

INDUSTRIAL CONTROLS & ROBOTICS (ICON), AAS

At Dunwoody College of Technology, the Industrial Controls & Robotics program provides evening students with the entry-level skills and theoretical knowledge to maintain the latest in automated manufacturing, packaging, and industrial robotic systems.

Graduates from this program are prepared to enter the industry as machine designers, machine assemblers, electro-mechanical technicians, maintenance mechanics, and field service technicians.

The course of study includes: basic electricity and electronics, mechanical systems, electronic sensors, programmable logic controllers (PLCs), industrial robotics, motion-control systems, and advanced packaging and manufacturing systems. The program's curriculum is aligned with standards set forth by the Packaging Machinery Manufacturers Institute (PMMI), the Institute of Packaging Professionals (IoPP), the Robotics Industry Association (RIA), the National Fire Protection Association (NFPA), and the Instrumentation Society of America (ISA) as well as other national trade organizations.

Arts & Sciences curriculum supports the technical coursework by enhancing the students' communication, mathematics, and critical thinking skills.

Credits earned in the Industrial Controls & Robotics AAS directly transfer into the following Dunwoody programs:

- Automation & Controls Engineering Technology Bachelor of Science (AENT) (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/engineering/automation-controls-engineering-technology/>)
- Industrial Engineering Technology Bachelor of Science (IENG) (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/engineering/industrial-engineering-technology-ieng-bachelor-science/>)

A shorter certificate option (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/robotics-manufacturing/industrial-controls-robotics-icon-certificate/>) is also available.

Credential Earned: AAS

Length of Program: 2 years (4 semesters)

Classes Offered: Evening

Available Starts: Fall Semester; Spring Semester

Program Outcomes

- Apply the concepts of basic electricity.
- Demonstrate required industry safety standards.
- Explain the operation of electronic devices.
- Troubleshoot circuits and systems using industry standard test equipment.
- Analyze electrical schematics and mechanical prints.
- Perform maintenance on mechanical systems.
- Commission and maintain industrial control systems.
- Commission and maintain industrial robots.

Degree Requirements

Code	Title	Credits
General Requirements		
MATH1000	Algebra & Trigonometry	3
MATH1250	Boolean Algebra	3
Communications		3
General Science Elective		3
Humanities		3
Social Sciences		3
Technical Requirements		
ASRO1220	Mechanical Transmission of Power Theory	4
ASRO2101	Industrial Controls & PLC's Lab	3
ASRO2120	Industrial Controls & PLCs Theory	8
ASRO2201	Automation & Robotics Lab	3
ASRO2205	Automation & Robotics Theory	8
ELTT1100	Basic Electricity & Electronics Lab	2
ELTT1120	Basic Electricity & Electronics Theory	8
MACH1000	Machine Shop Fundamentals	2
MDES1110	Engineering Drawings with SolidWorks	4
Total Credits		60

Courses

Descriptions

ASRO1220 | Mechanical Transmission of Power Theory | Lecture (4 Credits)

Identification, recognition and calculations associated with various components of machines including bearings, gears, cams, motors, clutches, cylinders (hydraulic and pneumatic), fluid systems, mechanical systems and other automation related components.

ASRO2101 | Industrial Controls & PLC's Lab | Laboratory (3 Credits)

Installation, wiring, programming, operation, testing and troubleshooting programmable logic controllers. Interfacing programmable logic controllers with switches, sensors, motors, pneumatics, and other I/O devices. Set-up, configuration and troubleshooting inductive and capacitive proximity, photo-electric, temperature and other industrial sensors.

ASRO2120 | Industrial Controls & PLCs Theory | Lecture (8 Credits)

Wiring and programming fundamentals associated with programmable logic controllers. Identification, recognition and calculations associated with inductive and capacitive proximity, photo-electric, temperature and other industrial sensors.

ASRO2201 | Automation & Robotics Lab | Laboratory (3 Credits)

Set up, configuration, programming and troubleshooting industrial robots to meet industry standards. Configuration and troubleshooting of installed automation and packaging equipment using machine schematics and related documentation.

ASRO2205 | Automation & Robotics Theory | Lecture (8 Credits)

Identification, recognition, programming and calculations associated with automation and packaging components, motion control, industrial robotics and related documentation.

ELTT1100 | Basic Electricity & Electronics Lab | Laboratory (2 Credits)

Analyze, design, and build series, parallel and combination AC and DC circuits. Build and test semiconductor circuits, power supplies, transistor circuits using protoboards and various test equipment.

ELTT1120 | Basic Electricity & Electronics Theory | Lecture (8 Credits)

Identification, recognition and calculations associated with basic electricity, including Ohm's Law, resistance, capacitance, inductance in AC and DC circuits, as well as solid state principles of diodes, power supplies and transistors.

MACH1000 | Machine Shop Fundamentals | Laboratory (2 Credits)

Manufacturing of parts through layout and bench work, includes the use of band saws, drill presses, surface grinders, manual lathes and vertical mills. Basic principles in metal-cutting technology includes threading, tapers, knurling, boring, radii cutting and milling procedures such as squaring stock, the use of rotary table and the many other milling and turning operations.

MDES1110 | Engineering Drawings with SolidWorks | Lecture (4 Credits)

Creation of 3D solid models, assemblies and related engineering documentation using SolidWorks. Blueprint reading and application of ASME/ANSI standards to CAD drawings.

MATH1000 | Algebra & Trigonometry | Lecture (3 Credits)

Real numbers and polynomials, exponents and radicals, fractional equations; proportions and linear equations; trigonometric functions, solutions of triangles, radians, trig functions graphs, vectors, and basic identities.

General Education: Mathematics

MATH1250 | Boolean Algebra | Lecture (3 Credits)

Binary, octal and hexadecimal number systems. Boolean algebra and mapping.

General Education: Mathematics