GRADUATE CERTIFICATE IN HIGH-PERFORMANCE COMPUTING

The certificate in high-performance computing offers an alternative to a master of science degree program for professionals who wish to align their background with the rapid changes in computing technologies and to expand their education beyond the bachelor's degree but might not have the time to commit to a full graduate degree program.

With processor chips now having multicores and turning into multiprocessors, all computing is turning into high-performance computing. This program addresses the professional preparedness needs arising from these current transformative developments and draws upon our advanced research engagements and our cutting-edge facilities in high-performance computing.

The objective of the program is to provide a mechanism for interdisciplinary computational engineers and scientists, as well as for computer engineers and scientists, to acquire up-to-date knowledge of the advances in computer systems. The certificate in high-performance computing program addresses the rapid growth and applications of multicore processors, parallel computers, hardware accelerators, and networked computing as a tool for engineering and scientific modeling. It is carefully tailored to provide students with the necessary knowledge in the basic aspects of high-performance computing, including programming, performance, architectures, systems, and applications.

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

ADMISSIONS

Admission deadlines:	Fall – January 15
	Spring – September 1
	Summer – March 1
Standardized test scores:	The Test of English as a Foreign Language (TOEFL), the Academic International English Language Testing System (IELTS), or the PTE Academic is required of all applicants except those who hold a bachelor's, master's, or doctoral degree from a college or university in the United States or from an institution located in a country in which English is the official language, provided English was the language of instruction. Minimum scores:
	- Academic IELTS: an overall band score of 6.0 with no individual score below 5.0; or
	- TOEFL: 550 on paper-based or 80 on Internet-based; or
	- PTE Academic: 53.
	Applicants with lower test scores may qualify for our full-time Applied English Studies program.
Prior academic records:	Transcripts are required from all colleges and universities attended, whether or not credit was earned, the program was completed, or the credit appears as transfer credit on another transcript. Unofficial transcripts from all colleges and universities attended must be uploaded to your online application. Official transcripts are required only of applicants who are offered admission.
	If academic records are in a language other than English, a copy in the original language and an English language translation must be uploaded. Transcript evaluations should not be uploaded. Applicants with degrees from Indian universities should upload transcripts and/or detailed marksheets.
Statement of purpose:	In an essay of 250 to 500 words, state your purpose in undertaking graduate study at The George Washington University; describe your academic objectives, research interests, and career plans; and discuss your related qualifications, including collegiate, professional, and community activities, and any other substantial accomplishments not already mentioned.
International applicants only:	International applicants requiring a visa from GW are not eligible to apply for admission to this program, but may apply for the MS, PhD, or a professional degree (AppSc or Engr) in computer engineering with an area of focus in computer architecture and high performance computing.

For more information on the admission process, please visit the SEAS Frequently Asked Questions page (https://graduate.seas.gwu.edu/apply-faq/).

Contact for questions:
engineering@gwu.edu - 202.994.1802 - 202.994.1651 (fax)
9:00 – 5:00 pm, Monday through Friday
Skype: GW Engineering

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 course selected from the following:		
ECE 6125	Parallel Computer Architecture	
ECE 6130	Big Data and Cloud Computing	
Electives		

6 credits in courses selected 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 6212	Design and Analysis of Algorithms
CSCI 6345	Introduction to Quantum Computing
CSCI 6421	Distributed and Cluster Computing
ECE 6005	Computer Architecture and Design
ECE 6045	Special Topics in Electrical Engineering
ECE 6050	Research
ECE 6120	Advanced Microarchitecture
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