

Arctic Engineering

College of Engineering and Mines
Department of Civil and Environmental Engineering
(907) 474-7241
www.uaf.edu/engineer/cee.htm

M.S. Degree

Minimum Requirements for Degree: 30 credits

The arctic engineering program trains graduate engineers to deal with the challenges of design, construction and operations in cold regions of the world. Climatic, geological and logistical conditions of the Arctic and subarctic create special problems and require knowledge and techniques not usually covered in engineering courses.

A thorough understanding of heat transfer processes is of primary importance, and the properties of frozen ground and water are basic to most engineering in the Arctic. Arctic conditions also uniquely affect hydraulics, hydrology and utility operations.

Core required courses in the arctic engineering program teach engineers to understand and adapt to cold region problems. Students round out the program with advanced elective courses in a particular field of interest. Arctic engineering research carried out by faculty can provide students with opportunities for theses or project papers dealing with the most current arctic knowledge.

Development of petroleum and other natural resources has accentuated the demand for engineers who understand northern operations. Skilled engineers are needed both in the private industries that are involved in development and within the government agencies that plan and regulate development activity.

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 168).
2. Complete the master's degree requirements (page 172).
3. Complete at least 5 of the following core courses:

CE 681—Frozen Ground Engineering	3
CE 682—Ice Engineering (3)	
or GEOS 615—Sea Ice (3)	3
CE 683—Arctic Hydrology and Hydraulic Engineering	3
CE 684—Arctic Utility Distribution	3
ME 685—Arctic Heat and Mass Transfer	3
ME 687—Arctic Materials Engineering	3
4. CE 698 or 699—Thesis or Project3
5. Electives * 12-15
6. Minimum credits required30

** All electives must be in areas related to or supportive of the student's degree program and approved by the student's graduate advisory committee.*

Note: CE 603—Arctic engineering is not an approved elective for the M.S. in arctic engineering.

See Civil Engineering.

See Engineering for Ph.D. program.

See Engineering Management.

See Science Management.

See Environmental Engineering and Environmental Quality Science.

Note: Page numbers refer to the UAF 2005-2006 academic catalog, which can be viewed online at www.uaf.edu/catalog/.