Computational Science and Engineering Certification for Material Science and Engineering

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

This CSE Certificate option is not an academic major or minor, but an additional credential only available to students currently enrolled in the MSE 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	CS 101, CS 125, or equivalent	3
Numerical Methods	CS 357 or TAM 470	3
Core /Application Coursework (minimum of <u>two</u>)	MSE498AF, PHYS 466, AE 420, MSE 397/497*, or any 400-level CSE course listed in: http://cse.illinois.edu/courses	6 (minimum)

* MSE 397/497 (Undergraduate Research) 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 MSE 397 or MSE 497 to fulfill the certification requirement, the **proposed research must be approved by the CSE steering committee representative of the MSE department***** or by one of the CSE affiliated Material Science and Engineering faculty listed on the Computational Science and Engineering website: http://cse.illinois.edu/directory/faculty-affiliates.

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