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): Industrial Engineering Technology (IENG), Bachelor of Science (https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/engineering/industrial-engineering-technology-ieng-bachelor-science/), Business Management Leadership (AMGT), Bachelor of Science (https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/engineering/industrial-engineering-technology-ieng-bachelor-science/)

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

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<th>Code</th>
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<tr>
<td>MATH1500</td>
<td>Algebra, Trig &amp; Boolean Algebra</td>
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<td>Communications</td>
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<tr>
<td>ELTT1110</td>
<td>Basic Electricity &amp; Electronics Lab</td>
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<tr>
<td>MDES1110</td>
<td>Engineering Drawings with SolidWorks</td>
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<td>MACH1200</td>
<td>Machine Shop Fundamentals</td>
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<tr>
<td>ASRO1210</td>
<td>Mechanical Transmission of Power Lab</td>
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<td>ASRO1220</td>
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<td>ASRO2110</td>
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<td>ASRO2120</td>
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<td>ASRO2230</td>
<td>Industrial Robotics Lab</td>
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<td>ASRO2241</td>
<td>Industrial Robotics Theory</td>
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<td>ASRO2291</td>
<td>Industrial Internship/Practicum</td>
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Total Credits: 72

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): ELTT1110

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): 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.
Corequisite(s): ASRO2120

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.
Corequisite(s): ASRO2110 ASRO2120

ASRO2210 | Automation & Packaging Lab | Laboratory (2 Credits)
Set up configuration and troubleshooting of installed automation and packaging equipment using machine schematics and related documentation.
Prerequisite(s): ELTT1110
Corequisite(s): ASRO2220

ASRO2220 | Automation & Packaging Theory | Lecture (3 Credits)
Identification, recognition and calculations associated with automation and packaging components, motion control, electrical safety, documentation, motors, control circuits and related documentation. Investigation of packaging and automation career options and industry related skills.
Prerequisite(s): ELTT1120
Corequisite(s): ASRO2210

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.
Prerequisite(s): ELTT1110
Corequisite(s): ASRO2240 ASRO2241

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.
Prerequisite(s): ELTT1120
Corequisite(s): ASRO2230

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.

MATH1500 | Algebra, Trig & Boolean Algebra | Lecture (5 Credits)
Polynomials, proportions and linear equations. Trig functions, graphs, and vectors. Binary, octal and hexadecimal number systems. Boolean Algebra and mapping.

General Education: Mathematics