OPERATIONS RESEARCH CONCENTRATION

Mathematics, Bachelor of Science with a Concentration in Operations Research Requirements

Code	Title	Credits
GENERAL EDUCATION REQUIREMENTS - 34 Hours Required		
Minimum of "C-"required		
Fundamental Skills		**15**
Writing – 6 hrs.		
ENGL 1150	ENGLISH COMPOSITION I	
ENGL 1160	COLLEGE RESEARCH AND INFORMATION LITERACY	
Oral Communication – 3 hrs.		
CMST 1110	PUBLIC SPEAKING FUNDS	
or CMST 2120	ARGUMENTATION AND DEBATE	
Quantitative Literacy – 3 hrs.		
MATH 1120	INTRODUCTION TO MATHEMATICAL AND COMPUTATIONAL THINKING	
or MATH 1130	QUANTITATIVE LITERACY	
or MATH 1140	QUANTITATIVE REASONING FOR HEALTHCARE PROFESSIONALS	
or MATH 1300	COLLEGE ALGEBRA WITH SUPPORT	
Data Literacy – 3 hrs.		
Select one from the following:		
STAT 1100	DATA LITERACY AND VISUALIZATION	
STAT 1530	ELEMENTARY STATISTICS	
Until Fall 2028, students can satisfy this requirement with an approved data literacy course, or any approved natural or social science general education course.		
Breadth of Knowledge		**13**
Social Science – 3 hrs.		
Humanities – 3 hrs.		
Natural & Physical Science (must complete a lab) – 4 hrs.		
Arts – 3 hrs.		
Individual and Social Responsibility		**6**
Cultural Knowledge – 3 hrs.		
Civic Knowledge and Engagement – 3 hrs.		
MAJOR REQUIREMENTS		
**Course will satisfy UNO's General Education requirement		
^Course requires pre-requisite(s)		
Mathematics Major with a Concentration in Operations Research - 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 Operations Research Concentration courses		**15**
MATH 3200	MATHEMATICAL COMPUTING II (Requires MATH 2200 or CIST 1400)	
or CSCI 1620	INTRODUCTION TO COMPUTER SCIENCE II	
MATH/CSCI 4300	DETERMINISTIC OPERATIONS RESEARCH MODELS	
MATH/CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS	
MATH/CSCI 4320	COMPUTATIONAL OPERATIONS RESEARCH	
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I	
or STAT 3800	APPLIED ENGINEERING PROBABILITY AND STATISTICS	
Select one the following Operations Research Concentration courses		**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	
College Breadth (choose one option)		**15-30+**
Option 1: Complete any UNO minor or undergraduate certificate - 15+ hours		
Option 2: Additional General Education Requirements - 18+ hours		
Additional quantitative literacy - 3 hours		
Additional Social Science Gen. Ed. from another Discipline - 3 hours		
Additional Humanities Gen. Ed. from another Discipline - 3 hours		
HIST 1000 and HIST 1010 - 6 hours		
Additional Nat. and Physical Science w/ or without Lab - 3-5 hours		
Option 3: CAS comprehensive major (50+ hours) OR any second UNO major (30+ hours)		
Bachelor Science Cognate Requirement		**15**
The Bachelor of Science Degree requires at least 15 hours of advisor-approved, complementary Cognate coursework.		
ELECTIVES		
Elective hours as required to reach a total of 120 hours		

Mathematics, Bachelor of Science with a Concentration in Operations Research 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
General Education Course or Elective		3
Attend Durango Days; other campus events. Set up a Handshake account and take the Pathway U career assessment. Attend the Student Involvement & Volunteer Fair to explore student organizations. Make advising appointment for spring: Sept-Oct. Work with your advisor to develop your Pathway in Stellic.		
	Credits	**14**

Spring		
ENGL 1160	COLLEGE RESEARCH AND INFORMATION LITERACY	3
MATH 1960	CALCULUS II	4
General Education Course or Elective		3
General Education Course or Elective		4
Attend campus events such as major exploration week to get an idea of interests and career paths. Schedule a resume review with UNO Career Services. Visit faculty office hours and ask about undergraduate research opportunities. Make advising appointment for summer and fall: February – March.		
Elective		1
	Credits	**15**

Sophomore

Fall		
MATH 1970	CALCULUS III	4
MATH 2050	APPLIED LINEAR ALGEBRA	3
Elective		3
General Education Course or Elective		3
General Education Course or Elective		3
Attend the Career & Internship Fair to start networking with employers. Look for volunteer, research, or part-time work to gain experience. Join a student organization or club related to your field or interests. Make advising appointment for spring: Sept. - Oct.		
	Credits	**16**

Spring		
MATH 2230	INTRODUCTION TO ABSTRACT MATH	3
MATH 2350	DIFFERENTIAL EQUATIONS	3
Elective		3
General Education Course or Elective		3
General Education Course or Elective		3
Attend a career fair for informational and networking purposes. Update your resume and LinkedIn profile with new experiences. Investigate and apply for summer internships, research, or study abroad programs. Make advising appointment for summer and fall: February – March.		
	Credits	**15**

Junior

Fall		
MATH 3230	INTRODUCTION TO ANALYSIS	3
MATH/CSCI 4300	DETERMINISTIC OPERATIONS RESEARCH MODELS	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I	3
Coding Course 1		3
Elective		3
Apply for a paid internship or research assistantship. Attend a mock interview workshop or use online interview tools with Career Services. Start researching and visiting graduate programs or professional schools. Visit Career Center, continue updating resume. Make advising appointment for spring: Sept-Oct.		
	Credits	**15**

Spring		
MATH 3200	MATHEMATICAL COMPUTING II	3
MATH/CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS	3
General Education Course or Elective		3
Cognate		3
Elective		3
Request letters of recommendation from faculty for jobs or grad school. Attend the All-Majors Career Fair with a plan to network. Meet with your advisor or submit for a graduation check-in to review remaining degree requirements. Make advising appointment for summer and fall: February – March.		
	Credits	**15**

Senior

Fall		
Elective		3
Operations Research or Cognate Course		3
Cognate		3
Cognate		3
Elective		3
Check in with Career Center for networking tips. Finalize graduate school applications or job search strategy. Attend a career fair and start applying for full-time jobs. Prepare for interviews and salary negotiations with Career Services. Make advising appointment for spring: Sept. - Oct.		
	Credits	**15**

Spring		
MATH/CSCI 4320	COMPUTATIONAL OPERATIONS RESEARCH	3
Operations Research or Cognate Course		3
Cognate		3
Elective		3
Elective		3
Complete your final advising check before graduation. Polish your resume, cover letters, and LinkedIn profile. Stay connected by joining alumni networks and professional organizations. Apply for graduation via MavLink.		
	Credits	**15**
	Total Credits	**120**

College Breadth: Students should plan on using at least 15 hours of "Electives" to fulfill Option 1, 2, or 3, of the College of Arts and Sciences' breadth requirement.

Upper Level Credits: Students need 27 upper level credits throughout the degree with at least 18 upper level credits within the major. Electives may need to be selected at the 3000-4000 level to reach these minimums.

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, World 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: 2.0

Note: This plan provides a general guide, but your specific courses, experiences, and career goals may differ. Work with your academic advisor to ensure you're meeting degree requirements and consult with career advisors to explore internships, research opportunities, and post-graduation plans. Regular check-ins will help you stay on track and make the most of your time at UNO!