

# Engineering Technology

## Engineering Technology

The Engineering Technology department is in the [College of Engineering and Technology](#). To find the most up-to-date information from the Engineering Technology department, visit their website.

[Engineering Technology department](#)

### DEPARTMENT CHAIR

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### FACULTY

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**FRAUGHTON, Travis** *Lecturer*

**HAKALA, Tim** *Assistant Professor*

**HAWKER, John** *Lecturer - Placeholder*

**LUNDAHL, Diana** *Associate Professor*

**PARKER, Trevor** *Lecturer*

**SEARLE, Scott** *Lecturer*

**WALKER, William Scott** *Assistant Professor*

## Degrees & Programs

### Automation and Electrical Technology, A.S.

#### Requirements

The EART program prepares Electrical Automation Technicians to troubleshoot, wire, repair, adapt, maintain, program (PLC's & PAC's), and control large automated electrical systems found in Industrial and Manufacturing Industries worldwide. The EART Technician will work with DC & AC motor controlled machines; Programmable Logic Controlled (PLC's) and Programmable Automation Controlled (PAC's) machines, systems, and devices; Hydraulic and pneumatic controlled machines; conveyor, fluid, and bulk storage systems; flex, soft start, and variable frequency drives; Robots; servo, and stepper motors. Because of their highly skilled hands on training the EART student is in high demand from many industries.

#### Total Program Credits: 60

General Education Requirements:		35 Credits
	<a href="#">ENGL 1010</a> Introduction to Academic Writing	3
or	<a href="#">ENGL 1005</a> Literacies and Composition Across Context (5.0)	
	<a href="#">ENGL 2010</a> Intermediate Writing Academic Writing and Research	3
Complete one of the following:		3
	<a href="#">MAT 1030</a> Quantitative Reasoning (3.0)	
	<a href="#">MAT 1035</a> Quantitative Reasoning with Integrated Algebra (6.0)	
	<a href="#">STAT 1040</a> Introduction to Statistics (3.0)	
	<a href="#">STAT 1045</a> Introduction to Statistics with Algebra (5.0)	
	<a href="#">MATH 1050</a> College Algebra (4.0)	

	<a href="#">MATH 1055</a> College Algebra with Preliminaries (5.0)	
	<a href="#">MATH 1090</a> College Algebra for Business (3.0)	
Complete one of the following:		3
	<a href="#">HIST 2700</a> US History to 1877 (3.0)	
and	<a href="#">HIST 2710</a> US History since 1877 (3.0)	
	<a href="#">HIST 1700</a> American Civilization (3.0)	
	<a href="#">HIST 1740</a> US Economic History (3.0)	
	<a href="#">POLS 1000</a> American Heritage (3.0)	
	<a href="#">POLS 1100</a> American National Government (3.0)	
Complete the following:		
	<a href="#">PHIL 2050</a> Ethics and Values	3
	<a href="#">HLTH 1100</a> Personal Health and Wellness	2
or	<a href="#">PES 1097</a> Fitness for Life (2.0)	
Distribution Courses:		
	Biology	3
	Physical Science	3
	Additional Biology or Physical Science	3
	Humanities Distribution	3
	Fine Arts Distribution	3
	Social/Behavioral Science	3
Discipline Core Requirements:		16 Credits
	Choose from AET or related courses (1000 level or higher)	16
Elective Requirements:		9 Credits
	Electives (1000 level or higher)	9

#### Graduation Requirements:

1. Completion of a minimum of 60 semester credits.
2. Overall grade point average of 2.0 (C) or above with no core course below a C-.
3. Residency hours-- minimum of 20 credit hours through course attendance at UVU.
4. Completion of GE and specified departmental requirements.

### Automation and Electrical Technology, A.A.S.

#### Requirements

The EART program prepares Electrical Automation Technicians to troubleshoot, wire, repair, adapt, maintain, program (PLC's & PAC's), and control large automated electrical systems found in Industrial and Manufacturing Industries worldwide. The EART Technician will work with DC & AC motor controlled machines; Programmable Logic Controlled (PLC's) and Programmable Automation Controlled (PAC's) machines, systems, and devices; Hydraulic and pneumatic controlled machines; conveyor, fluid, and bulk storage systems; flex, soft start, and variable frequency drives; Robots; servo, and stepper motors. Because of their highly skilled hands on training the EART student is in high demand from many industries.

#### Total Program Credits: 65

General Education Requirements:		14 Credits
	<a href="#">ENGL 1010</a> Introduction to Academic Writing	3

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or	<a href="#">ENGH 1005</a>	Literacies and Composition Across Contexts (5.0)	
		Any approved Humanities or Fine Art	3
		Any approved Behavioral Science, Social, or Political Science Distribution Course	3
		Any approved Physical Education, Health, Safety, or Environment Course	2
		Any approved Biology or Physical Science	3
Discipline Core Requirements:			51 Credits
	<a href="#">AET 1050</a>	Electrical Math I	2
	<a href="#">AET 1060</a>	Electrical Math II	2
	<a href="#">AET 1130</a>	Applied DC Theory	1
	<a href="#">AET 1135</a>	Applied DC Lab	1
	<a href="#">AET 1140</a>	Applied AC Theory	1
	<a href="#">AET 1145</a>	Applied AC Lab	2
	<a href="#">AET 1150</a>	Industrial Logic	1
	<a href="#">AET 1155</a>	Industrial Logic Lab	1
	<a href="#">AET 1250</a>	Industrial Electrical Code	2
	<a href="#">AET 1280</a>	Electric Motor Control	4
	<a href="#">AET 1285</a>	Electric Motor Control Lab	4
	<a href="#">AET 2110</a>	Industrial Electronics I	4
	<a href="#">AET 2115</a>	Industrial Electronics I Lab	2
	<a href="#">AET 2250</a>	Industrial Programmable Logic Controllers--PLCs	4
	<a href="#">AET 2255</a>	Industrial Programmable Logic Controllers--PLCs Lab	2
	<a href="#">EGDT 1040</a>	Fundamentals of Technical Engineering Drawing	3
or	<a href="#">EGDT 1071</a>	3 Dimensional Modeling--Solidworks	
	<a href="#">EGDT 1200</a>	Mechanical Drafting and Design	3
Choose 12 Credits from the Following Options:			12
	<a href="#">AET 2010</a>	Manufacturing Technology (1)	
	<a href="#">AET 2015</a>	Manufacturing Technology Lab (2)	
	<a href="#">AET 2150</a>	Introduction to Fluid Power Systems (2)	
	<a href="#">AET 2155</a>	Introduction to Fluid Power Systems Lab (1)	
	<a href="#">AET 2160</a>	Industrial Electronics II (2)	
	<a href="#">AET 2165</a>	Industrial Electronics II Lab (1)	
	<a href="#">AET 2270</a>	Industrial Programmable Automation Controllers--PACs (2)	
	<a href="#">AET 2275</a>	Industrial Programmable Automation Controllers--PACs Lab (1)	
	<a href="#">AET 2280</a>	Process Control Instrumentation (2)	
	<a href="#">AET 2285</a>	Process Control Instrumentation Lab (1)	
	<a href="#">AET 281R</a>	Cooperative Work Experience (1)	
	<a href="#">AET 2900</a>	Capstone Project (3)	
	<a href="#">AET 291R</a>	Special Topics in Industrial Systems (3)	

## Graduation Requirements:

1. Completion of a minimum of 65 semester credits
2. Overall grade point average of 2.0 (C) or above, with no core course below a 'C-'.
3. Residency hours: minimum of 20 credit hours through course attendance at UVU
4. Completion of GE and specified departmental requirements

## Mechatronics Engineering Technology, A.A.S.

### Requirements

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.

### Total Program Credits: 63

General Education Requirements:			18 Credits
	<a href="#">ENGL 1010</a>	Introduction to Academic Writing	3
or	<a href="#">ENGH 1005</a>	Literacies and Composition Across Contexts (5)	
	<a href="#">HLTH 1100</a>	Personal Health and Wellness	2
or	<a href="#">PES 1097</a>	Fitness for Life (2)	
	<a href="#">MATH 1050</a>	College Algebra	4
or	<a href="#">MATH 1055</a>	College Algebra with Preliminaries (5)	
		Humanities (ENGL 2310 Recommended)	3
		Social Science (ECON 1010 Recommended)	3
		Physical Science (PHYS 1010 Recommended)	3
Discipline Core Requirements:			45 Credits
	<a href="#">EGDT 1071</a>	3 Dimensional Modeling--Solidworks	3
	<a href="#">MECH 1010</a>	Introduction to Mechatronics	3
	<a href="#">MECH 1200</a>	Electronics in Automation Design	3
	<a href="#">MECH 1205</a>	Electronics in Automation Design Laboratory	2
	<a href="#">MECH 1300</a>	Industrial Wiring for Mechatronic Systems	1
	<a href="#">MECH 1305</a>	Industrial Wiring for Mechatronic Systems Laboratory	2
	<a href="#">MECH 2200</a>	Semiconductors Used in Mechatronic Systems	3
	<a href="#">MECH 2205</a>	Semiconductors in Mechatronic Systems Lab	1
	<a href="#">MECH 2300</a>	Microcontroller Architecture and Programming	4
	<a href="#">MECH 2305</a>	Microcontroller Architecture and Programming Lab	1
	<a href="#">MECH 2400</a>	Mechanical Components	4
	<a href="#">MECH 2500</a>	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 Laborator	1
MECH 2700	Industrial Motor Control Mechatronic Systems	2
MECH 2705	Industrial Motor Control Mechatronic Systems Laboratory	2

**Graduation Requirements:**

1. Completion of 63 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 20 credit hours through course attendance at UVU.
4. Completion of GE and specified departmental requirements.

## Electrical and Control Technology CA, Certificate of Proficiency

**Requirements**

The Certificate of Proficiency in Electrical and Control Technology CA prepares technicians and technologists to troubleshoot, wire, repair, adapt, install, and maintain electrical and industrial motor control equipment found in many local industries. Knowledge and experience are gained through theory and engaging "hands on" labs that prepare graduates to work safely around industrial and commercial electrical equipment. Electrical DC and AC theory, transformers, circuits, wiring, motors, motor controls, relay logic, logic gates, and the National Electrical Code for commercial and industrial systems is emphasized. Skills are developed in troubleshooting, testing, and analyzing electrical circuits. This is the first employable step in the exciting career path of working with electrically automated equipment.

**Total Program Credits: 21**

Discipline Core Requirements:		21 Credits
AET 1050	AET - Automation and Electrical Technology	2
AET 1060	AET - Automation and Electrical Technology	2
AET 1130	Applied DC Theory	1
AET 1135	Applied DC Lab	1
AET 1140	Applied AC Theory	1
AET 1145	Applied AC Lab	2
AET 1150	Industrial Logic	1
AET 1155	Industrial Logic Lab	1
AET 1250	Industrial Electrical Code	2
AET 1280	Electric Motor Control	4
AET 1285	Electric Motor Control Lab	4

**Graduation Requirements:**

1. Completion of a minimum of 21 semester credits.
2. Overall grade point average of 2.0 (C) or above, with no core course below a 'C-'.
3. All courses must be completed at UVU.

## Mechatronics Engineering Technology, B.S.

**Requirements**

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 programs 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.

**Total Program Credits: 121**

Matriculation Requirements:			
1.	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.		
2.	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.		
General Education Requirements:		36 Credits	
	ENGL 1010	Introduction to Academic Writing	3
or	ENGL 1005	Literacies and Composition Across Context (5.0)	
	ENGL 2010	Intermediate Writing Academic Writing and Research	3
	MATH 1050	College Algebra	4
or	MATH 1055	College Algebra with Preliminaries (5.0)	
	PHIL 205G	Ethics and Values	3
	HLTH 1100	Personal Health and Wellness (2.0)	
or	PES 1097	Fitness for Life	2
Complete one of the following:		3	
	HIST 1700	American Civilization (3.0)	
	HIST 1740	US Economic History (recommended) (3.0)	
	HIST 2700	US History to 1877 (3.0)	
and	HIST 2710	US History since 1877 (3.0)	
	POLS 1000	American Heritage (3.0)	
	POLS 1100	American National Government (3.0)	
Distribution Courses:			
	Biology	BIOL 1010 Recommended	3
	Physical Science	PHYS 1010 Recommended	3
	Science		3

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Humanities	ENGL 2310 Recommended	3
Social Science		3
Fine Arts		3
Discipline Core Requirements:		79 Credits
EGDT 1071	3 Dimensional Modeling--Solidworks	3
MECH 1010	Introduction to Mechatronics	3
MECH 1200	Electronics in Automation Design	3
MECH 1205	Electronics in Automation Design Laboratory	2
MECH 1300	Industrial Wiring for Mechatronic Systems	1
MECH 1305	Industrial Wiring for Mechatronic Systems Laboratory	2
MECH 2200	Semiconductors Used 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
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	Advanced Design in Mechatronic Systems	2
MECH 4305	Advanced Design in Mechatronic Systems 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 Project WE	3
Elective Requirements:		6 Credits
MECH 481R	Mechatronics Internship (3)	6
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.