

Artificial Intelligence, Modeling and Simulation in Engineering, Graduate Certificate

Requirements

The graduate Certificate in Artificial Intelligence, Modeling and Simulation in Engineering (AIMS) requires a minimum of 15 s.h. of credit. Students must earn a grade-point average of at least 3.00 in coursework for the certificate. The certificate program is most appropriate for University of Iowa graduate students enrolled in the College of Engineering and open to graduate students from other disciplines.

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; see Upcoming Workshops on the ITS-Research Services website. Students are also encouraged to participate in the HACKUIOWA hackathon organized by the UI 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 listed above. Students may petition to substitute other relevant graduate-level courses for the courses below 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

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 listed below in consultation with the AIMS faculty advisor.

Course #	Title	Hours
One of these:		
ME:6198	Individual Investigations: Mechanical Engineering	arr.
A course with prefix ME numbered 4100 or above		
A course with prefix CHEM, MATH, or PHYS numbered 5000 or above		