

TRON, AUTOMATION AND MECHATRONICS AAS (~~95 CREDITS~~) (96 CREDITS)

CIP Code

47.0105

- 6 quarter AAS
- Maximum class size: 20
- Student to teacher ratio: 20:1
- Enrollment Point: Fall, Winter, Spring, Summer
- This program offers hands-on, hybrid, web-enhanced and online courses. Please see course descriptions for more information.
- Program features equipment and software from industry leaders such as Allen Bradley, Rockwell Automation, FANUC Robotics, Bosch, Siemens, Famic Technologies, National Instruments, SMC MAP equipment, and Parker Hydraulics equipment.
- Curriculum is based on guidelines from the National Joint Apprenticeship Training Committee (NJATC) for electrical trades and is part of the Boeing internship program.
- Program participates in Boeing Internship program. Students are required to apply for and orient for this position.

In the Industrial Electronics and Robotics Technician program, students learn to install, diagnose, maintain, modify, test, and calibrate electronic, electrical, and mechanical systems used in manufacturing support equipment and production machinery, including precision machine tools (CNC) and industrial robots. The program consists of a certificate of training in Basic Electricity, a one-year Electrical Technician certificate, and a two-year Industrial Technology degree that prepares students for entry into electrical apprenticeships. Focus is on the intelligent control of machines and processes using programmable logic controllers (PLCs), embedded controllers, variable frequency drives (VFDs), industrial networks, sensors & transducers, instrumentation and robotics. The program also offers in-depth career training for those interested in becoming an electronics technician in the manufacturing, scientific, aerospace, or civilian military industries.

Required Courses

Automation and Mechatronics, TRON (~~95 Credits~~) (96 Credits)

TRON_110	Introduction to Robotics/Automation	1
TRON_111	Industrial Automation and Mechatronics	5
TRON_114	Measurement	4
TRON_117	Introduction to PLC	4
TRON_121	Digital Electronics	5
TRON_124	Pneumatics and Hydraulics	4
TRON_127	Print Reading and Documentation	4
TRON_131	Career Success Seminar	3
TRON_137	Mechanical Systems	5
TRON_141	Sensing our Environment	4
TRON_144	Critical Thought and App.	5
TRON_147	Embedded Controllers	5
TRON_211	Industrial Robotics I	5
TRON_214	Motors & Control Systems	5
TRON_217	Introduction to CNC Machining	3
TRON_221	Shop Floor IT	4
TRON_224	Industrial Robotics II	5
TRON_227	Independent Projects	5

General Education Requirements

10 Credits required from; Humanities, Social Sciences, Natural Sciences, Other

5 Credits required from Quantitative

5 Credits required from Communication/English

Quantitative (5 Credits Required)

<u>MATH_171</u>	Technical Math	5
<u>MATH_172</u>	Business Math	5
<u>MATH&_107</u>	Math in Society	5
<u>MATH&_141</u>	Precalculus I	5
<u>MATH&_142</u>	Precalculus II	5
<u>MATH&_146</u>	Statistics	5
<u>MATH&_151</u>	Calculus	5
<u>MATH&_152</u>	Calculus II	5
<u>MATH&_153</u>	Calculus III	5

Communication (5 Credits Required)

<u>ENGL&_101</u>	English Composition I	5
<u>ENGL&_235</u>	Technical Writing	5

Humanities

10 Credits required from; Humanities, Social Sciences, Natural Sciences, Other

<u>HREL_111</u>	Interviewing and Career Success	5
<u>HUM_&101</u>	Introduction to Humanities	5
<u>CMST&_102</u>	Introduction to Mass Media	5
<u>CMST&_152</u>	Intercultural Communication	5
<u>CMST&_210</u>	Interpersonal Communication	5
<u>CMST&_220</u>	Public Speaking	5
<u>CMST&_230</u>	Small Group Communications	5
<u>CMST&_240</u>	Culture & Diversity in Health Care	5

Natural Sciences

10 Credits required from; Humanities, Social Sciences, Natural Sciences, Other

<u>BIOL_170</u>	Medical Terminology	2
<u>BIOL&_160</u>	General Biology	5
<u>BIOL&_175</u>	Human Biology with Lab	5
<u>BIOL&_241</u>	Human Anatomy and Physiology I	5
<u>BIOL&_242</u>	Human Anatomy and Physiology II	5
<u>BIOL&_260</u>	Microbiology	5
<u>CHEM_&121</u>	General Chemistry	5
<u>CHEM_&131</u>	Introduction to Organic/Biochemistry	5

<u>NUTR& 101</u>	Intro to Nutrition	5
<u>PHYS &114</u>	Introductory Physics I (Algebra based Physics)	5
<u>PHYS &221</u>	Engineering Physics I w/LAB	5
<u>PHYS &222</u>	Engineering Physics II w/LAB	5
<u>PHYS &223</u>	Engineering Physics III w/LAB	5

Social Sciences

10 Credits required from; Humanities, Social Sciences, Natural Sciences, Other

<u>POLS &101</u>	Introduction to Political Science	5
<u>PSYC &100</u>	General Psychology	5
<u>PSYC &200</u>	Lifespan Psychology	5
<u>SOC &101</u>	Introduction to Sociology	5

Note: See a Career Advisor prior to choosing courses that meet general education requirements.

ROBOTICS SPECIALIST CERTIFICATE OF COMPLETION (60 CREDITS)

CIP Code

47.0105

- 4 quarter Certificate of Competency
- Maximum class size: 20
- Student to teacher ratio: 20:1
- Enrollment Point: Fall, Winter, Spring, Summer
- This program offers hands-on, hybrid, web-enhanced and online courses. Please see course descriptions for more information.
- Program features equipment and software from industry leaders such as Allen Bradley, Rockwell Automation, FANUC Robotics, Bosch, Siemens, Famic Technologies, National Instruments, SMC MAP equipment, and Parker Hydraulics equipment.
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In the Industrial Electronics and Robotics Technician program, students learn to install, diagnose, maintain, modify, test, and calibrate electronic, electrical, and mechanical systems used in manufacturing support equipment and production machinery, including precision machine tools (CNC) and industrial robots. The program consists of a certificate of training in Basic Electricity, a one-year Electrical Technician certificate, and a two-year Industrial Technology degree that prepares students for entry into electrical apprenticeships. Focus is on the intelligent control of machines and processes using programmable logic controllers (PLCs), embedded controllers, variable frequency drives (VFDs), industrial networks, sensors & transducers, instrumentation and robotics. The program also offers in-depth career training for those interested in becoming an electronics technician in the manufacturing, scientific, aerospace, or civilian military industries.

Required Courses

Robotics Specialist Certificate of Completion (60 Credits)

TRON_117	Introduction to PLC	4
TRON_124	Pneumatics and Hydraulics	4
TRON_127	Print Reading and Documentation	4
TRON_137	Mechanical Systems	5
TRON_141	Sensing our Environment	4
TRON_147	Embedded Controllers	5
TRON_211	Industrial Robotics I	5
TRON_214	Motors & Control Systems	5
TRON_221	Shop Floor IT	4
TRON_224	Industrial Robotics II	5

General Education Requirements

5 Credits required from Quantitative

5 Credits required from Communication/English

~~10~~ Credits required from; Humanities, Social Sciences, Natural Sciences, Other (5 Credits required from : Hum/SocSci/NatSci/Other)

Quantitative (5 Credits Required)

MATH_171	Technical Math	5
MATH_172	Business Math	5
MATH&_107	Math in Society	5
MATH&_141	Precalculus I	5

<u>MATH& 142</u>	Precalculus II	5
<u>MATH& 146</u>	Statistics	5
<u>MATH& 151</u>	Calculus	5
<u>MATH& 152</u>	Calculus II	5
<u>MATH& 153</u>	Calculus III	5

Communication (5 Credits Required)

<u>ENGL& 101</u>	English Composition I	5
<u>ENGL& 235</u>	Technical Writing	5

Humanities

10 Credits required from; Humanities, Social Sciences, Natural Sciences, Other

<u>HREL 111</u>	Interviewing and Career Success	5
<u>HUM &101</u>	Introduction to Humanities	5
<u>CMST& 102</u>	Introduction to Mass Media	5
<u>CMST& 152</u>	Intercultural Communication	5
<u>CMST& 210</u>	Interpersonal Communication	5
<u>CMST& 220</u>	Public Speaking	5
<u>CMST& 230</u>	Small Group Communications	5
<u>CMST& 240</u>	Culture & Diversity in Health Care	5

Natural Sciences

10 Credits required from; Humanities, Social Sciences, Natural Sciences, Other

<u>BIOL 170</u>	Medical Terminology	2
<u>BIOL& 160</u>	General Biology	5
<u>BIOL& 175</u>	Human Biology with Lab	5
<u>BIOL& 241</u>	Human Anatomy and Physiology I	5
<u>BIOL& 242</u>	Human Anatomy and Physiology II	5
<u>BIOL& 260</u>	Microbiology	5
<u>CHEM &121</u>	General Chemistry	5
<u>CHEM &131</u>	Introduction to Organic/Biochemistry	5
<u>NUTR& 101</u>	Intro to Nutrition	5
<u>PHYS &114</u>	Introductory Physics I (Algebra based Physics)	5
<u>PHYS &221</u>	Engineering Physics I w/LAB	5
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Social Sciences

10 Credits required from; Humanities, Social Sciences, Natural Sciences, Other

<u>POLS &101</u>	Introduction to Political Science	5
<u>PSYC &100</u>	General Psychology	5
<u>PSYC &200</u>	Lifespan Psychology	5
<u>SOC &101</u>	Introduction to Sociology	5

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