ADVANCED SCIENTIFIC COMPUTING, CERTIFICATE

This certificate is open to all masters and PhD students currently enrolled at the University of Pennsylvania.

The Penn Institute for Computational Science (PICS) offers the Advanced Scientific Computing Certificate. This is open to all MSE and PhD students enrolled at the University of Pennsylvania. The Certificate can be completed in one year, and courses may count towards other majors and degree requirements depending on the program.

Upon successful completion, students will:

1. Develop unique skills at the nexus of high-performance scientific computing, data science, physical science and engineering.
2. Become equipped to solve the complex scientific and technological problems that carry societal impact through theory and computing.
3. Earn a Certificate of Advanced Scientific Computing which will appear on the student's official Penn transcript.

https://pics.upenn.edu/certificate-of-advanced-scientific-computing-at-the-penn-institute-for-computational-science/

Curriculum

In order to complete The Certificate of Advanced Scientific Computing students must:

Code	Title	Course Units
1) Download, complete and submit the registration form. [1]		
2) Complete 4 courses. Options include:		
1 CU in		*1*
CIT 5960	Algorithms and Computation	
or CIS 5020	Analysis of Algorithms	
CIS 5620	Computer Animation	
CIS 5450	Big Data Analytics	
ENM 5020	Numerical Methods and Modeling	
1 CU in		*1*
CIS 5600	Interactive Computer Graphics	
MSE 5610	Atomic Modeling in Materials Science	
BE 5590	Multiscale Modeling of Chemical and Biological Systems	
SCMP 5990	Master's Independent Study	
2 CU Electives in:		*2*
CIS 5200	Machine Learning	
or CIS 5210	Artificial Intelligence	
or CIS 6200	Advanced Topics in Machine Learning	
ENM 5310	Data-driven Modeling and Probabilistic Scientific Computing	
CIS 5190	Applied Machine Learning	
BE 5160	Introduction to High-Performance Scientific Computing	
STAT 5710	Modern Data Mining	
Other course substitutions require prior approval		
3) Attend at least 2 workshops hosted by PICS. [2]		

4) Attend 8 AMCS or PICS colloquium hosted on various Fridays from 2:00pm-3:00pm [3]

[1]   Fill out the Registration Form (https://pics.upenn.edu/wp-content/uploads/2019/08/Permit-to-Register-for-PICS-Certificate-in-Advanced-Scientific-Computing-1.pdf) and have it signed by your adviser. Submit the completed form via email or in person to Ravi Radhakrishnan (https://www.seas.upenn.edu/directory/profile.php?ID=76).

[2]   More information on PICS workshops can be found here (https://pics.upenn.edu/events/).

[3]   More information on AMCS or PICS colloquium can be found here (https://pics.upenn.edu/events/).

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2025 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.