

# Artificial Intelligence, Modeling and Simulation in Engineering, Graduate Certificate

## Requirements

The graduate Certificate in Artificial Intelligence, Modeling and Simulation (AIMS) requires a minimum of 15 s.h. of graduate coursework. To earn the certificate, the student is required to attain a minimum grade-point average of 3.00 in coursework specifically for the certificate.

Students are strongly encouraged to participate in at least one workshop related to Python, R, or high performance and parallel computing offered by the Information Technology Services Research Services (ITS-RS) department, and HACKUIOWA organized by the University of Iowa's Hydroinformatics Lab.

The Certificate in Artificial Intelligence, Modeling and Simulation in Engineering requires the following coursework.

## Required Courses

Students must complete at least two of the following courses but may choose to complete all three courses as part of the certificate.

Course #	Title	Hours
At least two of these:		
ME:5170	Data-Driven Analysis in Engineering Mechanics	3
ME:5300	Uncertainty Quantification and Design Optimization	3
ME:6255	Multiscale Computational Science and Engineering	3

Students select courses from the following list to reach a total of 12 s.h. of credit when combined with two or all three of the courses previously listed. Students may petition to substitute other relevant graduate-level courses for the following courses in consultation with the AIMS faculty advisor.

Course #	Title	Hours
At least one of these:		
ME:4117	Finite Element Analysis	3
ME:4150	Artificial Intelligence in Engineering	3
ME:4175	Computational Naval Hydrodynamics	3
ME:5143	Computational Fluid and Thermal Engineering	3
ME:6240	Probabilistic Inference and Estimation for Mechanical Systems	3
ME:7256	Computational Solid Mechanics	3
ME:7257	Probabilistic Mechanics and Reliability	3

ME:7269	Computational Fluid Dynamics and Heat Transfer	3
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## Elective Course

In addition to the following courses, students may count a graduate-level course from another College of Engineering department or an independent investigation opportunity not in the following list in consultation with the AIMS faculty advisor.

Course #	Title	Hours
At least 3 s.h. from these:		
ME:6198	Individual Investigations: Mechanical Engineering	arr.
A mechanical engineering course (prefix ME) numbered 4100 or above		
A chemistry, mathematics, or physics course (prefix CHEM, MATH, or PHYS) numbered 5000 or above		