

Mechatronics Engineering Technology, B.S.

Visit the Technology Management and Mechatronics Department page (<https://www.uvu.edu/tm/>) for more information on the program and access to advising.

Program Description

The Mechatronics Engineering Technology Degree from Utah Valley University prepares graduates to work in the Utah manufacturing sector as an automation technologist, design technician, PLC programmer, as well as many other aspects of implementing manufacturing systems. Students complete courses in PLC programming and architecture, materials, CAD, electrical and mechanical components, pneumatics, and motor control. Students will also take courses in technical writing, physics, chemistry, and business to round out their professional profile.

Matriculation Requirements

[Graduates of the Mechatronics Engineering Technology, Electrical Automation Robotic Technology \(E.A.R.T\) or Automation and Electrical Technology \(A.E.T\) A.A.S. degree programs at UVU may automatically matriculate into the Bachelor of Science degree program in Mechatronics Engineering Technology.](#)

[E.A.R.T and A.E.T graduates that have not taken college algebra \(MATH 1050\) should enroll prior to or during their first semester in which they are enrolled in the Mechatronics B.S. program.](#)

Program Requirements

Code	Title	Credit Hours
Total Credit Hours		120
General Education Requirements		31 Credits
ENGL 1010 or ENGL 1005	Introduction to Academic Writing Foundations of Academic Writing	3
ENGL 2010	Intermediate Academic Writing	3
MATH 1050 or MATH 1055	College Algebra College Algebra with Preliminaries	4
Complete one of the following:		3
HIST 2700 & HIST 2710	US History to 1877 and US History since 1877 (6)	
HIST 1700	American History (3)	
HIST 1740	US Economic History (3) (recommended)	
POLS 1000	American Heritage (3)	
POLS 1100	American National Government (3)	
Distribution Courses:		
Biology (BIOL 1010 Recommended)		3
Physical Science (PHYS 1010 Recommended)		3
Humanities (ENGL 2100 Recommended)		3
Personal, Professional, and Civic Growth		3
Social/Behavioral Science		3
Fine Arts		3
Discipline Core Requirements		89 Credits
PHYS 2010 & PHYS 2015	College Physics I and College Physics I Lab	5
EGDT 1071	3 Dimensional Modeling--Solidworks	3
MECH 1010	Fundamentals of Mechatronics	3
MECH 1200	Electronics in Automation Design	3
MECH 1205	Electronics in Automation Design Laboratory	2
MECH 2200	Semiconductors in Mechatronic Systems	3
MECH 1300	Industrial Wiring for Mechatronic Systems	1

MECH 1305	Industrial Wiring for Mechatronic Systems Laboratory	2
MECH 2205	Semiconductors in Mechatronic Systems Lab	1
MECH 2300	Microcontroller Architecture and Programming	3
MECH 2305	Microcontroller Architecture and Programming Lab	2
MECH 2400	Mechanical Components	4
MECH 2500	Introduction to PLCs in Mechatronic Design	2
MECH 2505	Introduction to PLCs in Mechatronic Design Laboratory	2
MECH 2510	Fundamentals of Automation Controls	2
MECH 2515	Fundamentals of Automation Controls Laboratory	1
MECH 2550	Advanced PLC Programming and Applications	2
MECH 2555	Advanced PLC Programming and Applications Laboratory	2
MECH 2600	Introduction to Fluid Power Systems	2
MECH 2605	Introduction to Fluid Power Systems Laboratory	1
MECH 2700	Industrial Motor Control Mechatronic Systems	2
MECH 2705	Industrial Motor Control Mechatronic Systems Laboratory	2
MECH 3220	Motion Control for Mechatronic Systems	3
MECH 3225	Motion Control for Mechatronic Systems Laboratory	1
MECH 3300	Industrial Networks	2
MECH 3305	Industrial Networks Laboratory	1
MECH 3400	Statics and Material Properties for Mechatronics	4
MECH 3405	Statics and Material Properties for Mechatronics Laboratory	1
MECH 3500	Industrial Robots	2
MECH 3505	Industrial Robots Laboratory	1
MECH 3570	Design Analysis and Rapid Prototyping	3
MECH 3700	CNC Machines in Mechatronic Design	2
MECH 3705	CNC Machines in Mechatronic Design Laboratory	1
MECH 4300	Capstone I	2
MECH 4305	Capstone I Laboratory	1
MECH 4400	Polymers/Composites and Processes	3
MECH 4500	Advanced Automation Controls	3
MECH 4505	Advanced Automation Controls Laboratory	1
MECH 4800	Capstone II	3
Elective Requirements		5
MECH 4810R	Mechatronics Internship (3)	
MECH 4900R	Topics in Mechatronics (3)	
TECH 3010R	Technology Lecture Series (1)	

Graduation Requirements

1. Completion of 120 or more credit hours.
2. Overall grade point average of 2.0 (C) or above, with no core course below a C-.
3. Residency hours: minimum of 30 credit hours through course attendance at UVU.
4. Successful completion of at least one Global/Intercultural course.
5. Successful completion of at least two Writing Enriched courses.

Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (<http://www.uvu.edu/wolverinetrack/>).

First Year

Semester 1

ENGL 1010
or ENGL 1005

Introduction to Academic Writing
or Foundations of Academic Writing

Credit Hours

3

MATH 1050 or MATH 1055	College Algebra or College Algebra with Preliminaries	4
MECH 1010	Fundamentals of Mechatronics	3
MECH 1200	Electronics in Automation Design	3
MECH 1205	Electronics in Automation Design Laboratory	2
Credit Hours		15
Semester 2		
EGDT 1071	3 Dimensional Modeling--Solidworks	3
MECH 1300	Industrial Wiring for Mechatronic Systems	1
MECH 1305	Industrial Wiring for Mechatronic Systems Laboratory	2
MECH 2200	Semiconductors in Mechatronic Systems	3
MECH 2205	Semiconductors in Mechatronic Systems Lab	1
MECH 2300	Microcontroller Architecture and Programming	3
MECH 2305	Microcontroller Architecture and Programming Lab	2
Credit Hours		15
Second Year		
Semester 3		
PHYS 2010 & PHYS 2015	College Physics I and College Physics I Lab	5
Social/Behavioral Science (ECON 1010 Recommended)		3
MECH 2400	Mechanical Components	4
MECH 2500	Introduction to PLCs in Mechatronic Design	2
MECH 2505	Introduction to PLCs in Mechatronic Design Laboratory	2
MECH 2510	Fundamentals of Automation Controls	2
MECH 2515	Fundamentals of Automation Controls Laboratory	1
Credit Hours		19
Semester 4		
Humanities (ENGL 2100 Recommended)		3
Physical Science (PHYS 1010 Recommended)		3
MECH 2550	Advanced PLC Programming and Applications	2
MECH 2555	Advanced PLC Programming and Applications Laboratory	2
MECH 2600	Introduction to Fluid Power Systems	2
MECH 2605	Introduction to Fluid Power Systems Laboratory	1
MECH 2700	Industrial Motor Control Mechatronic Systems	2
MECH 2705	Industrial Motor Control Mechatronic Systems Laboratory	2
Credit Hours		17
Third Year		
Semester 5		
ENGL 2010	Intermediate Academic Writing	3
Fine Arts		3
Personal, Professional, and Civic Growth		3
MECH 3220	Motion Control for Mechatronic Systems	3
MECH 3225	Motion Control for Mechatronic Systems Laboratory	1
MECH 3500	Industrial Robots	2
MECH 3505	Industrial Robots Laboratory	1
Credit Hours		16
Semester 6		
Biology (BIOL 1010 Recommended)		3
MECH 3300	Industrial Networks	2
MECH 3305	Industrial Networks Laboratory	1
MECH 3400	Statics and Material Properties for Mechatronics	4
MECH 3405	Statics and Material Properties for Mechatronics Laboratory	1
MECH Elective		3
Credit Hours		14
Fourth Year		
Semester 7		
American Institutions		3
MECH 3570	Design Analysis and Rapid Prototyping	3
MECH 3700	CNC Machines in Mechatronic Design	2
MECH 3705	CNC Machines in Mechatronic Design Laboratory	1
MECH 4300	Capstone I	2
MECH 4305	Capstone I Laboratory	1

MECH Elective		2
	Credit Hours	14
Semester 8		
MECH 4400	Polymers/Composites and Processes	3
MECH 4500	Advanced Automation Controls	3
MECH 4505	Advanced Automation Controls Laboratory	1
MECH 4800	Capstone II	3
	Credit Hours	10
	Total Credit Hours	120

Program Learning Outcomes

1. Demonstrate proficiency in basic automation technology subjects including: (a) electronic mathematics, (b) AC and DC circuits and components, (c) computer architecture (d) programmable logic controllers (PLC's), (d) industrial pneumatic and hydraulic systems, and (e) CAD based mechanical design.
2. Demonstrate appropriate technical reading, writing, and communications skills.
3. Demonstrate proficiency in mathematics appropriate for automation technology.
4. Demonstrate proficiency in design, analysis, operation, and troubleshooting of automation systems, including: (a) automation motors (servo, stepper, PMDC, and BLDC), (b) industrial pneumatics (actuators, valves etc.), (c) PID speed and position controls, and (d) kinematics/dynamics of machines (motion analysis, linkages, and mechanisms).
5. Master PLC programming, operation, and structure for automation systems.

Electrical and electronic engineering technologists and technicians

- Total Positions 99,600
- Field Growth 3.0%
- Median Salary \$72,800
- Average Openings 9.5

Electro-mechanical and mechatronics technologists and technicians

- Total Positions 15,800
- Field Growth -1.2%
- Median Salary \$65,080
- Average Openings 1.3