



Computational Science and Engineering Certification for Aerospace Engineering Undergraduate Students

The Computational Science and Engineering certificate program is designed to provide AE undergraduate students an opportunity to develop a solid base in problem solving using computation as a major tool for modeling challenging problems in science and engineering.

This option is only available to students currently enrolled in the AE undergraduate degree program at the University of Illinois Urbana-Champaign. The program is designed so that students can fit it within the required courses in the student's home department, without the need of taking any additional hours that are distinct from already-required coursework. To receive a certificate in "**Computational Science and Engineering**," students must complete the **required** courses listed below. The Application courses are strongly recommended to be in the student's primary field of study. The minimum coursework required is 12 hours and this fulfills the prerequisite for a CSE certification.

REQUIRED COURSEWORK:

Topic	Course Number	Hours
Programming	AE 199IAC, CS 101, or CS 125	3
Numerical Analysis	AE 370	3
Computational Mechanics	AE 410 or AE 420	3
Application Coursework	AE 397/497*, or any 400-level CSE course** listed in http://cse.illinois.edu/courses	3 (minimum)

* AE 397/497 (Independent Study) may be used to fulfill the required application course. Engaging in undergraduate research helps hone both personal and professional growth and advancement by developing research skills and experiences that are in demand by both graduate schools and employers. The main requirement is that the course applies the computational skills gained to solve real problems. Experimental research is also encouraged but the research must comprise sufficient computational work. In order for AE 397 or AE 497 to fulfill the certification requirement, the **proposed research must be approved by the CSE steering committee representative of the AE department***** or by one of the CSE affiliated Aerospace faculty listed on the Computational Science and Engineering website: <http://cse.illinois.edu/directory/faculty-affiliates>.

** Credit may not be received for both AE410 and CSE461, or AE420 and CSE 451.

*** List of Steering Committee Representatives: <http://cse.illinois.edu/directory/administration>