

Advanced Manufacturing Department

DEGREES:

Automation Technology (AS)
Mechatronics (AS)

CERTIFICATES OF ACHIEVEMENT:

Automation Technology
Maintenance Technician
Mechatronics

COURSES:

IT (Industrial Technology)

MT (Maintenance Technology)

CONTACT INFORMATION:

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P.A.C.E. - INDUSTRIAL AND APPLIED TECHNOLOGY - A PATHWAY FOR ACADEMIC AND CAREER EXCELLENCE AT SOLANO COMMUNITY COLLEGE

ARE YOU THE KIND OF PERSON WHO...

- ...desires to work hands-on with objects, machines, tools, plants, or animals?
- ...enjoys work and play outside, including use your physical or athletic abilities?
- ...likes to follow directions to organize, plan and complete a project or task?
- ...is interested in attaining employment as soon as possible?

Advanced Manufacturing

Automation Technology

Certificate of Achievement and Associate in Science

Program Description

The Automation Technology program provides an introduction to industrial automation including digital electronic, process control and programming of PLCs, robotics and SCADA systems. The program examines applications and examples of automated manufacturing systems including both the theory and function of digital and industrial electronics, hydraulics and pneumatics, robotics systems, digital programming languages and alarm management.

The Certificate of Achievement can be obtained upon completion of the 27-28-unit major. The Associate in Science can be obtained by completing the 27-28-unit major, General Education, and electives as needed to complete a minimum of 60 units. All courses for the major must be completed with a minimum grade of C or a grade of P if the course is taken on a Pass/No Pass basis

Program Outcomes

Students who complete the Automation Technology Certificate of Achievement/Associate in Science will be able to:

1. Describe and apply current safety rules and regulations while working on various manufacturing and automation systems.
2. Configure and program manufacturing systems and modules including Programmable Logic Controllers (PLCs), Human Machine Interfaces (HMIs), and industrial robots.
3. Demonstrate an understanding of electrical systems and devices related to manufacturing and automation systems

REQUIRED COURSES	Units
CIS 001 Introduction to Computer Science	3
IT 151 Vocational Mathematics	3
IT 101 Introduction to Mechatronics	3
MT 162 Robotic Manufacturing Systems	3
MT 163 Advanced Robotics Manufacturing Systems	3
MT 164 Programmable Logic Controllers	3
MT 165 Advanced Programmable Logic Controllers	3
One course from Electronics List	3-4
Three units from Elective List	3
Required Major Total Units	27-28

Electronics List: (select one course)	Units
MT 121 Electronics	4
MT 122 Principles of Digital Electronics	3
Elective List (select three units)	Units
DRFT 151 3D Modeling with Fusion 360	1.5
IT 174 Making Things 4 – Basic Electronics	1
MT 166 CNC Programming	3
MT 132 Principles of Fluid Power Systems	3
MT 142 Principles of Electrical Machinery	3
OCED 090 Occupational Work Experience	1-3
OCED 070 Occupational Soft Skills	1.5

This is a Gainful Employment Program. For additional information, please visit http://www.solano.edu/gainful_employment/ and select "Automation Technology."

Advanced Manufacturing

Maintenance Technician

Certificate of Achievement

Program Description

The Maintenance Technician program introduces the student to basic electrical and mechanical components used in basic manufacturing systems. Topics covered include functional descriptions, physical properties and operation of electrical and mechanical components and devices. Industrial components and preventative maintenance requirements are also investigated. Students receive hands-on practical experience in the use and application of basic electrical instruments and mechanical measuring devices. An emphasis is placed on safe work habits and procedures, systematic preventive maintenance, localization and correction of malfunctions, and troubleshooting techniques.

The Certificate of Achievement can be obtained by completing the 18-unit major. All courses for the major must be completed with a minimum grade of C or a grade of P if the course is taken on a Pass/No Pass basis.

Program Outcomes

Students who complete the Maintenance Technician Certificate of Achievement will be able to:

1. Describe and apply current safety rules and regulations while working on various industrial equipment and machinery.
2. Understand the physical operation of electro-mechanical components such as AC and DC motors, solenoids, relays and various sensors used in basic manufacturing systems.
3. Describe and perform troubleshooting, preventative maintenance and documentation methods associated with basic manufacturing systemstanding of electrical systems and devices related to manufacturing and automation systems

REQUIRED COURSES	Units
IT 101 Introduction to Mechatronics	3
IT 151 Vocational Mathematics	3
MT 130 Principles of Mechanical Power Systems	3
MT 132 Principles of Fluid Power Systems	3
MT 140 Principles of Industrial Electrical Systems	3
MT 142 Principles of Electrical Machinery	3
Required Major Total Units	18

This is a Gainful Employment Program. For additional information, please visit http://www.solano.edu/gainful_employment/ and select "Maintenance Technician."

Advanced Manufacturing

Mechatronics

Certificate of Achievement and Associate in Science

Program Description

Mechatronics is the study of electronics, mechanics, electrical, and control systems to produce a well-rounded technician capable of handling the complex maintenance and operations tasks demanded by modern manufacturing, packaging, processing, transportation, and communication industries.

Individuals with well-rounded knowledge of how electromechanical and automated systems work together are in high demand and qualify to enter occupations such as a technician or specialist in industrial maintenance, automation, engineering, or in testing/research

The Certificate of Achievement can be obtained upon completion of the 36-37-unit major. The Associate in Science can be obtained by completing the 36-37-unit major, General Education, and electives as needed to complete a minimum of 60 units. All courses for the major must be completed with a minimum grade of C or a grade of P if the course is taken on a Pass/No Pass basis

Program Outcomes

Students who complete the Mechatronics Certificate of Achievement/Associate in Science will be able to:

1. Demonstrate safe work habits around mechanical and electrical industrial equipment.
2. Troubleshoot and solve basic problems involving electrical wiring, connections, and distribution at both the component level.
3. Troubleshoot and solve basic problems involving mechanical and fluid power systems.
4. Demonstrate proficiency in relating and integrating math and science concepts with basic systems found in industry.
5. Demonstrate proficiency in integrating computer use with industrial machinery and control systems

REQUIRED COURSES	Units
CIS 001 Introduction to Computer Science	3
IT 101 Introduction to Mechatronics.....	3
IT 151 Vocational Mathematics	3
MT 130 Principles of Mechanical Power Systems	3
MT 132 Principles of Fluid Power Systems	3
MT 140 Principles of Industrial Electrical Systems	3
MT 142 Principles of Electrical Machinery	3
MT 162 Robotic Manufacturing Systems.....	3
MT 164 Programmable Logic Controllers	3
One course from Electronics List	3-4
6 units from List A.....	6
Required Major Total Units.....	36-37

Electronics List: (select one course)	Units
MT 120 Principles of Analog Electronics	3
MT 121 Electronics	4
MT 122 Principles of Digital Electronics	3
List A: (select 6 units)	Units
DRFT 050 Basic Drafting	1.5
DRFT 079 Blueprint Reading	3
DRFT 151 3D Modeling with Fusion 360	1.5
IT 050 Alternative Energy Technologies.....	3
IT 120 Electrical Safety	3
IT 140 Industrial Materials.....	3
IT 174 Making Things 4 – Basic Electronics	1
MT 163 Advanced Robotics Manufacturing Systems	3
MT 165 Advanced Programmable Logic Controllers	3
MT 166 CNC Programming	3
OCED 070 Occupational Soft Skills	1.5
OCED 090 Occupational Work Experience	1-6

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