Mechatronics Engineering Technology, B.S.

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		**121**
General Education Requirements		**36 Credits**
ENGL 1010	Introduction to Academic Writing CC	3
or ENGH 1005	Literacies and Composition Across Contexts CC	
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1050	College Algebra QL	4
or MATH 1055	College Algebra with Preliminaries QL	
PHIL 205G	Ethics and Values IH GI	3
HLTH 1100	Personal Health and Wellness TE	2
or EXSC 1097	Fitness for Life TE	
Complete one of the following:		3
HIST 2700 & HIST 2710	US History to 1877 AS and US History since 1877 AS (6)	
HIST 1700	American Civilization AS (3)	
HIST 1740	US Economic History AS (3) (recommended)	
POLS 1000	American Heritage AS (3)	
POLS 1100	American National Government AS (3)	
Distribution Courses:		
Biology (BIOL 1010 Recommended)		3
Physical Science (PHYS 1010 Recommended)		3
Additional Biology or Physical Science		3
Humanities (ENGL 2100 Recommended)		3
Social/Behavioral Science		3
Fine Arts		3
Discipline Core Requirements		**85 Credits**
EGDT 1071	3 Dimensional Modeling--Solidworks	3
MECH 1010	Fundamentals of Engineering Technology	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 and Code	1
MECH 1305	Industrial Wiring and Code Lab	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 WE	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 WE	3
Elective Requirements		6
MECH 481R	Mechatronics Internship (3)	
MECH 490R	Topics in Mechatronics (3)	

Graduation Requirements

1. Completion of 121 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.

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		Credit Hours

ENGL 1010
    or ENGH 1005
	Introduction to Academic Writing CC
	        or Literacies and Composition Across Contexts CC
		3

MATH 1050
    or MATH 1055
	College Algebra QL
	        or College Algebra with Preliminaries QL
		4

MECH 1010	Fundamentals of Engineering Technology	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 and Code	1
MECH 1305	Industrial Wiring and Code Lab	2
MECH 2200	Semiconductors in Mechatronic Systems	3
MECH 2205	Semiconductors in Mechatronic Systems Lab	1
MECH 2300	Microcontroller Architecture and Programming	4
MECH 2305	Microcontroller Architecture and Programming Lab	1
	Credit Hours	**15**

Second Year

Semester 3

HLTH 1100	Personal Health and Wellness TE	2
or EXSC 1097	or Fitness for Life TE	
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	**16**

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 CC	3
Additional Biology or Physical Science		3
Fine Arts		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 WE	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		3
	Credit Hours	**15**

Semester 8

PHIL 205G	Ethics and Values IH GI	3
MECH 4400	Polymers/Composites and Processes	3
MECH 4500	Advanced Automation Controls	3

MECH 4505	Advanced Automation Controls Laboratory	1
MECH 4800	Capstone II WE	3
	Credit Hours	**13**
	Total Credit Hours	**121**

Program Learning Outcomes

1. Demonstrate proficiency in basic automation technology subjectsincluding: (a) electronic mathematics, (b) AC and DC circuits andcomponents, (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,valvesetc.), (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.