

AUTOMATED SYSTEMS & ROBOTICS (ASRO), AAS

At Dunwoody College of Technology, the Automated Systems & Robotics program provides 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 assemblers, electro-mechanical technicians, maintenance mechanics, and field service engineers.

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. Program 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).

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

Credential Earned: AAS

Length of Program: 2 years (4 semesters)

Classes Offered: Day

Available Starts: Fall Semester; Spring Semester

Bachelor's Completion Option(s): Automation Controls Engineering Technology (AENT), Bachelor of Science (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/engineering/automation-controls-engineering-technology/>) | Industrial Engineering Technology (IENG), Bachelor of Science (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/engineering/automation-controls-engineering-technology/>)

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.
- Perform duties on an industry-related internship or capstone project.

Degree Requirements

Code	Title	Credits
General Requirements		
MATH1000	Algebra & Trigonometry	3
MATH1250	Boolean Algebra	3
Communications		3
Humanities		3
Social Sciences		3
Science Elective		3
Technical Requirements		

ELTT1110	Basic Electricity & Electronics Lab	5
ELTT1120	Basic Electricity & Electronics Theory	8
MDES1110	Engineering Drawings with SolidWorks	4
MACH1200	Machine Shop Fundamentals	3
ASRO1210	Mechanical Transmission of Power Lab	2
ASRO1220	Mechanical Transmission of Power Theory	4
ASRO2110	Industrial Controls & PLCs Lab	5
ASRO2120	Industrial Controls & PLCs Theory	8
ASRO2230	Industrial Robotics Lab	2
ASRO2241	Industrial Robotics Theory	5
ASRO2291	Industrial Internship/Practicum	6
Total Credits		70

Courses

Descriptions

ELTT1110 | Basic Electricity & Electronics Lab | Laboratory (5 Credits)

Analyze, design and build series, parallel and combination AC and DC circuits. Semiconductor circuits, power supplies, transistor circuits are built and tested using protoboards and various test equipment.

Corequisite(s): ELTT1120

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.

Corequisite(s): ELTT1100 ELTT1110

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.

MACH1200 | Machine Shop Fundamentals | Laboratory (3 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.

ASRO1210 | Mechanical Transmission of Power Lab | Laboratory (2 Credits)

Assembling, disassembling and observing applications of bearings, gears, cams, motors, clutches, cylinders (hydraulic and pneumatic), fluid systems, mechanical systems and other automation related components. Drawing and fabrication of simple components.

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.

ASRO2110 | Industrial Controls & PLCs Lab | Laboratory (5 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.

ASRO2230 | Industrial Robotics Lab | Laboratory (2 Credits)

Set up, configuration, programming and troubleshooting industrial robots to meet industry standards. Industry safety standards, programming methods, applications and interfacing of sensors and I/O devices.

ASRO2241 | Industrial Robotics Theory | Lecture (5 Credits)

Identification, recognition and calculations associated with industrial robotics including terminology, safety practices and procedures, application justifications, robot types, operation, program instructions and techniques, I/O device interfacing, end of arm tooling, system integration and troubleshooting.

ASRO2291 | Industrial Internship/Practicum | Internship (6 Credits)

Internship or practicum option on various manufacturing topics: automation, electronics, robotics, mechanical systems, assembly, troubleshooting, research and/or field service.

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