

# ADVANCED MANUFACTURING TECHNOLOGY

The Advanced Manufacturing Technology program is first in the State of Texas to gain accreditation through the National Institute for Metalworking Skills (NIMS).

The National Institute for Metalworking Skills (NIMS) is the nation's only ANSI accredited developer of precision manufacturing skill standards and competency assessments. NIMS certifies an individual's skills against standards and accredits programs that meet their quality requirements. NIMS stakeholders represent over 6,000 American companies.

The Precision Manufacturing Certificate program, provides an environment to develop technical skills that are highly marketable to the area's industries. Most of the courses are set up to simulate actual working environments.

Technical coursework begins in the first semester in order to develop a common skill base for the program. During their first semester a student will gain the knowledge necessary to interpret industrial prints, operate machine tools, and utilize software to program Computer Numerical Controlled (CNC) machines.

## Precision Manufacturing Technology

### Certificate

This curriculum offers training on a variety of machine tools commonly used in machine shops and focuses on developing practical machining skills. Classroom analysis of various jobs and machine operations increases the student's capabilities as a machinist. General mathematics and communications skills are included to prepare students to work with technical advances in the machining industry.

Students are eligible to take the National Institute of Metalworking Skills (NIMS) certification exams, which are administered at South Texas College by certified faculty. Upon completion, this specialty will allow the student to continue in the Advanced Manufacturing Technology's two-year Associate of Applied Science Degree program or permit the student to work in a highly rewarding career field.

## Precision Manufacturing Technology

### Associate of Applied Science

This degree is designed to provide students with the opportunity for hands-on experience necessary for employment as a machine operator, with a focus on computer enhanced manufacturing processes. Through the integration of mathematics, metallurgy, programmable machinery, shop skills, and computer-assisted machining techniques, students can acquire the necessary skills for employment in an industrial environment. Graduates are eligible to take the National Institute of Metalworking Skills (NIMS) certification exams, which are administered at South Texas College by certified faculty.

Technical coursework includes: machine tool operation, Computer Numerical Control (CNC) programming and operation, parametric solid modeling, and material testing. Specialty

coursework includes: Computer Aided Drafting (CAD), Computer Aided Manufacturing (CAM), tool and fixture design, and multi-axis machine programming.

## Mechatronics Technology Specialist

### Certificate

This specialization is a blend of mechanics and electronics. Mechatronics implements techniques in robotics, controls theory, computing architecture and electronics technology. This program will prepare students with the hands-on training they need to work in this industry. Graduates may find employment as technicians assisting engineers.

## Advisory Committee Members Advanced Precision Manufacturing Technology

Advisory Committee Chair – Timothy Andre Jones, Mfg. Engineering Manager, Cinch Connectivity  
 Trung Nguyen, Royal Technologies  
 Jesus De Lira, Quality Engineer, Regal Beloit America, Inc.  
 Cliff Mahathey, Director of Operations – EMU Plastics  
 Cesario Pina, Plant Manager – Regal Beloit America, Inc.  
 Lutz Blume, Priority Tooling Solutions, US Inc.  
 Mike Willis, South Texas Manufacturers Association  
 Samuel and Norma Torres, Owners, Amaida Machine Shop

## Mechatronics Technology

Advisory Committee Chair - South Texas Manufacturers Association  
 Alberto Alcantar, Humanetics  
 Dan Robinson, Grand Rapids Foam Technology  
 Timothy Andre Jones, Cinch Connectivity  
 David Martinez, Royal Technologies  
 Juan Luna, General Electric Aviation  
 Paul Harris, Rexnord  
 Robert Ontiveros, South Texas Canteen  
 Tracy Rogers, Worldwide

## Certificates

- Precision Manufacturing Technology Certificate (p. 1)
- Mechatronics Technology Specialist Certificate (p. 2)

## Associate Degree

- Precision Manufacturing Technology Associate of Applied Science (p. 2)

## Precision Manufacturing Technology Certificate

### TSI EXEMPT

Course	Title	Credit Hours
<b>First Semester</b>		
DFTG 1325	Blueprint Reading and Sketching	3
MCHN 1338	Basic Machine Shop I	3
MCHN 1320	Precision Tools and Measurement	3
MCHN 2303	Fundamentals of Computer Numerical Controlled (CNC) Machine Controls	3
Credit Hours		12

**Second Semester**

DFTG 1313	Drafting for Specific Occupations	3
MCHN 1343	Machine Shop Mathematics	3
MCHN 1326	Introduction to Computer-Aided Manufacturing (CAM)	3
MCHN 1352	Intermediate Machining I	3
	Credit Hours	12
	Total Credit Hours	24

**Fourth Semester**

MCHN 1319	Manufacturing Materials and Processes	3
Math and Natural Sciences Elective <sup>1</sup>		3-4
MCHN 2438	Advanced Computer-Aided Manufacturing (CAM)	4
MCHN 2382	CAPSTONE: Tool & Die Technology	3
	Credit Hours	13-14
	Total Credit Hours	60-61

## Mechatronics Technology Certificate

**TSI EXEMPT**

Course	Title	Credit Hours
<b>First Semester</b>		
RBTC 1405	Robotic Fundamentals	4
CETT 1409	DC/AC Circuits	4
CETT 1425	Digital Fundamentals	4
INMT 2303	Pumps, Compressors & Mechanical Drives	3
	Credit Hours	15
<b>Second Semester</b>		
ELMT 1405	Basic Fluid Power	4
RBTC 1401	Programmable Logic Controllers	4
RBTC 1447	Electromechanical Devices	4
CETT 2189	CAPSTONE: Internship	1
	Credit Hours	13
	Total Credit Hours	28

<sup>1</sup> Identifies courses to fulfill minimum 15 credit hour General Education requirement

## Precision Manufacturing Technology Associate of Applied Science

**TSI LIABLE**

Course	Title	Credit Hours
<b>First Semester</b>		
DFTG 1325	Blueprint Reading and Sketching	3
MCHN 1338	Basic Machine Shop I	3
MCHN 2303	Fundamentals of Computer Numerical Controlled (CNC) Machine Controls	3
MCHN 1320	Precision Tools and Measurement	3
	Credit Hours	12
<b>Second Semester</b>		
DFTG 1313	Drafting for Specific Occupations	3
MCHN 1343	Machine Shop Mathematics	3
MCHN 1352	Intermediate Machining I	3
MCHN 1326	Introduction to Computer-Aided Manufacturing (CAM)	3
	Credit Hours	12
<b>Summer Session I</b>		
ENGL 1301	Composition I <sup>1</sup>	3
SPCH 1311	Introduction to Speech Communication <sup>1</sup>	3
Social and Behavioral Sciences Elective <sup>1</sup>		3
	Credit Hours	9
<b>Third Semester</b>		
MCHN 2447	Specialized Tools and Fixtures	4
MCHN 2435	Advanced CNC Machining	4
MCHN 2341	Advanced Machining I	3
Humanities Elective <sup>1</sup>		3
	Credit Hours	14