



**Mechanical Engineering
Technology/Mechatronics Systems
Credential: Diploma in Mechanical Engineering
Technology/Mechatronics Emphasis
D40320M0**

The Mechatronics Systems Technology curriculum prepares graduates for employment as technicians in the electro-mechanical field. Mechatronics technicians assist in design, development, testing, process design and improvement, and troubleshooting and repair of engineered systems. Emphasis is placed on the integration of electronics, microprocessors, and mechanical systems.

In addition to course work in engineering graphics, mechanical and electronic engineering fundamentals, materials and manufacturing processes, students will study computer applications, critical thinking, planning, problem solving, and oral and written communication.

Graduates of the curriculum should find employment opportunities in the manufacturing or service sectors of engineering technology. Engineering technicians can obtain professional certification by application to organizations such as Institute of Electrical and Electronics Engineers (IEEE), American Society for Quality Control (ASQC), Society of Manufacturing Engineers (SME), and National Institute for Certification in Engineering Technology (NICET).

Program Length: 3 semesters

Career Pathway Options: Associate in Applied Science in Mechanical Engineering Technology/ Mechatronics Emphasis, Diploma in Mechanical Engineering Technology/Mechatronics Emphasis
Program Sites: Lee Campus - Day Program

Course Requirements for Mechanical Engineering Technology
Diploma/Mechatronics Emphasis

A. General Education Courses (7 SHC)		C-L-SHC
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
MAT 120	Geometry and Trigonometry	2-2-3

B. Required Major Core Courses (19 SHC)

Required Subject Area

DDF 211	Design Process I	1-6-4
DFT 151	CAD I	2-3-3
DFT 152	CAD II	2-3-3
ELC 111	Introduction to Electricity	2-2-3
MEC 161	Manufacturing Processes I	3-0-3
MEC 231	CAM I	1-4-3

C. Other Major Hours Required for Graduation (14 SHC)		
CIS 111	Basic PC Literacy	1-2-2
DFT 153	CAD III	2-3-3
ELN 110	Survey of Electronics	2-2-3
ELN 133	Digital Electronics	3-3-4
MEC 110	Introduction to CAD/CAM	1-2-2

Total Semester Hours Credit required for graduation: 40

Semester Curriculum for Mechanical Engineering Technology
Diploma/Mechatronics Emphasis

1st Semester (Fall)		C-L-SHC
CIS 111	Basic PC Literacy	1-2-2
DFT 151	CAD I	2-3-3
ELC 111	Introduction to Electricity	2-2-3
MEC 110	Introduction to CAD/CAM	1-2-2
MEC 231	CAM I	<u>1-4-3</u>
		7-13-13

2nd Semester (Spring)		
DFT 152	CAD II	2-3-3
DFT 153	CAD III	2-3-3
ELN 110	Survey of Electronics	2-2-3
ELN 133	Digital Electronics	3-3-4
MAT 120	Geometry and Trigonometry	2-2-3
MEC 161	Manufacturing Processes I	<u>3-0-3</u>
		14-13-19

3rd Semester (Summer)		
DDF 211	Design Process I	1-6-4
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	<u>0-2-1</u>
		4-8-8

Total Semester Hours Credit required for graduation: 40

COURSE DESCRIPTIONS

CIS 111 Basic PC Literacy 1-2-2
This course provides an overview of computer concepts. Emphasis is placed on the use of personal computers and software applications for personal and fundamental workplace use. Upon completion, students should be able to demonstrate basic personal computer skills.

DDF 211 Design Process I 1-6-4
This course emphasizes design processes for finished products. Topics include data collection from manuals and handbooks, efficient use of materials, design sketching, specifications, and vendor selection. Upon completion, students should be able to research and plan the design process for a finished product.

DFT 151 CAD I 2-3-3
This course introduces CAD software as a drawing tool. Topics include drawing, editing, file management, and plotting. Upon completion, students should be able to produce and plot a CAD drawing.

DFT 152 CAD II 2-3-3
This course is a continuation of DFT 151. Topics include advanced two-dimensional, three-dimensional, and solid modeling and extended CAD applications. Upon completion, students should be able to generate and manage CAD drawings and models to produce engineering documents.

DFT 153 CAD III 2-3-3
This course introduces advanced CAD applications. Emphasis is placed upon advanced applications of CAD skills. Upon completion, students should be able to use advanced CAD applications to generate and manage data.

ELC 111 Introduction to Electricity 2-2-3
This course introduces the fundamental concepts of electricity and test equipment to non-electrical/electronics majors. Topics include basic DC and AC principles (voltage, resistance, current, impedance); components (resistors, inductors, and capacitors); power; and operation of test equipment. Upon completion, students should be able to construct and analyze simple DC and AC circuits using electrical test equipment.

ELN 110 Survey of Electronics 2-2-3
This course introduces fundamental electrical and electronic concepts for non-electronic majors. Emphasis is placed on terminology and devices used in basic electronic and digital applications. Upon completion, students should be able to demonstrate a grasp of the fundamentals of modern electronic circuits.

ELN 133 Digital Electronics 3-3-4
This course covers combinational and sequential logic circuits. Topics include number systems, Boolean algebra, logic families, MSI and LSI circuits, AC/DC converters, and other related topics. Upon completion, students should be able to construct, analyze, verify, and troubleshoot digital circuits using appropriate techniques and test equipment.

ENG 111 Expository Writing 3-0-3
Prerequisites: RED 090 and ENG 090 or appropriate placement test scores
Corequisites: ENG 111A
This course is the required first course in a series of two designed to develop the ability to produce clear expository prose. Emphasis is placed on the writing process including audience analysis, topic selection, thesis support and development, editing, and revision. Upon completion, students should be able to produce unified, coherent, well-developed essays using standard written English. *This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in English composition.*

ENG 111A Expository Writing Lab 0-2-1
Prerequisites: RED 090 and ENG 090 or appropriate placement test scores
Corequisites: ENG 111
This writing laboratory is designed to apply the skills introduced in ENG 111. Emphasis is placed on the editing and revision components of the writing process. Upon completion, students should be able to apply those skills in the production of final drafts in ENG 111. The computer is used as a writing and design tool for this course.

MAT 120 Geometry and Trigonometry 2-2-3
Prerequisites: MAT 070, MAT 080, MAT 121, MAT 161, MAT 171, or MAT 175 or appropriate placement test scores
This course introduces the concepts of plane trigonometry and geometry with emphasis on applications to problem solving. Topics include the basic definitions and properties of plane and solid geometry, area and volume, right triangle trigonometry, and oblique triangles. Upon completion, students should be able to solve applied problems both independently and collaboratively using technology.

MEC 110 Introduction to CAD/CAM 1-2-2
This course introduces CAD/CAM. Emphasis is placed on transferring part geometry from CAD to CAM for the development of a CNC-ready program. Upon completion, students should be able to use CAD/CAM software to produce a CNC program.

MEC 161 Manufacturing Processes I 3-0-3
This course provides the fundamental principles of value-added processing of materials into usable forms for the customer. Topics include material properties and traditional and non-traditional manufacturing processes. Upon completion, students should be able to specify appropriate manufacturing processing for common engineering materials.

MEC 231 Comp-Aided Manufact I 1-4-3
This course introduces computer-aided design / manufacturing (CAD / CAM) applications and concepts. Topics include software, programming, data transfer and verification, and equipment setup. Upon completion, students should be able to produce parts using CAD / CAM applications.