

MJC Electronics Technology Program & Related Maintenance Programs

1 INDUSTRIAL ELECTRONICS AND ELECTRICAL

Certificate & A.S. Degree: Industrial Electronics			
<p>The Electronics Technology Department prepares students in the Industrial Electronics Program for a career in industry as Electronics Technicians, Instrumentation Technicians, and Electricians. Students receive theoretical and laboratory instruction in electrical/electronic principles, analog and digital devices, electrical/electronic systems, computer hardware, industrial equipment and control systems. Consult with an Electronics Faculty for advising on the selection of courses options.</p>			
PROGRAM LEARNING OUTCOMES			
<p>Upon satisfactory completion of this program, the student should be prepared to:</p> <ol style="list-style-type: none"> 1. Perform basic troubleshooting and electrical oriented repairs an installations in accordance to industry standards. 2. Work successfully in the Power Utility, Building Trades, and/or Manufacturing Industry. 3. Comply with current electrical/engineering safety and environmental standards. 			
PROGRAM REQUIREMENTS			
<p>To earn an Associate in Science Degree, the student must complete the MJC Associate Degree Requirements in addition the coursework below. All required and sufficient elective courses in the program must be completed with a C or better.</p>			
REQUIRED COURSES - 28.5 units			Units
ELTEC 200	[1]	Technical Measures & Analysis	3
ELTEC 208	[1]	The World of Electricity and Electronics	3
ELTEC 212	[2, 3]	Digital Principles and Circuits	3
ELTEC 221	[3, 4]	Instrumentation Devices and Systems	3
ELTEC 226	[2, 3]	Motors, Controls and Controllers	3
ELTEC 229	[3, 4]	Commercial & Industrial Wiring	3.5
ELTEC 230	[1, 2, 3]	Blueprint Reading for Electricians	2
ELTEC 232	[2, 3]	Introduction to Programmable Logic Controllers	3

ELTEC 234	[3, 4]	Introduction to PACs:Programmable Automation Controllers	3
ELTEC 236	[3, 4]	HMI & Industrial Communications	2
ELTEC 265	[2, 3, 4]	Troubleshooting Techniques	1
ELTEC 320	[1, 2]	Electrical Safety	1
ELECTIVE COURSES - Complete a minimum of 3 units			
COMPET 206	[1, 2]	Personal Computer Assembly, Upgrading & Repairing	3
COMPET 214	[2, 3]	Microprocessor Programming & Interfacing	4
ELTEC 205	[1, 2]	Electronics Fabrication and Assembly Techniques	3
ELTEC 223	[2, 3]	Industrial Electrical Components and Con	3
ELTEC 321	[3, 4]	Photovoltaic Systems	3
Total Units			33.5 - 34.5

Certificate of Achievement: Electrician

The Electrician program prepares students for careers in electrical installation and repair for the Public Utilities, Manufacturing and Construction industries. Students receive the principles in electricity, wiring, common devices & components and PLCs.

PROGRAM LEARNING OUTCOMES

Upon satisfactory completion of this program, the student should be prepared to:

1. Build circuits for power distribution or motor controls based on a schematic.
2. Perform measurements in a circuit and draw conclusions based on them.
3. Dimension basic components that make up an electrical circuit.

PROGRAM REQUIREMENTS

To earn a Certificate of Achievement in this major, the student must complete all courses listed in required courses category below and the unit minimum from the elective courses category.

Required Courses: Complete 25 units			Units
ELTEC 208	[1]	The World of Electricity and Electronics	3
ELTEC 320	[1]	Electrical Safety	1
ELTEC 230	[1]	Blueprint Reading for Electricians	2
ELTEC 223	[1, 2]	Industrial Electrical Components and Con	3
AGM 225	[1, 2]	Principles of Electrical Wiring	3
ELTEC 226	[2, 3]	Motors, Controls and Controllers	3
ELTEC 265	[2, 3]	Troubleshooting Techniques	1
ELTEC 235	[2, 3, 4]	California Electrical Code	4
ELTEC 232	[3, 4]	Introduction to Programmable Logic Controllers	2
ELTEC 229	[3, 4]	Commercial & Industrial Wiring	3
Elective Courses: Complete a minimum of 5 units			
AGM 262	[NP]	Hydraulics/Pneumatics	3
ELTEC 205	[NP]	Electronics Fabrication and Assembly Techniques	3
ELTEC 212	[2, 3, 4]	Digital Principles and Circuits	3
ELTEC 321	[2, 3, 4]	Photovoltaic Systems	3
ELTEC 221	[3, 4]	Instrumentation Devices and Systems	3
ELTEC 234	[4]	Advanced Topics in Programmable Logic	2
Total Units			30 - 31

Skills Recognition Award: Electrical Installer

This program provides skill preparation courses intended to quickly prepare students to begin their careers in industry as electrician assistants. Students will be exposed to basic safety, electrical theory and wiring techniques.

PROGRAM LEARNING OUTCOMES

Upon satisfactory completion of this program, the student should be prepared to:

1. Perform common tasks related to electrical wiring following safety procedures.
2. Interpret typical schematics used in electrical installations or as descriptions of electrical controls.
3. Perform the required wiring of a standard circuit (e.g.: a 3-way lighting circuit) or a circuit described in an electrical schematic.
4. Demonstrate professional quality and efficient workmanship in wiring assignments produced in lab.

PROGRAM REQUIREMENTS

To earn a Skill Recognition Award as Electrical Installer, the student must complete the requirements detailed in the Career Technical Education Pathway which include completion of the requirements below.

Required Courses: Complete 12 units			Units
ELTEC 208	[1]	The World of Electricity and Electronics	3
AGM 225	[1]	Principles of Electrical Wiring	3
ELTEC 230	[1]	Blueprint Reading for Electricians	2
ELTEC 320	[1]	Electrical Safety	1
ELTEC 229			

A.S. Univ Prep - Area of Emphasis: University Prep - Industrial Arts

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PROGRAM LEARNING OUTCOMES

Upon satisfactory completion of this program, the student should be prepared to:

1. Demonstrate broad systems and technology understanding in various industrial and technical fields.

2. Transfer into an industrial arts, industrial technology or broad based manufacturing 4 year of study program.			
PROGRAM REQUIREMENTS			
To earn an Associate of Arts Degree in this major, the student must complete the requirements detailed in the the University Preparation Pathway which include completion of the requirements below. This degree is specifically designed to meet transfer requirements to a CSU Industrial Arts Program.			
REQUIRED COURSES -			Units
AUTEC 311	[NP]	Basic Automotive Systems	4
CMPET 269	[3, 4]	Networking Devices & Systems	1
CSCI 240	[1, 2]	Networking Essentials	4
CSCI 270	[1, 2]	Introduction to Programming	3
CSCI 271	[3, 4]	Problem Solving and Programming 1	3
ELTEC 208	[1]	The World of Electricity and Electronics	3
ELTEC 212	[2, 3]	Digital Principles and Circuits	3
MACH 211DE	[NP]	Machine Tool Technology 1	4 - 5
WELD 200	[NP]	Arc & Gas Welding	3
Total Units			28 - 29
NOTE: It is highly recommended that students complete the following courses in CSU Graduation Requirement: B1. PHYSICAL SCIENCE - CHEM 143: Introduction to College Chemistry B4. MATH & QUANTITATIVE REASONING - MATH 134: Elementary Statistics			

2 MANUFACTURING & GENERAL MAINTENANCE RELATED PROGRAMS

Certificate of Achievement: Manufacturing Technology (Interdisciplinary)

The Industrial Welding Program supports and maintains a training platform that focuses on the most common welding and sheet metal processes, certifications, and supporting technologies used in industry. The curriculum for the program is concentrated primarily on the Shielded Metal Arc, Gas Tungsten Arc, Gas Metal Arc, Flux Core Arc Welding, Oxy-Acetylene Welding, Oxy-Acetylene and Plasma Cutting. The program's courses expose students to both hands-on, laboratory and lecture learning objectives.

PROGRAM LEARNING OUTCOMES

Upon satisfactory completion of this program, the student should be prepared to:

1. Perform the measuring and calculating of voltages, currents, and resistance in circuits and the wiring application of typical industrial equipment.
2. Perform typical machining, grinding, and threading operations within acceptable tolerances of general manufacturing procedures.
3. Demonstrate proper set-up of SMAW, GMAW, and GTAW equipment and perform typical welding procedures according to general manufacturing codes and standards.

PROGRAM REQUIREMENTS

To earn a Certificate in this major, the student must complete the requirements below:

			Units
AGM 262	[1]	Hydraulics/Pneumatics	3
ELTEC 208	[1]	The World of Electricity and Electronics	3
ELTEC 229	[2]	Commercial & Industrial Wiring	3
ELTEC 265	[1]	Troubleshooting Techniques	1
MACH 301	[1]	Machine Shop 1	3
MACH 302	[2]	Machine Shop 2	3
WELD 200	[1]	Arc & Gas Welding	3
WELD 204	[2]	Gas Metal Arc Welding(G.M.A.W) & Flux Core Arc Welding (F.C.A.W)	3
WELD 206	[2]	Gas Tungsten Arc Welding (G.T.A.W.)	3
Total Units			25

Certificate of Achievement: Maintenance Machinist 2

The Machine Tool Technology program is designed to provide training in the operation of traditional manual as well as computer operated machine tools used to produce the mechanical components used in all industrial applications. Students will receive instruction the use of lathes, milling machines, precision grinders as well as the theory and practice of precision dimensional measurement.

PROGRAM LEARNING OUTCOMES

Upon satisfactory completion of this program, the student should be prepared to:

1. Demonstrate compliance with current machine shop safety and environmental regulations.
2. Perform manual machine shop operations in accordance with industry recognized and accepted practices.

PROGRAM REQUIREMENTS

To earn a Certificate of Achievement the student must complete 21 units from the areas indicated. This series of courses is intended to address the needs of those who are interested in advancing the skills developed in the Maintenance Machinist recognition award program.

REQUIRED COMPETENCIES FOR CERTIFICATE	Units
Successfully Complete MATH 20 Pre-Algebra or Eligibility for MATH 70 by MJC assessment process.	5
Required Courses – Complete 16 units	Units
MACH 301 [1] Machine Shop 1	3
MACH 302 [2] Machine Shop 2	3
MACH 303 [3] Machine Shop 3	3
WELD 200 [2] Arc & Gas Welding	3
MACH 357 [1] Machine Trades Print Reading	2
MACH 395ABC [4] Advanced Mach Tool Technology Lab	2 - 3
ELECTIVE COURSES - Complete 5 units	Units
WELD 204 [3] Gas Metal Arc Welding(G.M.A.W) & Flux Core Arc Welding (F.C.A.W)	3
WELD 206 [4] Gas Tungsten Arc Welding (G.T.A.W.)	3
ELTEC 320 [NP] Electrical Safety	1
ELTEC 265 [NP] Troubleshooting Techniques	1
AGM 214 [NP] Equipment Service and Safety	1
Total Units	21

3 UNIVERSITY TRANSFERRED FOCUS OPTION

A.S. University Prep - Industrial Arts

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CMPET 269	[3, 4]	Networking Devices & Systems	1
CSCI 240	[1, 2]	Networking Essentials	4
CSCI 270	[1, 2]	Introduction to Programming	3
CSCI 271	[3, 4]	Problem Solving and Programming 1	3
ELTEC 208	[1]	The World of Electricity and Electronics	3
ELTEC 212	[2, 3]	Digital Principles and Circuits	3
MACH 211DE	[NP]	Machine Tool Technology 1	4 - 5
WELD 200	[NP]	Arc & Gas Welding	3
Total Units			28 - 29

4 CTE PROGRAM OF STUDY (PATHWAY FROM CERES AND JOHANSEN HIGH)

MJC Electronics Technology Department

Career Technical Education (CTE) Programs of Study

	Ceres High School <i>Chris Vanmeter</i>	Johansen ITEA <i>Michael Catlapp</i>
MJC <i>Jim Howen</i> <i>Adrian DeAngelis</i> <i>Jon Kropp</i> <i>Michael Ryun</i> <i>Marty Mckinsey</i> <i>Aaron Hamilton</i> <i>Tim Vaughan</i> <i>Jose Cazares</i> <i>Barney Gordon</i>	Industrial Electrical (Certificate or Degree) Electrician (Certificate) Electrical Installer (Award) *Manufacturing Technology (Certificate) *Maintenance Machinist	Industrial Electrical (Certificate or Degree) Electrician (Certificate) Electrical Installer (Award) *Manufacturing Technology (Certificate) *Maintenance Machinist
12th Grade	Academy Intro. to Tech Industries	ITEA 3:
11th Grade	Academy Fundamentals of Electricity ELTEC 208: 3 units]	ITEA 2:
10th Grade	Academy Manufacturing Drafting (CAD Drafting, VEX Robotics, Milling, Pneumatics, Mechanics)	ITEA 1:
9th Grade	Manufacturing Technologies Foundation [ELTEC 300: 3 units]	-----

5 ELECTRICIAN TRAINEE DAS #136 COURSES

Modesto Junior College is approved as School #136 and delivers a partial program for “electrician trainees” registered through the Division of Labor Standards. What this means for “electrician trainees” is that there are courses for you to register in to stay active, but the MJC program does not offer a full menu of classes found in an approved full program. This program adheres to California Code of Regulations, Title 8, Section 296.0 (e).

Courses

Year 1
ELTEC 208 - World of Electricity
ELTEC 230-Electrical Safety
ELTEC 230-Electrical Blueprint Reading

Year 2
INTEC 248-National Electrical Code
INTEC 232-Principles of Wiring
HE 100-CPR

Year 3
ELTEC/INTEC 223 - Industrial Electrical Components
INTEC 249 - Analysis of National Electrical Code (Spring only)
ELTEC 260-Troubleshooting Techniques

Year 4
INTEC 306-Occupational Safety
ELTEC 212-Digital Principles and Circuits

Year 5
ELTEC/INTEC 226-Motors, Controls, and Controllers
ELTEC 221-Instrumentation Devices and Systems

Year 6
ELTEC 229-Commercial and Industrial Wiring
INTEC 301-Handability Skills
INTEC 366-Heating, Air Conditioning, & Refrigeration

Year 7
ELTEC 215-Introduction to Semiconductors and Devices

*Courses are subject to change**

Electrician Trainee DAS Program

MODESTO JUNIOR COLLEGE
(Approved School #136)
Call 575-6332 to make an appointment to complete application state and college forms at MJC or you can visit our website
www.mjc.edu/teched.com

STATE
San Francisco Operational Services
455 Golden Gate Avenue, 15th floor
San Francisco, CA 94102
(415) 703-4920
(415) 703-5477 (fax)

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MJC MODESTO JUNIOR COLLEGE

Students, please be aware that not all courses are offered each semester and that courses begin typically on the first day of either summer, fall, or spring semesters (i.e. May/June, August, and January).

When registering please contact Judy Wagner at (209) 575-6332 or visit our Division Office at the Sierra Hall Building on the West Campus.

6 SCHEDULE HAND OUTS

SPRING 2016 SCHEDULE: ELECTRONICS- WEST CAMPUS Rev. D

TIME	MONDAY	TUESDAY		WEDNESDAY	THURSDAY		FRIDAY
8:55		208 Basic DC/AC 9:55			208 Basic DC/AC 9:55		9:00 321 Solar-Patterson
9:55		208 Basic DC/AC LAB			208 Basic DC/AC LAB		11:05
11:05		11:35			11:35		11:05
11:35			11:45 320 Electrical Safety 12:50				321 Solar Lab Patterson
12:45		12:45			12:45		
1:15	1:15 208	Micro-processors 1:45	1:15 1:15 223	1:15	Micro-processors 1:45	1:15 223 1:15	2:10

1:45		Basic DC/AC 3:20		1:50 Micro- processors lab 3:20	205 Fabrication 3:20	Industrial control devices 3:20	208 Basic DC/AC LAB 4:20		1:50 Micro- processors lab 3:20	Industrial control devices LAB 4:20	205 Fabricatio n Lab 4:20	
3:20												
4:20												4:25
5:30	208 Basic DC/AC 7:35	223 Industrial control devices 7:35	221 Instrume ntation 7:35	5:30 229 Industrial Wiring 7:35	232 Intro to PLCs 6:35	265 Trouble- shooting 6:25	226 Motors 7:35	236 HMIs 6:35	5:30 229 Lab Industrial Wiring 10:05	234 Advanced PLCs 6:35		230 Blueprint Reading 6:30
6:45	7:35	7:35	7:35	7:35	6:45	6:35	7:35	6:45	Industrial Wiring	6:45	6:35	
7:45	7:45 208	7:45 223	7:45 221		232 Intro to PLCs lab	7:45 212 Digital lab	7:45 226	7:45 9:50	10:05	234 Advanced PLCs lab	7:45 212 Digital lab	

	Basic DC/AC LAB	Industrial control devices lab	Instrumentation lab		9:50	9:50	Motors lab			9:50	9:50	
9:50												
10:05 10:50							10:50					
	10:50	10:50	10:50									

Available for Night and Swing shift employees
Available for Full-time students
Available for Day and Night shift employees

PROPOSED FALL SCHEDULE: ELECTRONICS- WEST CAMPUS

TIME	MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY	
8:55	223 Industrial control devices 11:00	221 Instrumentation 11:00	230 Blueprint Reading 11:00	208 Basic DC/AC	223 Industrial control devices lab (S102) 12:00	221 Instrumentation Lab 12:00	208 Basic DC/AC		208 Basic DC/AC 11:00	
10:05				208 Basic DC/AC LAB			208 Basic DC/AC LAB			
11:10		265 Troubleshooting 12:10	320 Electrical Safety 12:00						11:10	
11:40										
12:30				212			212		208 Basic DC/AC Lab	
1:15		226 Motors 2:05		Digital 12:30 – 1:35	226 Motors 2:05		Digital 12:30 – 1:35	2:15		
2:05		226 Motors lab 3:45		212 Digital lab 3:35	226 Motors lab 3:45		212 Digital lab 3:35			

3:35										
3:45										
5:30	223 Industrial control devices	229 Industrial Wiring	232 Intro to PLCs	205 Fabrication	229 Industrial Wiring lab	208 Basic DC/AC 7:35	208 Basic DC/AC 7:35	234 Advanced PLCs		
6:35			234 Intro to PLCs lab					232 Advanced PLCs lab		
7:35	223 Industrial control devices lab		Intro to PLCs lab	205 Fabrication Lab	10:05	7:45 208 Basic DC/AC lab	7:45 208 Basic DC/AC lab	Advanced PLCs lab		
	10:50		9:50					9:50		
10:50				10:50		10:50	10:50			

Available for Night and Swing shift employees
Available for Full-time students
Available for Day and Night shift employees

7 ADVISORY LIST

Last Name	First Name	Company	Position	Phone #	Email	Address	City	State	Zi
Albright	Jeff	Modesto City Schools	DAVE	209-576-4702	albritton.j@monet.k12.ca.us	641 Norseman Dr.	Modesto	CA	95
Apodaca	Bob	Saputo Foods	Maintenance Manager	209-862-1732 Ext. 107	rapodaca@saputo.com	691 Inyo St.	Newman	CA	95
Castro	Dan	Lawrence Livermore National Laboratory	Senior Engineering Associate	925-422-3455 925-980-6923	castro1@llnl.gov	P.O. Box 808, L-360	Livermore	CA	94
Coate	John	Hilmar Cheese	Maintenance Manager	209-656-1156	jcoate@himarcheese.com	9001 N. Lander Ave.	Hilmar	CA	95
Coffey	Rick	E&J Gallo Winery			richard.coffey@ejgallo.com	P.O. Box 1130	Modesto	CA	95
DeAngelis	Adrian	MJC	Electronics Instructor	209-575-6088	deangelisa@mjc.edu	435 College Ave.	Modesto	CA	95
Henley	Jeremy	Guntert & Zimmerman Const. Div., Inc.		209-599-0066		222 East Fourth St.	Ripon	CA	95
Howen	Jim	MJC	Electronics Instructor	209-575-6896	howenj@mjc.edu	435 College Ave.	Modesto	CA	95
Krum	Justin	First Light Electric		209-846-7541	JKrum@1stlightenergy.com	3224 McHenry Ave.	Modesto	CA	95

Loogman	George	Satake	Western Services Supervisor	209-551-3203	gloogman@satake-usa.com	1055 Reno Ave.	Modesto	CA	9
Lucas	Matthew	Lawrence Livermore National Laboratory	Engineering Technical Associate	925-422-1949	lucas3@llnl.gov	P.O. Box 808, L-360	Livermore	CA	9
Mahler	Mike	US Farms Systems	Service Manager (Turlock Facility)	559-685-0340	mmahler@usfarmssystem.com	2955 South K St.	Tulare	CA	9
Majewski	Joe	Gallo Glass	Director of Operations	209-341-3633	joseph.majewski@ejgall.com	P.O. Box 1230 605 S. Santa Cruz	Modesto	CA	9
McCown	Kennith	Covanta Energy	Western Region Tech Training	209-837-4423	kmccown@covantaenergy.com	P.O. Box 278	Crows-landing	CA	9
Noreen	RC	Platt Electric	Vice President	916-419-5721	rcnoreen@platt.com	4201 South Market Ct.	Sacramento	CA	9
Nunez	Brandon	Blue Diamond	Plant Manager	209-262-2971	bnunes@bdgrowers.com	1300 N. Washington	Turlock	CA	9
Oxenrider	Jacob	San Luis and Delta-Mendota Water Authority	Plant Foreman		jacob.oxenrider@sldmwa.org	P.O.Box 2157	Los Banos	CA	9
Ryun	Michael	Modesto Irrigation District MJC	MJC Adjunct Instructor	209-575-6332	ryunm@mjc.edu	435 College Ave.	Modesto	CA	9
Scrosati	Steve	ICS Online	Owner	209-599-9775	steve@icsonlineinc.com	P.O. Box 481	Ripon	CA	9

Van Diepen	Doug	Del Monte Foods	Plant Engineer	209-548-5545	Douglas.vandiepen@delmonte.com	4000 Yosemite Blvd.	Modesto	CA	95163
Vanmeter	Chris	Ceres High School	Instructor	209-556-1920	cvanmeter@ceres.k12.ca.us	2320 Central Ave.	Ceres	CA	95307