ARCTIC ENGINEERING
College of Engineering and Mines
Department of Civil and Environmental Engineering
907-474-7241
http://cem.uaf.edu/cee/

M.S. Degree

This program is presently suspended.
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 sub-Arctic create special problems and require knowledge and tech-
niques 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 engi-
neers 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 accen-
tuated the demand for engineers who understand northern operations.
Skilled engineers are needed both in private industries involved in de-
velopment and within government agencies that plan and regulate de-
velopment activity.

M.S. Degree

1. Complete the general university requirements (page 209).

2. Complete the master's degree requirements (page 209).

3. Complete at least five of the following core courses:
   - CE F681—Frozen Ground Engineering ........................................ 3
   - CE F682—Ice Engineering (3)
     or GEOS F615—Sea Ice (3) ................................................................. 3
   - CE F683—Arctic Hydrology and Hydraulic Engineering ................. 3
   - CE F684—Arctic Utility Distribution .............................................. 3
   - ME F685—Arctic Heat and Mass Transfer ..................................... 3
   - ME F687—Arctic Materials Engineering ....................................... 3

4. CE F698 or F699— Non-thesis Research/Project or Thesis ............. 3

5. Electives * .................................................................................. 12-15

6. Minimum credits required ............................................................. 30
   * 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 F603—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 Environmental Engineering and Environmental Quality Science.
See Science Management.