

# Automation, Instrumentation, & Robotics

## Associate in Applied Science (AAS)

The Automation, Instrumentation, & Robotics Associate of Applied Science (AAS) degree prepares students to excel in a dynamic and rapidly evolving industrial environment. This comprehensive 2-year program offers hands-on training and technical skills in key areas, including automation systems, robotic technologies, industrial instrumentation, and equipment maintenance. Through a combination of theoretical knowledge and practical applications, students will gain the expertise needed to troubleshoot, repair, and optimize complex industrial systems. This degree serves as a pathway into LCC's Bachelor of Applied Science-Organizational Leadership & Technical Management (BAS-OLTM) degree.

For a roadmap that identifies the preferred sequencing of courses and other specific recommendations from faculty, please see the corresponding program map(s):

- [Automation, Instrumentation, & Robotics Associate in Applied Science \(AAS\) \(lowercolumbia.edu/program-maps/trades/AAS-Automation-Instrumentation-Robotics\)](https://www.lowercolumbia.edu/program-maps/trades/AAS-Automation-Instrumentation-Robotics)

## Degree Requirements

**Total credits required to earn this degree: 98**

LCC students must meet distribution requirements for bachelor degrees, associate degrees, and specific certificates. See [Diversity and Distribution Lists \(lowercolumbia.edu/publications/catalog/distribution-lists/\)](https://www.lowercolumbia.edu/publications/catalog/distribution-lists/) for more information.

## General Education Requirements

- **Communications:**

5 credits – ENGL& 101 English Composition I **OR**  
ENGL 110 Industrial Communications **OR**  
ENGL& 235 Technical Writing (ENGL& 101 required for OLTM)

- **Quantitative Skills:**

5 credits – MATH 106 Industrial Mathematics or higher (MATH& 107 or higher required for OLTM)

- **Natural Sciences:**

5 credits – DHET 240 Fluid Power/Electrical Theory and Design **OR**  
MFG 130 Materials Science **OR**  
CHEM& 100 Preparatory Chemistry **OR**  
CHEM& 110 Chemical Concepts w/Lab **OR**  
choose from the *Distribution List* (5 credits of Natural Science with lab required for OLTM)

- **Diversity / Human Relations / Social Science:**

5 credits – BUS 144 Management of Human Relations **OR**  
SOC& 101 Introduction to Sociology: DIV (SOC& 101 required for OLTM)

## Program Requirements

Course Code	Course Title	Number of Credits
BLPT 120	Blueprint Reading for Industrial Technology	2
COLL 289	Employment Portfolio Seminar	1
CS 110	Introduction to Microcomputer Applications	3
HLTH 105	First Aid, CPR and Bloodborne Pathogens	1
IMIN 215	Programmable Logic Controllers	5
IMIN 230	Process Technology Equipment	4
IMIN 240	Instrumentation Fundamentals	5
IMIN 260	Advanced Instrumentation	5
MASP 107	Machining for Related Occupations	3
MFG 100	Foundational Skills for the Trades	2
MFG 105	Industrial Safety	3
MFG 140	Applied Hydraulics	4
MFG 230	Computer Integrated Manufacturing	4
MFG 288	Cooperative Work Experience	2
PMFG 110	Industrial & Predictive Maintenance Fundamentals	5
PMFG 150	Electrical and Electronic Fundamentals	6
PMFG 201	Electrical Control Equipment	3
PMFG 202	Electric Motors	2
PMFG 210	Advanced Industrial Maintenance	5
ROBT 260	Introduction to Robotics	5

Course Code	Course Title	Number of Credits
ROBT 270	Robotics in Automation	5
WELD 105	Related Welding	3

## Program Outcomes

Students completing this program should acquire the following skills and abilities:

- Demonstrate skills in industrial maintenance to ensure the reliability and efficiency of machinery through preventative maintenance, diagnostics, and repair. (GS - Critical Thinking, Communication, Quantitative Literacy, Teamwork)
- Integrate knowledge and skills from the program by completing an internship that connects academic learning with real-world applications in industrial automation and maintenance environments. (GS - Critical Thinking, Communication, Quantitative Literacy, Teamwork)
- Understand and explain the principles of electrical and electronic systems, including power distribution, circuit design, and safety protocols, to support automation and maintenance tasks. (GS - Critical Thinking, Communication, Quantitative Literacy)
- Apply hands-on experience with instrumentation and control systems to monitor, calibrate, and adjust industrial processes for optimal performance. (GS - Critical Thinking, Communication, Quantitative Literacy)
- Demonstrate proficiency in the use of automation and robotic systems by configuring, operating, and maintaining automated technologies in industrial settings. (GS - Critical Thinking, Communication, Quantitative Literacy)
- Design, program, and troubleshoot automated systems by integrating electrical, mechanical, and software components to ensure smooth and efficient operation. (GS - Critical Thinking, Communication, Quantitative Literacy)

## Notes

### Revised January 2025 (effective Summer 2025)

Program planning is based on information available at the time of preparation. It is the student's responsibility to meet with their LCC advisor and with an advisor at the college to which they plan to transfer for specific requirements. Consult the LCC catalog for LCC graduation requirements.