

INDUSTRIAL MAINTENANCE TECHNOLOGY

Industrial Maintenance Track

An understanding of the requirements and opportunities in maintenance, good safety practices, pride in workmanship, and an understanding of the principles and accepted practices of the maintenance trade are covered in this program. Students are trained to hold positions in factories, hospitals, hotels, etc., where multi-skilled maintenance personnel are needed. Included are courses in air conditioning, carpentry, electricity, machine tool, metal fabrication, and welding.

Progression in the Industrial Maintenance Track is contingent upon achievement of a grade of "C" or better in each technical course and maintenance of a 2.0 cumulative grade point average or better (on a 4.0 scale). The diploma and certificates within the Industrial Maintenance Track require a "C" or better in each technical course and maintenance of a 2.0 cumulative grade point average or better (on a 4.0 scale).

Advanced Manufacturing Technician Track

Advanced Manufacturing requires demonstrating multiple skills and competencies. Students accepted into this program gain valuable workplace experience, working three (3) days in a manufacturing environment and two (2) days on campus in a manufacturing-based classroom. Critical conceptual components of the track include embedded Safety Culture, Workplace Organization (5S), Lean Manufacturing, Problem Solving and Maintenance Reliability, coupled with Personal Behavior development (Attendance, Communication, Diligence, Teamwork, Initiative, and Interpersonal Relations) within the program pathway. Successful students apply learned skills throughout the program in the campus classroom, campus laboratory and manufacturing workplace. The advanced manufacturing technician (AMT) track develops multiple skills within the industrial maintenance pathway for manufacturing employers.

Progression in the Advanced Manufacturing Technician Track is contingent upon achievement of a grade "C" or better in all courses and maintenance of a 2.0 cumulative grade point average or better (on a 4.0 scale). The diploma and certificates within the Advanced Manufacturing Track require a "C" or better in all courses and maintenance of a 2.0 cumulative grade point average or better (on a 4.0 scale).

AMTEC Track

This program affords students the opportunity to achieve an understanding of the advanced skills needed to obtain a successful career in a constantly changing and globally competitive workforce. Students are trained in the multi-skilled maintenance trade with an emphasis on those skills needed in automotive industrial facilities.

Progression in the Automotive Manufacturing Technical Education Collaborative (AMTEC) Track is contingent upon achievement of a grade of "C" or better in each technical course and maintenance of a 2.0 cumulative grade point average or better (on a 4.0 scale). The diploma and certificates within the Automotive Manufacturing Technical Education Collaborative (AMTEC) track require a "C" or better in each technical course and maintenance of a 2.0 cumulative grade point average or better (on a 4.0 scale).

Advanced Manufacturing Tool and Die Technician Track

The Advanced Manufacturing Tool and Die Technician Track is a program designed to provide a student with a well-rounded skill set that is needed to obtain a career in the advanced manufacturing industry sector. This apprenticeship-style program provides the students the opportunity to work in an advanced manufacturing environment and learn in an advanced manufacturing-based classroom setting. Graduates from this program will have been introduced to critical maintenance skills, positive safety practices, and manufacturing core exercises with an emphasis on the knowledge needed to gain employment in the presswork and die maintenance field.

Progression in the Advanced Manufacturing Tool and Die Technician Track is contingent upon achievement of a grade of "C" or better in all courses and maintenance of a 2.0 cumulative grade point average or better (on a 4.0 scale). The diploma and certificates within the Advanced Manufacturing Track require a "C" or better in all courses and maintenance of a 2.0 cumulative grade point average or better (on a 4.0 scale).

Note: Hours Exception (62-71 for the A.A.S) approved by the KCTCS Board of Regents in December 2014.

Degrees

- Industrial Maintenance Technology - AAS (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-technology-aas/>)
 - Advanced Manufacturing Technician Track (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-technology-aas/#advancedmanufacturingtechniciantrack>)
 - Advanced Manufacturing Tool and Die Technician Track (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-technology-aas/#advancedmanufacturingtoolanddietechniciantrack>)
 - Automotive Manufacturing Technical Education Collaborative (AMTEC) Track (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-technology-aas/#automotivemanufacturingtechnicaleducationcollaborativeamtectrack>)
 - Industrial Maintenance Track (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-technology-aas/#industrialmaintenancetrack>)

Diplomas

- Industrial Maintenance Technician - Diploma (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-technician-diploma/>)

Certificates

- Chemical Operator - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/chemical-operator-certificate/>)
- Controls and Automation Technician - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/controls-automation-technician-certificate/>)

- Electro-hydraulic Technician - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/electro-hydraulic-technician-certificate/>)
- Fluid Power Mechanic - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/fluid-power-mechanic-certificate/>)
- Industrial Maintenance Electrical Mechanic - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-electrical-mechanic-certificate/>)
- Industrial Maintenance Machinists Mechanic - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-machinists-mechanic-certificate/>)
- Industrial Maintenance Mechanic Level I - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-mechanic-level-i-certificate/>)
- Industrial Maintenance Mechanic Level II - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-mechanic-level-ii-certificate/>)
- Industrial Maintenance Robotics Technician - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/industrial-maintenance-robotics-technician-certificate/>)
- Presswork and Die Maintenance Technician Level I - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/presswork-die-maintenance-technician-level-i-certificate/>)
- Presswork and Die Maintenance Technician Level II - Certificate (<https://catalog.kctcs.edu/programs-of-study/aas/industrial-maintenance-technology/presswork-die-maintenance-technician-level-ii-certificate/>)

Approved Technical Electives List

Course	Title	Credits
ACR 100	Refrigeration Fundamentals	3
ACR 101	Refrigeration Fundamentals Lab	2
ACR 102	HVAC Electricity	3
ACR 103	HVAC Electricity Lab	2
ACR 112	Sheet Metal Fabrication	3
ACR 113	Sheet Metal Fabrication Lab	2
ACR 130	Electrical Components	3
ACR 131	Electrical Components Lab	2
ACR 170	Heat Load/Duct Design	3
ACR 200	Commercial Refrigeration	3
ACR 201	Commercial Refrigeration Lab	2
ACR 206	Boilers	5
ACR 207	Commercial HVAC Systems	5
ACR 208	Chillers	4
ACR 209	Manual N Commercial Load Calculation and Design	4
ACR 210	Ice Machines	3
ACR 250	Cooling and Dehumidification	3
ACR 251	Cooling and Dehumidification Lab	2
ACR 260	Heating and Humidification	3
ACR 262	Heating and Humidification Lab	2
ACR 270	Heat Pump Application	3
ACR 271	Heat Pump Application Lab	2
ACR 290	Journeyman Preparation	3

AIT 130	Measurement and Instrumentation	4
AIT 140	Industrial Controls I	4
AIT 150	Industrial Controls II	4
AIT 160	Workplace Safety	1
AIT 200	Process Management and Quality Control	4
BRX 110	Basic Blueprint Reading for Machinist	2
BRX 112	Blueprint Reading for Machinist	4
BRX 120	Basic Blueprint Reading	3
BRX 210	Mechanical Blueprint Reading	2
CAD 100	Introduction to Computer Aided Design ¹	3
CAD 112	Engineering Graphics	4
CAD 120	Introduction to Architecture	4
CAD 150	Programming in CAD	4
CAD 200	Intermediate Computer Aided Drafting	4
CAD 201	Parametric Modeling	4
CAD 212	Industrial Drafting Processes	4
CAD 216	Building Information Modeling	4
CAD 220	Architectural Design	4
CAD 222	Mechanical Design	4
CAD 230	Construction Techniques	4
CAD 240	Advanced Dimensioning and Measurement	4
CAD 292	Industrial Applications	4
CMM 110	Fundamentals of Machine Tools - A	3
CMM 112	Fundamentals of Machine Tools - B	3
CMM 114	Fundamentals of Machine Tools	6
CMM 118	Metrology/Control Charts	2
CMM 120	Applied Machining I	3
CMM 122	Applied Machining II	3
CMM 124	Applied Machining	6
CMM 130	Manual Programming	3
CMM 132	CAD/CAM/CNC	3
CMM 134	Manual Programming CAD/CAM/CNC	6
CMM 138	Intro. to Programming & CNC Machines	6
CMM 150	Shop Theory	2
CMM 151	Machinery's Handbook and Metallurgy	3
CMM 152	Jigs, Fixtures and Gaging	3
CMM 153	Mold Theory	3
CMM 154	Die Theory	3
CMM 210	Industrial Machining I	3
CMM 212	Industrial Machining II	3
CMM 214	Industrial Machining	6
CMM 218	Advanced Machining Techniques for Manufacturing	8
CMM 220	Advanced Industrial Machining I	4
CMM 222	Advanced Industrial Machining II	2
CMM 224	Advanced Industrial Machining	6
CMM 230	Conversational Programming	6
CMM 234	CNC Machines & Coding Practices	6
CMM 240	Introduction to 3-D Programming	6
CMM 244	Advance Programming/Setup Practices	6
CMM 298	Practicum	1
COE 199	Cooperative Education: (Topic)	1-8

DPT 100	Introduction to 3D Printing Technology	3	ELT 118		3
DPT 102	3D Printing Technology Fundamentals	2	ELT 120	Digital I	3
DPT 150	Introduction to Engineering Mechanics for 3D Printing	3	ELT 122	Mechanical Power Transmission Systems	3
DPT 280	Special Projects for 3D Printing, Level I	1	ELT 124	Mechanical Power Transmission Systems Lab	1
EET 100	Electrical Safety in the Workplace	3	ELT 201	Statics and Strength of Materials	4
EET 110	Voice & Data Installer Level I	4	ELT 210	Devices I	4
EET 116	Fiber Optics Systems	3	ELT 214	Devices II	4
EET 119	Basic Electricity	5	ELT 220	Digital II	3
EET 127	Electrical Technology Capstone	1	ELT 222	Mechanics of Telephony	3
EET 148		3	ELT 224	Basic Telecommunications Installation and Maintenance	3
EET 150	Transformers	2	ELT 232	Computer Software Maintenance	3
EET 151	Transformers Lab	1	ELT 234	Computer Hardware Maintenance	3
EET 154	Electrical Construction I	2	ELT 240	Communications Electronics	6
EET 155	Electrical Construction I Lab	2	ELT 244	Electrical Machinery and Controls	4
EET 200	Robotic Systems I	2	ELT 250	Programmable Logic Controllers	4
EET 201	Robotic Systems II	2	ELT 260	Robotic and Industrial Automation	5
EET 202	Robotic Maintenance	2	ELT 261		3
EET 203	Robotic Vision Systems	2	ELT 264		4
EET 250	National Electrical Code	4	ELT 265	Applied Fluid Power	3
EET 252	Electrical Construction II	2	ELT 289	Engineering and Electronics Technology Capstone	1
EET 253	Electrical Construction II Lab	2	FPX 100	Fluid Power	3
EET 254	Electrical Construction	3	FPX 101	Fluid Power Lab	2
EET 255	Electrical Construction Lab	4	IET 104	Blueprint Reading/Schematics	2
EET 264	Rotating Machinery	2	IET 111	Lean Safety Culture	1
EET 265	Rotating Machinery Lab	2	IET 112	Lean Manufacturing Concepts -TPS	1
EET 266	Rotating Machinery and Transformers	3	IET 113	Lean 5S Methodology	1
EET 267	Rotating Machinery and Transformers Lab	3	IET 114	Lean Problem Solving Methodology	1
EET 268	Rotating Machinery Electrical Motor Controls I	3	IET 115	Lean Machine Reliability	1
EET 269	Rotating Machinery and Motor Controls I Lab	4	IMT 100	Welding for Maintenance	3
EET 270	Electrical Motor Controls I	2	IMT 101	Welding for Maintenance Lab	2
EET 271	Electrical Motor Controls I Lab	2	IMT 110	Industrial Maintenance Electrical Principles	3
EET 272	Electrical Motor Controls II	2	IMT 111	Industrial Maintenance Electrical Principles Lab	2
EET 273	Electrical Motor Controls II Lab	2	IMT 115	Maintenance Machining I	2
EET 274	Electrical Motor Controls	3	IMT 116	Maintenance Machining I Lab	5
EET 275	Electrical Motor Controls Lab	4	IMT 120	Industrial Maintenance Rotating Machinery	3
EET 276	Programmable Logic Controllers	2	IMT 121	Industrial Maintenance Rotating Machinery Lab	2
EET 277	Programmable Logic Controllers Lab	2	IMT 138	Lean Manufacturing	5
EET 280	Multi-Platform Programmable Logic Controllers	4	IMT 1381	Safety Culture	1
EET 281	Special Problems I	1	IMT 1382	5S	1
EET 283	Special Problems II	2	IMT 1383	Total Production Management	1
EET 285	Special Problems III	3	IMT 1384	Problem Solving	1
EET 286	Programmable Logic Controllers II	2	IMT 1385	Maintenance Reliability	1
EET 287	Programmable Logic Controllers II Lab	2	IMT 140	Industrial Mechanics	3
EET 290	Troubleshooting Industrial Controls and Motors	4	IMT 141	Industrial Mechanics Lab	1
EET 295	Alternative Energy Photovoltaic and Wind Electrical Generations Systems	4	IMT 150	Maintaining Industrial Equipment I	3
ELT 102	Blueprint Reading	2	IMT 151	Maintaining Industrial Equipment I Lab	2
ELT 103	Introduction to Engineering	3	IMT 160	FANUC Robot Operations	2
ELT 106		2	IMT 161	KUKA Robot Level 1 Robot Operation	2
ELT 110	Circuits I	5	IMT 162	YASKAWA/MOTOMAN Robot Operations	2
ELT 114	Circuits II	5	IMT 198	Practicum	1-8
			IMT 199	Cooperative Education	1-8

IMT 200	Industrial Robotics and Robotic Maintenance	4	WLD 152	Basic Welding B	5
IMT 220	Industrial Maintenance Electrical Motor Controls I	3	WLD 161	Submerged Arc Welding Lab	1
IMT 221	Industrial Maintenance Electrical Motor Controls I Lab	2	WLD 170	Blueprint Reading for Welding	2
IMT 222	Industrial Maintenance Motor Controls II	2	WLD 171	Blueprint Reading for Welding Lab	3
IMT 223	Industrial Maintenance Motor Controls II Lab	2	WLD 181	Advanced Welding Systems Lab	1
IMT 230	Industrial Maintenance of PLCs	5	WLD 198	Special Topics in Welding	1-6
IMT 231	Industrial Maintenance of PLC's Lab	2	WLD 220	Welding Certification	2
IMT 240	Industrial Maintenance Motor Control Concepts	6	WLD 221	Welding Certification Lab	3
IMT 241	Industrial Maintenance Motor Control Concepts Lab	4	WLD 225	Shielded Metal Arc Welding Open Groove Lab	3
IMT 250	Maintaining Industrial Equipment II	2	WLD 227	Shielded Metal Arc Welding Pipe Lab A	3
IMT 251	Maintaining Industrial Equipment II Lab	3	WLD 229	Shielded Metal Arc Welding Pipe Lab B	3
IMT 260	Presswork and Die Maintenance	7	WLD 235	Gas Tungsten Arc Welding Pipe Lab A	3
IMT 280	Advanced Programmable Logic Controllers	3	WLD 237	Gas Tungsten Arc Welding Pipe Lab B	3
IMT 281	Advanced Programmable Logic Controllers Lab	2	WLD 239	Orbital Tube Welding	1
IMT 282	PLC Programming Languages	3	WLD 245	Gas Metal Arc Welding Pipe Lab A	3
IMT 289	Industrial Maintenance Technology Capstone	1	WLD 247	Gas Metal Arc Welding Pipe Lab B	3
IMT 290	Special Problems	1	WLD 251	Welding Automation Lab	1-6
ISM 102	Fundamentals of Instrumentation	4	WLD 253	Pipe Fitting and Template Development Lab	1
ISM 210	Fundamentals of Process Control	4	WLD 298	Welding Practicum	1-6
ISX 100	Industrial Safety	3	WPP 200	Workplace Principles	3
ISX 101	Introduction to Industrial Safety	3			
ISX 105		2			
MFG 265	Robotics and Industrial Automation	4			
MST 200	Advanced Hydraulic Systems	3			
MST 201	Advanced Hydraulic Systems Lab	2			
MST 204	Advanced Pneumatic Systems	3			
MST 205	Advanced Pneumatic Systems Lab	2			
MST 206	Electrohydraulics	3			
MST 207	Electrohydraulics Lab	2			
PLB 150	Plumbing, Introduction to the Trade	3			
PLB 151	Basic Plumbing Skills	3			
PHS 175	Applied Physics	6			
PHX 150	Introductory Physics	3			
PMX 100	Precision Measurement	3			
WLD 100	Oxy-Fuel Systems	2			
WLD 101	Oxy-Fuel Systems Lab	2			
WLD 110	Cutting Processes	2			
WLD 111	Cutting Processes Lab	3			
WLD 120	Shielded Metal Arc Welding	2			
WLD 121	Shielded Metal Arc Welding Fillet Lab	3			
WLD 123	Shielded Metal Arc Welding Groove with Backing Lab	3			
WLD 130	Gas Tungsten Arc Welding	2			
WLD 131	Gas Tungsten Arc Welding Fillet Lab	3			
WLD 133	Gas Tungsten Arc Welding Groove Lab	3			
WLD 140	Gas Metal Arc Welding	2			
WLD 141	Gas Metal Arc Welding Fillet Lab	3			
WLD 143	Gas Metal Arc Welding Groove Lab	3			
WLD 145	Gas Metal Arc Welding Aluminum Lab	1			
WLD 147	Flux Cored Arc Welding Lab	1			
WLD 151	Basic Welding A	2			

¹ or Modules CAD 1001 CAD Basics (0.75 credit hours) - CAD 1004 Dimensioning (0.75 credit hours).