MECHATRONICS TECHNOLOGY - MICRO-ELECTROMECHANICAL SYSTEMS, SHORT-TERM TECHNICAL CERTIFICATE

Curriculum Code #6500

Effective May 2024

Division of Engineering, Business and Information Technologies (http://catalog.lorainccc.edu/academic-programs/engineering-business-information-technologies/)

The micro-electromechanical systems (MEMS) short-term technical certificate is structured to provide students with the knowledge and skills necessary to work as an entry-level technician. Training is provided in the fundamental concepts of micro-electromechanical systems, microelectronics, semiconductor wafers, electronic printed circuit board (PCB) hardware, and how these devices are manufactured and fabricated. The student will learn and apply principles in actual cleanroom activities. The program will utilize state-of-the-art laboratory facilities containing equipment for manufacturing, testing, troubleshooting, calibrating, and analyzing electronic hardware, microelectronics, and MEMS systems. Every course in the short-term technical certificate can be applied to the two-year associate of applied science degree in the MEMS major of the mechatronics program. Lorain County Community College has articulation agreements with colleges and universities including programs offered by Lorain County Community College's University Partnership.

First Year

Fall Semester		**Hours**
ELCT 111	ELECTRICAL CIRCUITS I	3
ELCT 115	FABRICATION PROCESS FOR ELECTRONICS	2
MEMS 122	INTRODUCTION TO MICRO-ELECTROMECHANICAL SYSTEMS (MEMS)	4
MEMS 124	PRINTED CIRCUIT BOARD TEST & TROUBLESHOOTING [3]	3
MTHM 155	TECHNICAL MATHEMATICS I	4
SDEV 101	INTRODUCTION TO THE LCCC COMMUNITY [2]	1
	Hours	**17**
	Total Hours	**17**

1

Indicates that this course has a prerequisite.

2

A student must register for the orientation course when enrolling for more than six credit hours per semester or any course that would result in an accumulation of 13 more credit hours.

Program Contact(s):

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For information about admissions, enrollment, transfer, graduation and other general questions, please contact your advising team (https://www.lorainccc.edu/admissions-and-enrollment/advising-and-counseling/).

More program information can be found on our website. (https://www.lorainccc.edu/engineering/mechatronics/micro-electromechanical-systems-mems-short-term-certificate/)

Credit for Prior Learning (PLA) options may be available for your program. For more information, please visit our website: www.lorainccc.edu/PLA (http://www.lorainccc.edu/PLA/)

Program Learning Outcomes

1. An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined
   engineering problems appropriate to the discipline of microelectronics and MicroElectroMechanical Systems (MEMS)..
2. An ability to design solutions for well-defined technical problems and assist
   with the engineering design of systems, components, or processes appropriate to the discipline of microelectronics and MEMS.
3. An ability to apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify
   and use appropriate technical literature.
4. An ability to conduct standard tests, measurements, and experiments and
   to analyze and interpret the results.

Objectives

An accreditable program will prepare graduates with technical skills necessary for entry into industry of the manufacturing, inspecting, testing, rework, and troubleshooting of PCB and related microelectronic products. Graduates of the one year certificate are expected to use introductory skills and techniques in the knowledge of equipment operations, assembly, testing, and troubleshooting of prototyping a PCB and associated microelectronic components.

Program Educational Objectives

1. Use technical skills, techniques, tools and equipment in the field of microelectronics and microsystems.
2. Recognize industry standard terminology materials and processes related
   to microelectronic manufacturing.
3. Assemble and perform verifications such as inspection, testing, and rework
   of functioning printed circuit boards