Artificial Intelligence, Modeling and Simulation in Engineering, Certificate

Requirements

The undergraduate Certificate in Artificial Intelligence, Modeling and Simulation in Engineering (AIMS) requires a minimum of 18 s.h. of credit. Students must earn a grade-point average of at least 2.00 in coursework for the certificate. The certificate may be earned by any student admitted to the University of Iowa who is not concurrently enrolled in a UI graduate or professional degree program.

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.

Mechanical engineering students may use the certificate as a tailored engineering focus area by adding at most two additional eligible courses. In addition, mechanical engineering students may earn the Certificate in Artificial Intelligence, Modeling and Simulation in Engineering while they complete the mechanical engineering design, the manufacturing, or the robotics and autonomous systems focus area for their major.

Students may petition to substitute an appropriate related course for a required or elective course in consultation with the AIMS undergraduate certificate director. See Artificial Intelligence, Modeling and Simulation (AIMS) Certificate Programs on the College of Engineering website for more information.

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

Required Courses

Course #	Title	Hours
Both of these:		
ME:4111	Scientific Computing and Machine Learning	3
ME:4150	Artificial Intelligence in Engineering	3

Elective Courses

Course #	Title	Hours
Three of these:		
ME:4110	Computer-Aided Engineering	3
ME:4112	Engineering Design Optimization	3
ME:4116	Manufacturing Processes Simulations and Automation	3
ME:4117	Finite Element Analysis	3
ME:4120	Advanced Linear Control Systems	3
ME:4175	Computational Naval Hydrodynamics	3
ME:5143	Computational Fluid and Thermal Engineering	3
ME:5170	Data-Driven Analysis in Engineering Mechanics	3
ME:5300	Uncertainty Quantification and Design Optimization	3

Capstone Course

Students must complete a capstone design project on an approved topic related to the certificate.

Course #	Title	Hours
One of these:		
ME:4086	Mechanical Engineering Design Project	3
ME:4098	Individual Investigations: Mechanical Engineering	3