AIMS UG Certificate for CS Students

Artificial Intelligence, Modeling and Simulation (AIMS) certificate undergraduate program is hosted by the Department of Mechanical Engineering at the University of Iowa. The official website is [here](#). The AIMS undergraduate certificate program requires 18 semester hours (s.h.) of credits, including two required courses (ME:4111 Scientific Computing and Machine Learning and ME:4150 Artificial Intelligence in Engineering), three elective courses selected from the list on the [website](#), and a capstone design project.

Computer Science (CS) students can earn the AIMS undergraduate certificate without taking extra credits by course substitutions as below.

1. **Required courses:**
   - The following courses can be substituted for ME:4111:
     CS:5430 Machine Learning or CS:3800 Elementary Numerical Analysis
   - The following courses can be substituted for ME:4150:
     CS:4420 Artificial Intelligence or CS:5430 Machine Learning

2. **Here is the list of CS/MATH courses that can be substituted for three elective courses.**
   - CS:4330 Theory of Computation
   - CS:4350 Logic in Computer Science
   - CS:4700 High Performance and Parallel Computing
   - CS:5710/MATH:5800 Numerical Analysis-nonlinear equation and approximation theory
   - CS:5720/MATH:5810 Numerical Analysis-differential equation and linear algebra
   - CS:5810 Formal Methods in Software Engineering
   - CS:5360 Randomized Algorithms
   - CS:4720/MATH:4820 Optimization Techniques
   - MATH:4840 Mathematics of Machine Learning
   - MATH:4060 Discrete Mathematical Models

3. **The following courses can be substituted for the capstone course.**
   - CS:5990 Individualized Research or Programming Project (3 s.h.)
   - CS:5830 Software Engineering Project
   - Note: Please consult with Prof. Xiao ([shaoping-xiao@uiowa.edu](mailto:shaoping-xiao@uiowa.edu)) before conducting the project. The final report with a paragraph emphasizing the AIMS component is required.

The students need to declare the AIMS UG certificate through their MyUI account. Then, the students need to contact Prof. Xiao ([shaoping-xiao@uiowa.edu](mailto:shaoping-xiao@uiowa.edu)), the director of the AIMS UG certificate program, to discuss the plan of study before submitting the course substitution forms. Here is the guideline for submitting an online course substitution form through the College of Engineering website. Note: Multiple forms must be submitted if there is more than one substitution.
1. Find “Course substitution request form” in academic forms, and click it.

- COURSE SUBSTITUTION REQUEST FORM

This form is to be completed by the student to request a substitution of a degree requirement (gen ed, core curriculum, major/program of study, or seminar) course for another course.

2. Login with your hawkid and password.

3. “Select your major or certificate” with “AIMS Certificate”

4. Click “Required Course” to substitute for a required course. For example,

- **What certificate requirement are you requesting a substitution for:**
  - Required Course
  - Elective Course
  - Capstone Course

- **Course to Use as Substitution:** CS:5430 Machine Learning

- **Is this a transfer course?**
  - Yes
  - No

- **AIMS Certificate**
  - ME:4111 Scientific Computing and Machine Learning

5. Click “Elective Course” or “Capstone Course” for other substitutions. For example,

- **What certificate requirement are you requesting a substitution for:**
  - Required Course
  - Elective Course
  - Capstone Course

- **Course to Use as Substitution:** CS:4330 Theory of Computation

- **Is this a transfer course?**
  - Yes
  - No