

Computer-Integrated Machining Technology

Computer-Integrated Machining Technology curriculum is designed to develop skills in the theory and safe use of hand tools, power machinery, computerized machining equipment, and sophisticated precision measurement instruments. Students learn to interpret blueprints, set up manual and CNC machines, perform basic and advanced machining operations and make decisions to ensure that work quality is maintained. Employment opportunities for machining technicians exist in manufacturing industries, public institutions, government agencies, and in a wide range of specialty machining shops.

The Computer-Integrated Machining Technology Program at Central Piedmont provides students with the opportunity to expand their knowledge and skills in CNC programming and broader knowledge in CNC Graphics Programming. All projects are performed on full-scale industrial equipment used in the local industry.

Information on the Computer-Integrated Machining Technology program is available on the Computer-Integrated Machining Technology website.

For specific information about potential positions and wages in computer-integrated machining employment, visit the Central Piedmont Career Coach website.

Computer-Integrated Machining Technology (A50210)

Degree Awarded

The Associate in Applied Science degree - Computer- Integrated Machining Technology is awarded by the college upon completing the program.

Admissions

- A high school diploma or equivalent is required.
- CPCC placement tests are required in English and mathematics. Developmental mathematics and English courses are available for students to build skills and knowledge.
- Consult with an advisement counselor regarding course placement and attend an orientation session after placement testing.
- Many courses have prerequisites or co-requisites; check the Courses section for details.

Note: Students who do not take program-related courses for two consecutive semesters must reenter the program under the Catalog in effect at the time of reentry.

Contact Information

The Computer-Integrated Machining Technology program is in the Engineering Technologies Division. For more information, call the Program Chair at 704.330.3206.

General Education Requirements

| | | |
|----------------------------|-----------------------------------|-----|
| ENG 111 | Writing and Inquiry | 3.0 |
| ENG 114 | Professional Research & Reporting | 3.0 |
| Select 1 of the following: | | 3.0 |
| COM 110 | Introduction to Communication | |

or COM 231 Public Speaking
 Select 1 of the following: 3.0

MAT 110 Mathematical Measurement and Literacy
 or MAT 121 Algebra/Trigonometry I

Select 1 of the following: 3.0

ART 111 Art Appreciation
 or ART 114 Art History Survey I
 or ART 115 Art History Survey II
 or DRA 111 Theatre Appreciation
 or HUM 120 Cultural Studies
 or HUM 130 Myth in Human Culture
 or MUS 110 Music Appreciation
 or MUS 112 Introduction to Jazz
 or PHI 215 Philosophical Issues
 or PHI 240 Introduction to Ethics
 or REL 110 World Religions

Select 1 of the following: 3.0

ECO 251 Principles of Microeconomics
 or ECO 252 Principles of Macroeconomics
 or HIS 111 World Civilizations I
 or HIS 112 World Civilizations II
 or HIS 131 American History I
 or HIS 132 American History II
 or POL 120 American Government
 or PSY 150 General Psychology
 or SOC 210 Introduction to Sociology

Major Requirements

| | | |
|------------|---|-----|
| MAC 111 | Machining Technology I | 6.0 |
| MAC 142 | Machining Applications II | 4.0 |
| MAC 121 | Introduction to CNC | 2.0 |
| MAC 122 | CNC Turning | 2.0 |
| MAC 131 | Blueprint Reading-Machining I | 2.0 |
| MAC 143 | Machining Applications III | 4.0 |
| MAC 114 | Introduction to Metrology | 2.0 |
| or ISC 212 | Metrology | |
| MAC 152 | Advanced Machining Calculations | 2.0 |
| MAC 124 | CNC Milling | 2.0 |
| MAC 222 | Advanced CNC Turning | 2.0 |
| MAC 224 | Advanced CNC Milling | 2.0 |
| MAC 234 | Advanced Multi-Axis Machining | 3.0 |
| MAC 231 | Cam: Computer Numerical Control Turning | 3.0 |
| MAC 232 | CAM: Computer Numerical Control Milling | 3.0 |
| MAC 228 | Advanced CNC Processes | 3.0 |
| EGR 125 | Appl Software for Tech | 2.0 |
| DFT 154 | Intro to Solid Modeling | 3.0 |

Technical Electives

Select 2 credits from the following: 2.0

ACA 122 College Transfer Success
 ISC 112 Industrial Safety
 MAC 118 Machine Shop Basic
 MEC 180 Engineering Materials
 TDP 110 Introduction to Three Dimensional Printing

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|---------------|--------------------------------------|
| TDP 140 | Precision Three Dimensional Printing |
| WLD 112 | Basic Welding Processes |
| WBL 112 | Work-Based Learning I |
| WBL 122 | Work-Based Learning II |
| Total Credits | 67 |

Computer-Integrated Machining Technology Diploma (D50210)

Computer-Integrated Machining Technology Diploma gives individuals the opportunity to gain entry-level employment in the metalworking industries. Basic knowledge of conventional machine tools, CNC programming, and CNC operations is provided by hands-on activities on equipment commonly used in the industry. Coursework will apply toward a Computer-Integrated Machining Technology A.A.S. Degree program.

Degree Awarded

A Diploma in Computer-Integrated Machining Technology is awarded by the college upon completion of this program.

Admissions

Completion of a high school diploma or the equivalent is encouraged as a foundation of a career in this area. Many courses have prerequisites or co-requisites; check the Course Descriptions section for details.

Note: Students who do not enroll in program-related courses for two consecutive semesters must reenter the program under Catalog program requirements in effect at the time of reentry.

Contact Information

The Computer-Integrated Machining Technology program is in the Engineering Technologies Division. For more information, call the Program Chair at 704.330.6608.

General Education Requirements

| | | |
|---------|---------------------------|-----|
| ENG 111 | Writing and Inquiry | 3.0 |
| SOC 210 | Introduction to Sociology | 3.0 |

Major Requirements

| | | |
|---------------|---------------------------------|-----|
| MAC 111 | Machining Technology I | 6.0 |
| MAC 131 | Blueprint Reading-Machining I | 2.0 |
| MAC 142 | Machining Applications II | 4.0 |
| MAC 114 | Introduction to Metrology | 2.0 |
| MAC 121 | Introduction to CNC | 2.0 |
| MAC 124 | CNC Milling | 2.0 |
| MAC 122 | CNC Turning | 2.0 |
| MAC 143 | Machining Applications III | 4.0 |
| MAC 152 | Advanced Machining Calculations | 2.0 |
| MAC 222 | Advanced CNC Turning | 2.0 |
| MAC 224 | Advanced CNC Milling | 2.0 |
| Total Credits | | 36 |

Computer-Integrated Machining Technology Certificates (C50210)

- Computer-Integrated Machining Technology Certificate with a Specialization in CNC Programming and Operations (C50210-C1) (p. 2)

- Computer-Integrated Machining Technology Certificate Specialization in Basic Machining Skills (C50210-C3) (p. 2)
- Computer-Integrated Machining Technology Certificate with a Specialization in Motorsports Machining Certificate I (C50210-C4) (p. 3)
- Computer-Integrated Machining Technology Certificate with a Specialization in Computer-Integrated Machining Pathway (C50210-C6) (p. 3)
- Computer-Integrated Machining Technology Certificate with a Specialization in Advanced CNC Technology (C50210-C7) (p. 3)
- Computer-Integrated Machining Technology Certificate with a Specialization in Additive Manufacturing (C50210-C8) (p. 3)

Computer-Integrated Machining Technology Certificate with a Specialization in CNC Programming and Operations (C50210-C1)

This certificate provides study in CNC programming and machining operations. Coursework includes manual programming, set-up and operation and provides in-depth study in both 2-D and 3-D Graphics programming. Coursework will apply toward a Computer-Integrated Machining Technology A.A.S. degree program.

Certificate Awarded

A certificate is awarded in CNC Programming and Operations upon completion of this program.

Admissions

- Completion of a high school diploma or equivalent is required as a foundation of a career in this area.
- Individuals entering this certificate program should have a basic knowledge of manual machining and/or minimum experience with CNC machine tools.
- Many courses have prerequisites or co-requisites; check the Courses section for details.

Contact Information

Computer-Integrated Machining Technology Program is in the Engineering Technologies Division. For more information, call the Program Chair at 704.330.6608.

Major Requirements

| | | |
|---------------|---|-----|
| MAC 121 | Introduction to CNC | 2.0 |
| MAC 122 | CNC Turning | 2.0 |
| MAC 124 | CNC Milling | 2.0 |
| MAC 222 | Advanced CNC Turning | 2.0 |
| MAC 224 | Advanced CNC Milling | 2.0 |
| MAC 231 | Cam: Computer Numerical Control Turning | 3.0 |
| MAC 232 | CAM: Computer Numerical Control Milling | 3.0 |
| Total Credits | | 16 |

Computer-Integrated Machining Technology Certificate Specialization in Basic Machining Skills (C50210-C3)

Major Requirements

| | | |
|---------|-------------------------------|-----|
| MAC 111 | Machining Technology I | 6.0 |
| MAC 131 | Blueprint Reading-Machining I | 2.0 |
| MAC 114 | Introduction to Metrology | 2.0 |

| | | |
|---------------|---------------------|-----|
| MAC 121 | Introduction to CNC | 2.0 |
| Total Credits | | 12 |

Computer-Integrated Machining Technology Certificate with a Specialization in Motorsports Machining Certificate I (C50210-C4)

This certificate provides the graduate with basic skills in the set-up and operation of conventional and computer numerical control machine tools used in the Motorsports machining labs.

Certificate Awarded

A certificate is awarded in Motorsports Machining by the college upon completion of the program.

Admissions

Completion of a high school diploma or equivalent is encouraged as a foundation of a career in this area.

Contact Information

Computer-Integrated Machining Technology Program is in the Engineering Technologies Division. For more information, call the Program Chair at 704.330.6608.

Major Requirements

| | | |
|---------------|-------------------------------|-----|
| MAC 111 | Machining Technology I | 6.0 |
| MAC 121 | Introduction to CNC | 2.0 |
| MAC 122 | CNC Turning | 2.0 |
| MAC 114 | Introduction to Metrology | 2.0 |
| MAC 124 | CNC Milling | 2.0 |
| MAC 131 | Blueprint Reading-Machining I | 2.0 |
| Total Credits | | 16 |

Computer-Integrated Machining Technology Certificate with a Specialization in Computer-Integrated Machining Pathway (C50210-C6)

This certificate also is available to students enrolled in Career and College Promise.

Major Requirements

| | | |
|---------------|-------------------------------|-----|
| MAC 111 | Machining Technology I | 6.0 |
| MAC 131 | Blueprint Reading-Machining I | 2.0 |
| MAC 121 | Introduction to CNC | 2.0 |
| MAC 124 | CNC Milling | 2.0 |
| Total Credits | | 12 |

Computer-Integrated Machining Technology Certificate with a Specialization in Advanced CNC Technology (C50210-C7)

This certificate provides the graduate with enhanced skills in the operation and set up of multi-axis CNC machining centers. This certificate provides additional studies in multi-axis CNC machine tool operation.

Certificate Awarded

A certificate is awarded in Advanced CNC Technology by the college upon completion of this program.

Admissions

- Completion of a high school diploma or equivalent is encouraged as a foundation of a career in this area.
- Some courses have pre-requisites; check the Courses section for details.
- This certificate requires the completion of the Computer-Integrated Machining Technology Certificate Specialization in CNC Programming and Operations (C50210-C1) for admission.

Contact information

Computer Integrated Machining Technology Program is in the Engineering Technologies Division. For more information, call the Program Chair at 704.330.6608.

Major Requirements

| | | |
|---------------|---|-----|
| DFT 154 | Intro to Solid Modeling | 3.0 |
| MAC 114 | Introduction to Metrology | 2.0 |
| MAC 228 | Advanced CNC Processes | 3.0 |
| MAC 232 | CAM: Computer Numerical Control Milling | 3.0 |
| MAC 234 | Advanced Multi-Axis Machining | 3.0 |
| Total Credits | | 14 |

Computer-Integrated Machining Technology Certificate Specialization in Additive Manufacturing (C50210-C8)

Major Requirements

| | | |
|---------------|--|-----|
| MEC 111 | Machine Processes I | 3.0 |
| MEC 180 | Engineering Materials | 3.0 |
| TDP 110 | Introduction to Three Dimensional Printing | 3.0 |
| TDP 140 | Precision Three Dimensional Printing | 3.0 |
| Total Credits | | 12 |