

M.S., CIVIL ENGINEERING

Admission Requirements

Complete the following admission requirements:

- Complete a bachelor's degree in engineering or natural sciences.¹
- Submit GRE scores.
- International students must complete the TOEFL with a score of 575 or better.

¹ If applying with a non-engineering degree, submit a graduate study plan, including required deficiency courses, to be approved by a committee.

DEFICIENCY REQUIREMENTS²

Code	Title	Credits
Fundamentals of Engineering Exam		
MATH F251X	Calculus I	4
MATH F252X	Calculus II	4
MATH F253X	Calculus III	4
MATH F302	Differential Equations	3
Two approved science courses		8
Three F200-level or above engineering courses		
Four F400-level CE courses ³		

² If taken before, these courses can be credited as deficiency courses as approved by the CEE department chair.

³ Two must be design classes in different fields of civil engineering.

Program Requirements

Minimum Requirements for Civil Engineering Masters Degree: 30 credits

CONCENTRATIONS: ARCTIC ENGINEERING (P. 1), ENVIRONMENTAL ENGINEERING (P. 1), DESIGN AND CONSTRUCTION MANAGEMENT, (P. 1) GEOTECHNICAL ENGINEERING (P. 2), STRUCTURAL ENGINEERING (P. 2), TRANSPORTATION ENGINEERING (P. 2), WATER RESOURCES ENGINEERING (P. 2)

Code	Title	Credits
General University Requirements		
Complete the general university requirements. (http://catalog.uaf.edu/graduate/mastersdegrees/#generaluniversityrequirementstext)		
Master's Degree Requirements		
Complete the master's degree requirements. (http://catalog.uaf.edu/graduate/mastersdegrees/#masterofsciencewithprojecttext)		
Civil Engineering Program Requirements		
Complete a thesis or project		3-9
Complete comprehensive exam		
Complete one from the following concentrations		21-27
Arctic Engineering		

Environmental Engineering
Engineering Design and Construction
Geotechnical Engineering
Structural Engineering
Transportation Engineering
Water Resources Engineering

ARCTIC ENGINEERING

Code	Title	Credits
Complete the following:		
CE F401	Arctic Engineering	3
CE F624	Permafrost Engineering	3
CE F682	Ice Engineering	3
or GEOS F615	Sea Ice	
CE F683	Arctic Hydrology and Hydraulic Engineering	3
ME F685	Arctic Heat and Mass Transfer	3
or ME F642	Advanced Heat Transfer	
Approved electives (6 credits for thesis; 12 credits for project) ¹		6-12

¹ Recommended electives include: CE F422, CE F601, CE F625, CE F628, CE F635, CE F684, CE F685, MATH F460 and MATH F615.

ENVIRONMENTAL ENGINEERING

Code	Title	Credits
Complete the following:		
CE F601	Engineering Research Communication	3
ENVE F641	Aquatic Chemistry	3
or CHEM F605	Aquatic Chemistry	
ENVE F645	Unit Processes: Chemical and Physical	3
ENVE F647	Biotechnology	3
Approved electives (9 credits for thesis; 15 credits for project) ¹		9-15

¹ Recommended electives include: BIOL F657, CE F401, CE F663, CE F684, CHEM F609, CHEM F631, CHEM F655, ENVE F642, ENVE F643, ENVE F644, ENVE F646, ENVE F649, ENVE F652 and ME F658.

DESIGN AND CONSTRUCTION MANAGEMENT

Code	Title	Credits
Complete the following:		
Personnel, leadership, business communications, marketing electives ¹		6
Design and construction management electives ²		6
Accounting, finance, economics electives ³		3
Design and construction technical electives ⁴		9
Project only:		3
Complete additional approved elective ⁵		

¹ Recommended electives include: CE F601, ESM F601, MBA F607 and MBA F617.

² Recommended electives include: CE F620, ESM F608, ESM F609 and MBA F627.

³ Recommended electives include: ESM F605.

⁴ Recommended electives include: CE F451.

⁵ Recommended electives include: CE F401 and ENVE F644.

GEOTECHNICAL ENGINEERING

Code	Title	Credits
Complete 15 credits from the following:		15
CE F605	Pavement Design	
CE F622	Foundations and Retaining Structures	
CE F624	Permafrost Engineering	
CE F625	Soil Stabilization and Embankment Design	
CE F627	Geotechnical Earthquake Engineering	
CE F628	Unsaturated Soils Mechanics	
CE F633	Theory of Elastic Stability	
CE F635	Numerical Methods for Geomechanics and Soil-Structure Interaction	
Additional approved electives (6 credits for thesis; 12 credits for project) ¹		6-12

¹ Recommended electives include: CE F401, CE F422, CE F601, CE F637, GE F440 and ME F601.

STRUCTURAL ENGINEERING

Code	Title	Credits
Complete 15 credits from the following:		15
CE F601	Engineering Research Communication	
CE F622	Foundations and Retaining Structures	
CE F630	Advanced Structural Mechanics	
CE F633	Theory of Elastic Stability	
CE F634	Structural Dynamics	
CE F635	Numerical Methods for Geomechanics and Soil-Structure Interaction	
Additional approved electives (6 credits for thesis; 12 credits for project) ¹		6-12

¹ Recommended electives include: CE F631, CE F637, CE F640, CE F646 and CE F650.

TRANSPORTATION ENGINEERING

Code	Title	Credits
Complete the following:		
Approved engineering electives (9 credits for thesis; 15 credits for project) ¹		9-15
Additional approved electives ²		12

¹ Recommended engineering electives include: CE F401, CE F601, CE F605, CE F624, CE F682, ESM F621, ESM F622 and ME F631.

² At least 3 credits must be in advanced mathematics or statistical methods. Recommended electives include: MATH F408, MATH F661, STAT F402, STAT F461, STAT F602, STAT F605 and STAT F611.

WATER RESOURCES ENGINEERING

Code	Title	Credits
Complete 12 credits from the following:		12
CE F661	Advanced Water Resources Engineering	
CE F662	Open Channel and River Engineering	

CE F663	Groundwater Hydrology
CE F664	Sediment Transport
CE F683	Arctic Hydrology and Hydraulic Engineering

Additional approved electives (9 credits for thesis; 15 credits for project) ¹ 9-15

¹ Recommended electives include: CE F401, CE F445, CE F601, CE F665, GEOS F616, GEOS F617, GEOS F694, NRM F435 and NRM F670.

See Engineering (<http://catalog.uaf.edu/graduate/graduate-degree-programs/engineering/>) for Ph.D. program.