

GRADUATE CERTIFICATE IN HIGH-PERFORMANCE COMPUTING

The graduate certificate in the field of high-performance computing (HPC) program provides a mechanism for practicing interdisciplinary computational engineers and scientists to acquire up-to-date knowledge in the advances of computer systems, in particular, the rapidly growing use of multicore processors, parallel computers, hardware accelerators, and networked computing platforms in applications. The program is tailored to provide students with necessary knowledge in all aspects of high performance computing including programming, applications, performance, architectures, and systems.

The certificate program may serve as an alternative to a master of science degree program for professionals who may not have the time to commit to a full graduate degree program, but who wish to align their background with the rapid changes in computing technologies and to expand their education beyond the bachelor's degree. All courses taken as part of this program may be transferred to the Department of Electrical and Computer Engineering's MS and/or PhD programs. While the HPC certificate can be coupled with a graduate degree program, interested students must be admitted to and complete the HPC certificate program separately.

Specific admission requirements are shown on the Graduate Program Finder (<http://www.gwu.edu/all-graduate-programs>).

Visit the program website (<http://www.ece.seas.gwu.edu/graduate-certificate-high-performance-computing>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
ECE 6105	Introduction to High-Performance Computing	
At least one of the following:		
ECE 6125	Parallel Computer Architecture	
ECE 6130	Big Data and Cloud Computing	
Electives		
Six additional credits from the following:		
CE 6210	Introduction to Finite Element Analysis	

CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 8330	Advanced Finite Element Analysis
CSCI 3571	Introduction to Bioinformatics
CSCI 4572	Computational Biology
CSCI 6421	Distributed and Cluster Computing
ECE 6005	Microcomputer Systems Architecture
ECE 6045	Special Topics
ECE 6050	Research
ECE 6120	Advanced Microarchitectures
ECE 6140	Embedded Systems
ECE 6213	Design of VLSI Circuits
ECE 6214	High-Level VLSI Design Methodology
ECE 6735	Numerical Electromagnetics
ECE 6800	Computational Techniques in Electrical Engineering
MAE 6225	Computational Fluid Dynamics
MAE 6291	Special Topics in Mechanical Engineering
PHYS 6130	Computational Physics I
PHYS 6230	Computational Physics II
PHYS 6330	Computational Physics III
PHYS 8110	Selected Topics in Theoretical Nuclear Physics

Credits taken for the certificate may be used towards a graduate degree, with academic advisor approval.