

# MANUFACTURING INDUSTRIAL ENGINEERING TECHNOLOGY, ASSOCIATE OF APPLIED SCIENCE



The Manufacturing Industrial Engineering Technology program is accredited by ABET (The Accreditation Board of Engineering Technology). Manufacturing is instrumental to the function of society today and will remain indispensable for the future. This program ensures application of appropriate manufacturing processes and cost effective utilization of manufacturing tools, materials, equipment and manpower to manufacture parts and maintain equipment. The program provides graduates with a unique blend of theoretical and hands-on knowledge with computer integration in a manufacturing environment that directly corresponds to modern applications used in industry. Graduates are employed in a wide variety of areas relevant to manufacturing industries.

**Program contact:** Learn more

**This degree program contains one or more embedded certificates which will be automatically awarded when the certificate requirements are completed. If you do not want to receive the embedded certificate(s), please notify the Office of the Registrar at RegistrarOffice@tri-c.edu.**

Learn more about how certificate credits apply to the related degree.

## Related Degrees and Certificates

- 3D Digital Design and Manufacturing Technology, Certificate of Proficiency
- Computer-Aided Drafting (CAD), Certificate of Proficiency
- Computer-Integrated Manufacturing (CIM), Certificate of Proficiency
- Machine Tools Operation, Certificate of Proficiency
- Quality Control, Certificate of Proficiency
- Digital Design & Product Innovation, Short-Term Certificate
- Digital Manufacturing and Product Launch, Short-Term Certificate
- CNC Machining and Composites Manufacturing, Short-Term Certificate

## Related Training and Credentials

- CNC Technology Certificate Program
- Computer Aided Design (CAD) for Professionals
- Right Skills Now CNC Operations Program
- Manufacturing Technical Readiness Program
- Nondestructive Testing (NDT) and Quality Assurance (QA)

## Program Admission Requirements

Applications may be submitted after meeting the following requirements:

- High School Diploma/GED
- Complete ENG-1010 College Composition I or ENG-101H Honors College Composition I
- MATH-0965 Intermediate Algebra with grade of "C" or higher; or qualified Math placement.
- Complete MET-1100 Technology Orientation

## Program Learning Outcomes

This program is designed to prepare students to demonstrate the following learning outcomes:

1. Communicate effectively and efficiently with diverse individuals and teams, all levels of employees, customers, and suppliers by means of verbal, written (memos, reports, emails, etc.), graphics, symbols, and effective listening skills and using appropriate technology.
2. Complete tasks and projects on schedule through the effective use of time management, appropriate math skills, and teamwork that fosters inclusion, synergized efforts in problems identification, and troubleshooting for successful resolution of problems towards the achievement of set goals and objectives.
3. Apply quality systems, principles, concepts and utilize appropriate math, measurement and statistical tools and technology to improve processes, product quality, and to enhance productivity.
4. Incorporate safety awareness, principles and practices in every aspect work and as a way of life, including machine safety, environmental safety, chemical safety, and personal/employee protection.
5. Apply knowledge of machines' principles and operation, tools and materials, requisite mathematics and physics, to select operation parameters in order to program, setup, and operate production manufacturing equipment, and also to be able to, troubleshoot and diagnose both numerically/computer numerically (NC/CNC) controlled machines, and programmable logic controlled (PLC) equipment.
6. Apply the knowledge of material science, machining tolerances, blueprint/schematics, and hands on skills in welding, burning, pipefitting, rigging, the use of basic hand tools and mobile equipment for the fabrication of designed parts incorporating accepted industry methods.
7. Apply the knowledge of the principles of drafting and the communication of ideas, designs and visualization skills as the language of the engineering field, including the creation and interpretation of drawings using proper dimensioning and tolerancing for size and geometry, and use of computer aided drawing programs to incorporate proper industry acceptable standards and conventions.
8. Apply the basic principles of equipment maintenance, troubleshooting and problem solving techniques to maintain industrial machines that ensures the production of quality products.
9. Exhibit independence in the pursuits of continuous professional development.
10. Model ethical behavior in professional responsibilities.

## Suggested Semester Sequence

First Semester		Credit Hours
MATH-1530	College Algebra <sup>1</sup>	4
MET-1100	Technology Orientation	2
MET-1230	Drawing & AutoCAD <sup>2</sup>	3
MET-1120	Computer Applications and Programming	2
MET-1240	Machine Tools and Manufacturing Processes	3
Select one of the following:		3
ENG-1010	College Composition I	
ENG-101H	Honors College Composition I	
<b>Credit Hours</b>		<b>17</b>
Second Semester		Credit Hours
MATH-1540	Trigonometry <sup>1</sup>	3
MET-1300	Engineering Materials and Metallurgy	3
MET-1250	Introduction to Additive Manufacturing	3
MET-1410	Computer Aided Manufacturing Processes	3
MET-2601	3D Solid Modeling	3
<b>Credit Hours</b>		<b>15</b>
Third Semester		Credit Hours
MET-1261	Product Ideation & Design I	3
MET-1270	Additive Manufacturing Processes	3
MET-2160	3D Scanning, Reverse Engineering, and Quality Inspection	3
PHYS-1210	College Physics I <sup>3</sup>	4
Select one of the following:		3
ENG-1020	College Composition II	
ENG-102H	Honors College Composition II	
ENG-2151	Technical Writing	
<b>Credit Hours</b>		<b>16</b>
Fourth Semester		Credit Hours
MET-2422	Fundamentals of Engineering Economics	3
MET-2410	Quality Control and Lean Manufacturing	3
MET-2990	Product Development and Manufacture	3
Arts & Humanities/Social and Behavioral Sciences (see AAS Degree requirements)		3
Select one of the following:		3-4
MET-2151	3D Digital Design & Printing	
PHYS-1220	College Physics II <sup>4</sup>	
<b>Credit Hours</b>		<b>15-16</b>
<b>Total Credit Hours</b>		<b>63-64</b>

<sup>1</sup> MATH-1580 Precalculus or MATH-1610 Calculus I will be accepted in place of MATH-1530 College Algebra & MATH-1540 Trigonometry but an additional 2 credit hours of general electives may be needed.

<sup>2</sup> MET-1220 and MET-1200 together will be accepted in place of MET-1230 Drawing & AutoCAD.

<sup>3</sup> PHYS-2310 General Physics I will be accepted in place of PHYS-1210 College Physics I. PHYS-2310 General Physics I is recommended for students planning to transfer.

<sup>4</sup> PHYS-1220 College Physics II is recommended for students planning to transfer to a four-year program.

Students should select either a Cultural Sensitivity or a Civic Responsibility elective to fulfill their Arts and Humanities/Social and Behavioral Science Requirement.

## Recommended Cultural Sensitivity Electives

Code	Title	Credit Hours
<b>ARTS AND HUMANITIES</b>		
DANC-1100	Dance Appreciation	3
ENG-2430	Introduction to Literature: Drama <sup>1</sup>	3
ENG-2510	African-American Literature I <sup>1</sup>	3
ENG-2520	African-American Literature II <sup>1</sup>	3
ENG-2601	Literature for Children and Adolescents <sup>1</sup>	3
ENG-2700	World Literature <sup>1</sup>	3
ENG-2730	Exploration of World Mythology <sup>1</sup>	3
HIST-2031	Islam to the Modern Middle East	3
HUM-1010	Introduction to Humanities	3
HUM-1020	The Individual in Society	3
HUM-102H	Honors Individual in Society	3
HUM-2030	Culture and Belief	3
THEA-1010	Theatre Appreciation	3
THEA-2210	History of Theatre and Drama I	3
THEA-2220	History of Theatre & Drama II	3
<b>SOCIAL AND BEHAVIORAL SCIENCES</b>		
ANTH-1010	Cultural Anthropology	3
ANTH-2010	Peoples and Cultures of the World	3
HIST-1010	History of Civilization I	3
HIST-1020	History of Civilization II	3
HIST-1510	United States History to 1877	3
POL-2070	International Relations	3
PSY-1010	General Psychology	3
PSY-2020	Life Span Development	4
SOC-2100	Aging and Society	3
SOC-2410	Sociology of Gender	3
SOC-2550	Race and Ethnic Relations	3

## Recommended Civic Responsibility Electives

Code	Title	Credit Hours
<b>ARTS AND HUMANITIES</b>		
HUM-1020	The Individual in Society	3
HUM-102H	Honors Individual in Society	3
HUM-2030	Culture and Belief	3
PHIL-1000	Critical Thinking	3
PHIL-2050	Bioethics	3
<b>SOCIAL AND BEHAVIORAL SCIENCES</b>		
GEOG-2030	Environmental Geography	3
HIST-1510	United States History to 1877	3
HIST-1520	United States History Since 1877	3
HIST-152H	Honors United States History since 1877	3
POL-1010	American National Government	3
POL-101H	Honors American National Government	3
POL-1020	State & Local Government	3

POL-2030	Comparative Politics	3
POL-2070	International Relations	3
UST-1010	Introduction to Urban Studies	3

MATH-1140, MATH-1141, MATH-1200, MATH-1270, and MATH-1280 can no longer count towards fulfilling the college-level mathematics requirement. These courses were re-classified as developmental mathematics by the state of Ohio in 2016. Tri-C established a 5-year transition window for students who had completed these courses prior to 2016 to apply them towards meeting graduation requirements, which expired in Summer 2021. It is highly recommended to see a counselor to determine the appropriate math required for your current major.