: ELEMENTARY OR SECONDARY LEVEL	12
	Credits	**12**
	Total Credits	**120**

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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

GPA Requirements: TED 2100 and TED 2200 require a 2.50 GPA. TED 2380 and TED 2400 as well as Admission into the Teacher Prep Program require a 2.75 GPA.

Graduation Requirements: 2.75 GPA.

Pre-Actuarial Mathematics Concentration

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
Elective		1
*ENGL 1150: Requires placement.		
**MATH 1950: Requires placement.		
	Credits	**15**
Spring		
ENGL 1160	ENGLISH COMPOSITION II	3
MATH 1960	CALCULUS II	4
Humanities/Fine Arts Course		3
Natural & Physical Science with lab		4
	Credits	**14**
Sophomore		
Fall		
MATH 1970	CALCULUS III	4
MATH 2230	INTRODUCTION TO ABSTRACT MATH	3
Humanities & Fine Arts/U.S. Diversity Course*		3
Natural & Physical Science**		3
Cognate Course		3

*Must be in a 2nd discipline.

**N&PS course should be in a 2nd discipline.

		Credits 16
Spring		
HIST 1000 or Minor/2nd Major Course*		3
MATH 2050	APPLIED LINEAR ALGEBRA	3
MATH 3230	INTRODUCTION TO ANALYSIS (**)	3
Social Science		3
Social Science		3

*A&S College Requirement Options

**MATH 2230 feeds right into MATH 3230, do your best to keep them in back-to-back semesters.

Student should consider taking the Exam FM through the Society of Actuaries the summer following this semester.

		Credits 15
Junior		
Fall		
MATH 2200	MATHEMATICAL COMPUTING I	3
MATH 2350	DIFFERENTIAL EQUATIONS	3
MATH 3400	THEORY OF INTEREST (*)	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I (**)	3
Social Science***		3

*MATH 3400: Requires MATH 1970

**MATH 4740: Requires MATH 2230

***Social Science Course must be in a 2nd discipline.

		Credits 15
Spring		
MATH 3200	MATHEMATICAL COMPUTING II	3
MATH 4310 or CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS (*) or PROBABILISTIC OPERATIONS RESEARCH MODELS	3
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II (**)	3
Cognate Course		3
Additional Social Science Course for A&S or Minor/2nd Major Course^		3

*MATH 4310: Requires MATH 4740 and MATH 2050. IMPORTANT: Student only needs to take MATH/CSCI 4310 OR STAT 4430, not both.

**MATH 4750: Requires MATH 4740

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

Student should consider taking Exam P through the Society of Actuaries the summer following this semester.

		Credits 15
Senior		
Fall		
STAT 4430	LINEAR MODELS (*)	3
Advanced Writing Requirement**		3
Additional Humanities and Fine Arts Course for A&S or Minor/2nd Major Course***		3
Cognate Course		3
Cognate Course		3

*STAT 4430: Requires MATH 4750. IMPORTANT: Student only needs to take MATH/CSCI 4310 OR STAT 4430, not both.

**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.

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

		Credits 15
Spring		
HIST 1010 or Minor/2nd Major Course*		3
STAT 4440	TIME SERIES ANALYSIS (**)	3
Cognate Course***		3
Cognate Course***		3
Elective at 3000-4000L***		3

*A&S College Requirement Options

**STAT 4440: Requires MATH 4750

***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

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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

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Operations Research Concentration

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 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
HIST 1000 or Minor/2nd Major Course**		3
Social Science		3
Social Science with U.S. Diversity		3
	Credits	**16**

*MATH 2050: Requires MATH 1960

**A&S College Requirement Options.

Spring

MATH 2230	INTRODUCTION TO ABSTRACT MATH (*)	3
MATH 2350	DIFFERENTIAL EQUATIONS (**)	3
Advanced Writing Requirement***		3
Social Science^		3
Humanities/Fine Arts Course#		3
	Credits	**15**

*MATH 2230: Requires MATH 1960

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

***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.

^Social Science must be in 2nd discipline.

#HFA Must be in 2nd discipline

Junior

Fall

MATH 3230	INTRODUCTION TO ANALYSIS (*)	3
MATH 4300 or CSCI 4300	DETERMINISTIC OPERATIONS RESEARCH MODELS (**) or DETERMINISTIC OPERATIONS RESEARCH MODELS	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I (***)	3
Coding Course 1^		3
Additional Social Science for A&S or Minor/2nd Major Course#		3
	Credits	**15**

*MATH 3230: Requires MATH 2230

**MATH/CSCI 4300: Requires MATH 2050

***MATH 4740: Requires MATH 2230

^See Academic Catalog for list of Coding Course Options.

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

Spring

MATH 3200	MATHEMATICAL COMPUTING II (*)	3
MATH 4310 or CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS (**) or PROBABILISTIC OPERATIONS RESEARCH MODELS	3
Natural/Physical Science***		3
Cognate		3
Additional Humanities/Fine Arts Course for A&S or Minor/2nd Major Course^		3
	Credits	**15**

*MATH 3200: Requires MATH 2200. CSCI 1620: Requires CIST 1400.

**MATH/CSCI 4310: Requires MATH 2050 and MATH 4740

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

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

Senior

Fall

HIST 1010 or Minor/2nd Major Course*		3
Operations Research Elective or Cognate**		3
Cognate		3
Cognate		3
Elective***		3
	Credits	**15**

*A&S College Requirement Options

**Must take one Operations Research Elective. Fall options: MATH 4750 Probability & Statistics II, MATH 4900 Independent Studies, STAT 4410 Intro to Data Science, STAT 4430 Linear Models

***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.

Spring

MATH 4320	COMPUTATIONAL OPERATIONS RESEARCH (*)	3
Operations Research Elective or Cognate**		3
Cognate		3
Elective at 3000-4000 Level/Minor/2nd Major Course***		3
Elective at 3000-4000 Level/Minor/2nd Major Course***		3
	Credits	**15**
	Total Credits	**120**

*MATH 4320: Requires MATH 3200 (or instructor permission) and MATH 4300.

**Must take one Operations Research Elective. Fall options: MATH 4750 Probability & Statistics II, MATH 4900 Independent Studies, STAT 4420 Data Visualization, STAT 4440 Time Series Analysis, STAT 4450 Machine Learning & Data Mining.

***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.

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Placement Exams: For Math, English, Foreign Language, a placement exam may be required. More information on these exams can be found

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Statistics Concentration

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
Social Science		3
Social Science		3
Humanities/Fine Arts & US Diversity Course**		3
*MATH 2050: Requires MATH 1960		
**HFA Must be in a 2nd discipline		
	Credits	**16**

Spring		
MATH 2230	INTRODUCTION TO ABSTRACT MATH (*)	3
MATH 2350	DIFFERENTIAL EQUATIONS (**)	3
Social Science***		3
Additional Humanities/Fine Arts Course for A&S or Minor/2nd Major Course^		3
Advanced Writing Requirement#		3
*MATH 2230: Requires MATH 1960		
**MATH 2350: Requires MATH 1960. MATH 2050 Recommended but not required.		
***SS must be in a 2nd discipline		
^A&S College Requirement Options. Additional HFA must be in a 3rd discipline.		
#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 2200	MATHEMATICAL COMPUTING I	3
MATH 3230	INTRODUCTION TO ANALYSIS (*)	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I (**)	3
Natural/Physical Science***		3
Additional Social Science for A&S or Minor/2nd Major Course#		3
*MATH 3230: Requires MATH 2230		
**MATH 4740: Requires MATH 2230		
^N&PS Course must be in a 2nd discipline		
#A&S College Requirement Options. Additional SS must be in a 3nd discipline		
	Credits	**15**

Spring		
HIST 1000 or Minor/2nd Major Course*		3
MATH 3200	MATHEMATICAL COMPUTING II	3
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II (**)	3
Cognate		3
Cognate		3
*A&S College Requirement Options		
**MATH 4750: Requires MATH 4740		
	Credits	**15**

Senior

Fall		
HIST 1010 or Minor/2nd Major Course*		3
Group A Elective or Cognate**		3
Group B Elective or Cognate***		3
Cognate		3
Elective or Minor/Double Major Course^		3
*A&S College Requirement Options		
**Must take 3 Stat Electives with at least 2 from Group A. This semester Group A options: STAT 4430 (F) requires MATH 4750.		
***Must take 3 Stat Electives with at least 2 from Group A. This semester Group B options: STAT 4410 (F) requires MATH 4740; MATH/CSCI 3100 (F, S) requires MATH 2230; MATH 4900 Independent Study.		
^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		
Group A Elective or Cognate*		3
Group B Elective or Cognate**		3
Cognate		3
Elective at 3000-4000 Level/Minor/Double Major Course***		3
Elective at 3000-4000 Level/Minor/Double Major Course***		3
*Must take 3 Stat Electives with at least 2 from Group A. This semester Group A options: STAT 4420 (S) requires MATH 4750 & CSCI 1620 or MATH 3200; STAT 4440 (S) requires MATH 4750 & CSCI 1620 or MATH 3200.		
**Must take 3 Stat Electives with at least 2 from Group A. This semester Group B options: MATH/CSCI 3100 (F, S) requires MATH 2230; MATH/CSCI 4310 (S) requires MATH 3050 and 4750; MATH/STAT 4450 (S) requires MATH 4740; MATH 4900 Independent Study.		

***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**

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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

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Computational Mathematics Concentration

Freshman

Fall		**Credits**
CMST 1110 or CMST 2120	PUBLIC SPEAKING FUNDS or ARGUMENTATION AND DEBATE	3
ENGL 1150	ENGLISH COMPOSITION I (*)	3
HIST 1000	WORLD HISTORY TO 1500	3
MATH 1950	CALCULUS I (**)	5
*ENGL 1150 - Requires appropriate placement		
**MATH 1950 - Requires appropriate placement		
	Credits	**14**
Spring		
ENGL 1160	ENGLISH COMPOSITION II	3
HIST 1010	WORLD HISTORY SINCE 1500	3
MATH 1960	CALCULUS II	4
Natural/Physical Science with Lab		4
Elective		1
	Credits	**15**

Sophomore

Fall		
MATH 1970	CALCULUS III	4
MATH 2050	APPLIED LINEAR ALGEBRA	3
MATH 3250	INTRODUCTION TO NUMERICAL METHODS (*)	3
Humanities and Fine Arts with US Diversity**		3
Social Science		3
*MATH 3250: Requires MATH 1960		
**HFA must be in something other than History		
	Credits	**16**
Spring		
MATH 2230	INTRODUCTION TO ABSTRACT MATH (*)	3
MATH 2350	DIFFERENTIAL EQUATIONS (**)	3
Natural/Physical Science***		3
Social Science		3
Advanced Writing Requirement^		3
*MATH 2230 Requires: MATH 1960.		
**MATH 2350: Requires MATH 1960. Recommended but not required: MATH 2050		
***N&PS Course must be in a 2nd discipline		
^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 3230	INTRODUCTION TO ANALYSIS (*)	3
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS (or Elective**)	3
MATH 4400	THE FINITE ELEMENT METHOD (***)	3
Humanities and Fine Arts or Course towards Minor/2nd Major#		3
Social Science		3
*MATH 3230 Requires: MATH 2230.		
**MATH 4330 Requires: MATH 1970 and 2350. + Offered only in Fall of odd-numbered years.		
***MATH 4400: Requires MATH 1970, MATH 2050, and MATH 2350, and one of MATH 3250 or MATH 4200.		
#HFA must be in a 3rd discipline		
	Credits	**15**
Spring		
MATH/CSCI 4200	NUMERICAL METHODS (*)	3
Computational Mathematics Elective**		3
Cognate Course		3
Social Science***		3
Humanities & Fine Arts or Course towards Minor/2nd Major		3
*MATH/CSCI 4200: MATH 1970, MATH 2050, and MATH 2350.		
**See Academic Catalog for list of Computational Mathematics Electives.		
***SS Must be in a 3rd discipline		
	Credits	**15**

Senior

Fall		
MATH 4330	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS (or Elective*)	3
Computational Mathematics Elective**		3
MATH 4350	ORDINARY DIFFERENTIAL EQUATIONS (***)	3
Humanities & Fine Arts or Course towards Minor/2nd Major		3
Cognate Course		3
*MATH 4330: Requires MATH 1970 and 2350. + Offered only in Fall of odd-numbered years.		
**See Academic Catalog for list of Computational Mathematics Electives.		
***MATH 4350: Requires MATH 1970, 2050, and 2350.		
	Credits	**15**
Spring		
Cognate Course		3

Cognate Course		3
Cognate Course		3
Elective at 3000-4000 Level		3
Elective at 3000-4000 Level		3
Credits		**15**
Total Credits		**120**

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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

Pure Mathematics Concentration

Pure Mathematics Concentration, Even Year Admit

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**

Pure Mathematics Concentration, Odd Year Admit

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