

# Software Engineering

College of Natural Science and Mathematics  
Department of Computer Science  
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## M.S.E. Degree

Minimum Requirements for Degree: 30 credits

Software engineering is defined as “the application of a systematic, disciplined, quantifiable approach to the development, operation and maintenance of software” (IEEE Standard Glossary of Software Engineering Terminology).

Graduates of the UAF M.S.E. program will be prepared to develop high-quality software products which meet required deadlines within budget constraints, understand complex software-intensive systems and to participate in their development and application while adopting different process roles. Those roles include software architecture, design, construction, test and project management.

The UAF software engineering program is based on recommendations from Carnegie Mellon University's Software Engineering Institute and standardization efforts such as the international SWEBOK (Software Engineering Body of Knowledge). Local, national and international employment opportunities for software engineers continue to be numerous.

## Graduate Program — M.S.E. Degree

1. Complete the UAF admission process including the following:
  - a. Submit GRE general scores.
  - b. Complete at least a bachelor's degree at an accredited institution with a GPA of at least 3.0. Complete course work or possess practical knowledge at the advanced undergraduate level in each of the following areas: computer organization, discrete mathematics, algorithms and data structures, object-oriented programming (e.g., C++, FORTRAN95, or Java), and an in-depth knowledge of at least two of the following topics: compiler techniques, comparative programming languages, operating systems or database systems.
  - c. Have at least two years of relevant software development experience or equivalent.
2. Complete the general university requirements (page 201).
3. Complete the master's degree requirements (page 205).
4. Complete the following:

CS F602—Software Project Management .....	3
SWE F671—Advanced Software Engineering .....	3
SWE F673—Software Requirements Engineering .....	3
SWE F674—Software Architecture .....	3
SWE F690—Graduate Seminar and Project .....	3
SWE F691—Graduate Seminar and Project .....	3
Approved electives .....	12
5. Minimum credits required .....

30

*Note: Each student must take and pass a comprehensive examination covering material from all of the required courses listed in item four above. CS F670/SWE F670—Computer Science for Software Engineers is required as a deficiency course for students without B.S. in computer science.*

See Computer Science.