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 (https://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.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>Required</td>
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<tr>
<td>ECE 6105</td>
<td>Introduction to High-Performance Computing</td>
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<td>At least one of the following:</td>
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<td>ECE 6125</td>
<td>Parallel Computer Architecture</td>
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<td>ECE 6130</td>
<td>Big Data and Cloud Computing</td>
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<td>Electives</td>
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<td>Six additional credits from the following:</td>
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<tr>
<td>CE 6210</td>
<td>Introduction to Finite Element Analysis</td>
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Code                  Title                                                   Credits
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              Computer Architecture and Design                            
ECE 6045              Special Topics                                             
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                  

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