

# Software Engineering

College of Science, Engineering and Mathematics  
Department of Mathematical Sciences  
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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, software design, software construction, software test and software 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 166).
3. Complete the master’s degree requirements (page 170).

4. Complete the following:

CS 602—Software Project Management.....	3
SWE 671—Advanced Software Engineering .....	3
SWE 673—Software Requirements Engineering.....	3
SWE 674—Software Architecture .....	3
SWE 690—Graduate Seminar and Project.....	3
SWE 691—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 4 above. CS 670/ SWE 670—Computer Science for Software Engineers is required as a deficiency course for students without B.S. in computer science. See Computer Science.*

**Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at [www.uaf.edu/catalog/](http://www.uaf.edu/catalog/).**

