ROBOTICS AND AUTOMATION UNDERGRADUATE ACADEMIC CERTIFICATE

Robotic automation has spread through all different types of manufacturing, food processing, and agriculture. The key to companies remaining competitive is to continue to increase productivity through automation using robotics. This certificate produces students that have a deep understanding of the Robotics stack from the lower level motors and controllers, through PLC controllers and into higher level cognitive processes including using modern Al techniques.

All required coursework must be completed with a grade of C or better (0-10-a (https://catalog.uidaho.edu/general-requirements-academic-procedures/o-miscellaneous/)).

Required Coursework:

| Code | Title | Hours |
|---------------------------------|---|-------|
| CS 4553 | Robotic Systems Engineering I | 3 |
| CS 4554 | Robotic Systems Engineering II | 3 |
| Any 3 courses of the following: | | 9 |
| CS 4440 | Supervisory Control and Critical Infrastructure Systems | |
| CS 4502 | Real-Time Operating Systems | |
| CS 4543 | Embedded Systems | |
| CS 4556 | PLC Programming for Automation | |
| CS 4701 | Artificial Intelligence | |
| CS 4712 | Machine Learning | |
| CS 4715 | Deep Learning | |
| CS 4731 | Evolutionary Computation | |
| CS 4771 | Python for Machine Learning | |
| CS 4885 | Machine Vision | |
| ME 4540 | Assistive Technologies for Physical Impairment | |
| ME 4640 | Robotics Kinematic and Kinetic Analysis | |
| Total Hours | | 15 |

Courses to total 15 credits for this certificate

Students should consult with their academic advisor regarding this certificate.

- 1. Graduates will be able to apply modern software design and engineering principles and practices to the hardware, software, safety and environmental aspects of a robotic system.
- 2. Graduates will be able to analyze, evaluate and design parts of the robotic stack and will be able to communicate with other disciplines working on robotic systems.