COMPUTATIONAL SCIENCES - CERTIFICATE

The Institute for Scientific Computation developed the Computational Sciences Certificate Program to meet the increased need for computational techniques that help solve complex science and engineering problems. This program targets science and engineering students enrolled in graduate studies, providing them with a broad-based multidisciplinary enhancement to their degree program and preparing them with the intellectual infrastructure necessary as a leader in computational science, engineering, and technology. By completing this certification program, a graduate will receive an official certified transcript that will add value and marketability to their advanced degree. The Computational Sciences Certificate Program provides formal documentation on a student's transcript that they successfully completed courses focused on computational aspects that supplement their degree in science or engineering. To fulfill the certification requirements, a student must complete four total courses (one core and three electives), as described by the program curriculum, and a capstone project within their home department. For more information, visit http://isc.tamu.edu/.

Program Requirements

Code	Title	Semester Credit Hours
Core Courses		**3**
Select one of the following		
CSCE 659	Parallel/Distributed Numerical Algorithms and Applications [1]	
MATH 609	Numerical Analysis	
STAT 604	Topics in Statistical Computations	
Elective Courses		**9**
Select three of the following, one of which must be exclusive of the student's home department [2]		
AERO 615	Computational Fluid Dynamics for Aerospace Applications	
CSCE 603	Database Systems and Applications	
CSCE 605	Compiler Design	
CSCE 620/ VIZA 670	Computational Geometry	
CSCE 626	Parallel Algorithm Design and Analysis	
CSCE 654	Supercomputing	
CVEN 680	Advanced Computation Methods for Fluid Flow	
CVEN 688	Computational Fluid Dynamics	
GEOP 620	Geophysical Inverse Theory	
MATH 610	Numerical Methods in Partial Differential Equations	
MATH 648	Computational Algebraic Geometry	
MATH 660/ CSCE 660	Computational Linear Algebra	
MATH 661	Mathematical Theory of Finite Element Methods	
MATH 676	Finite Element Methods in Scientific Computing	
MEEN 672	Introduction to Finite Element Method	
NUEN 618	Multiphysics Computations in Nuclear Science and Engineering	
OCNG 618	Numerical Methods for the Geosciences	
PETE 656	Advanced Numerical Methods for Reservoir Simulation	
STAT 605	Advanced Statistical Computations	
STAT 608	Regression Analysis	
STAT 626	Methods in Time Series Analysis	
STAT 636	Applied Multivariate Analysis and Statistical Learning	
Other		
Capstone Project [3]		
Total Semester Credit Hours		**12**

[1] MATH 609 will also satisfy the CSCE 653 prerequisite.

[2] With approval by the director of the Institute for Scientific Computation (ISC), student may substitute a course outside those listed as elective options. In such situations, the student must justify the substitution to and seek approval from the ISC's director *prior to* enrolling in the course. The director will include their support for the substitution in a memorandum to the Graduate and Professional School (GPS) after the student files their degree plan with GPS and copies of these documents with the ISC.

[3] The capstone project's goal is to provide students with experience in the computational sciences. The capstone project may be fulfilled by:

1. an independent study graduate course within the student's home department, or
2. an independent study graduate course outside the student's home department, or
3. as part of a MS thesis or project required by the student's home department, or
4. as part of a PhD dissertation.

To fulfill this requirement, the ISC's associate director or director must approve the capstone project, certify its computational component, and document its completion.