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### Career Readiness

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## Mechatronics

### Embedded Certificate of Credit Degree Checklist

The Mechatronics Technology Certificate of Credit is for students interested in gaining instruction, knowledge and hands-on training in electronics, mechanics and computers. Successful completion of this Certificate of Credit afford students the opportunity to complete the Level 1 Certification Exam to become a certified Siemens Mechatronics System Assistant.

Mechatronics is a blend of mechanical, electrical and computerized technologies that together form a complex system used by many manufacturing, packaging and other modern operations. The need for skilled individuals to support these systems is on-going.



### Program Description

- Students will develop skills to work as a technician in an integrated multidisciplinary industrial environment
- Instruction in mechatronics provides students with the knowledge and hands-on training in electronics, mechanics and computers to work in a variety of industrial and manufacturing related business
- Upon successful completion of the program, students will be afforded the opportunity to complete the Level 1 Certification Examination to become a certified Siemens Mechatronics System Assistant

### Practical Experience

- Students will be exposed to basic functions of electrical components; the systematic flow of energy and measurement of components
- Students will learn troubleshooting techniques, systematic preventive maintenance and safety with respect to electrical components, pneumatic and hydraulic controls and PLCs used in a mechatronics system
- Students will study the basic pneumatic, electro pneumatic and hydraulic control circuits in a mechatronics system
- Students will study basic digital logic and programmable logic controllers (PLCs) in a mechatronics system using the automation system SIMATIC S7-300 and the programming software STEP7

### Career Opportunities

Our Embedded Certificates of Credit when completed as part of an overall education path toward Associates Degree completion, can qualify students for eventual transfer to any one of Tennessee's four-year college or university programs. Completion of a four-year baccalaureate program or other similar licensure may prepare Mechatronics students for a career as a Mechatronics Engineer.

## Mechatronics Certificate of Credit

Motlow State Community College offers the Mechatronics Technology Certificate for students interested in employment as a technician in an integrated multidisciplinary industrial environment. Instruction in mechatronics provides students with the knowledge and hands-on training in electronics, mechanics and computers to work in a variety of industrial and manufacturing related business. The certificate offers employment preparation opportunities, as well as, the opportunity to upgrade and improve existing skills. Upon successful completion of the program, students will be afforded the opportunity to complete the Level 1 Certification Examination to become a certified Siemens Mechanics System Assistant. This certificate is not covered by Financial Aid.

### ADMISSION TO THE MOTLOW COLLEGE MECHATRONICS CERTIFICATE

#### Application Procedure

- Must be 18 or older to apply unless participating in the high school dual enrollment program
- Apply and be accepted for admission to Motlow State Community College
- Submit the separate Mechatronic Program Application by established deadline
- Take the COMPASS Math examination

#### Selection Criteria

Below are the criteria for acceptance into the Mechatronics program.

- Achieve a minimum score of 15 on the COMPASS math examination.
- For individuals that score equally on the math examination, preference will be given to a certified Trade Adjustment Act worker, a Veteran possessing a DD214 in accordance with the VetGuide Appendix A document, or any other "covered person" under the Jobs for Veterans Act.
- Individuals that score equally on the COMPASS math examination, and without preferential status, the date/time stamp on the emailed letter of acceptance will be used to fill the remaining slots in the classes.

## Mechatronics Certificate of Credit

- MECH 1100 - Electrical Components
- MECH 1200 - Mechanical Components and Electrical Drives
- MECH 1300 - (Electro) Pneumatic and Hydraulic Control Circuits
- MECH 1500 - Digital Fundamentals and Programmable Logic Controllers

## Semester Hours Credit: 16

### DUAL/JOINT ENROLLMENT PROGRAM REQUIREMENTS

Any student seeking to enter the mechatronics certificate program must meet the dual/joint enrollment criteria and have a recommendation by his/her instructor. Dual/Joint enrollment students may be subject to additional entrance criteria on an as needed basis and as established by the program chair.

## Mechatronics Technology A.A.S.

Mechatronics Technology

Career Readiness

Associate of Applied Science Degree

This career program will provide the academic knowledge and practical experience necessary to prepare students for employment as a highly skilled mechatronics technician. The concentration is specifically provided for students who are interested in working as a technician in an integrated multidisciplinary industrial environment. Upon successful completion of the program, students will be afforded the opportunity to complete the Level 2 Certification Examination to become a Siemens Certified Mechatronics Systems Associate. This program is designed for students who do not intend to transfer to a four-year institution.

### ADMISSION TO THE MOTLOW COLLEGE A.A.S. DEGREE IN MECHATRONICS

#### Application Procedure

- Must be 18 or older to apply unless participating in the high school dual enrollment program.
- Apply and be accepted for admission to Motlow State Community College.
- Submit the separate Mechatronic Program Application by established deadline.
- Take the COMPASS examination in all areas or have current ACT scores.

#### Selection Criteria

Below are the criteria for acceptance into the Mechatronic

- Achieve a minimum score of 15 on the COMPASS math examination.
- For individuals that score equally on the COMPASS math examination, preference will be given to a certified Trade Adjustment Act worker, a Veteran possessing a DD214 in accordance with the VetGuide Appendix A document, or any other "covered person" under the Jobs for Veterans Act.
- Individuals that score equally on the COMPASS math examination, and without preferential status, the date/time stamp on the emailed letter of acceptance will be used to fill the remaining slots in the classes.

## GENERAL EDUCATION (15 credit hours)

- ENGL 1010 - English Composition I •
- MATH 1710 - College Algebra/Pre-Calculus I •
- SPCH 1010 - Fundamentals of Speech •

### ONE OF THE FOLLOWING:

- ARTA 1030 - Art Appreciation •

- MUSA 1030 - Music Appreciation •
- THEA 1030 - Introduction to Theatre •

### ONE OF THE FOLLOWING:

- ANTH 2010 - Introduction to Anthropology •
- COMM 1010 - Introduction to Mass Communications•
- ECON 2010 - Macroeconomics •
- ECON 2020 - Microeconomics •
- GEOG 1030 - Cultural Geography •
- GEOG 2010 - World Regional Geography•
- HPE 2340 - Wellness Perspectives and Lifestyles •
- POLS 1030 - American Government •
- POLS 2010 - State and Local Government •
- PSYC 1030 - General Psychology•
- SOCI 1010 - Introduction to Sociology •
- SOCI 1020 - Social Problems•
- SOCI 2010 - Marriage and Family•

### CONCENTRATION REQUIREMENTS (47 credit hours)

- CISP 1010 - Computer Science I
- PHYS 2010 - Non-Calculus Based Physics I •
- MECH 1100 - Electrical Components
- MECH 1200 - Mechanical Components and Electrical Drives
- MECH 1300 - (Electro) Pneumatic and Hydraulic Control Circuits
- MECH 1500 - Digital Fundamentals and Programmable Logic Controllers
- MECH 2100 - Process Control Technologies
- MECH 2200 - Introduction to Totally Integrated Automation
- MECH 2300 - Automation Systems
- MECH 2400 - Motor Control
- MECH 2500 - Mechanics and Machine Elements
- MECH 2600 - Manufacturing Processes

### Semester Hours Credit: 63

#### DUAL/JOINT ENROLLMENT PROGRAM REQUIREMENTS

Any student seeking to enter the mechatronics certificate program must meet the dual/joint enrollment criteria and

have a recommendation by his/her instructor. Dual/Joint enrollment students may be subject to additional entrance criteria on an as needed basis and as established by the program chair.

# Mechatronics Career Path

