

# COMPUTER NUMERICAL CONTROL (CNC) PROGRAMMING AND OPERATIONS ASSOCIATE IN APPLIED SCIENCE

## Program Description

This program teaches machine controls, setting of tools, machine limits and capabilities; creating, editing and debugging high-tech machine programs; focuses on writing programs both manually and utilizing high-end CAD/CAM software; and teaches the basics of 3-axis machining and turning centers up to multi-axis machining and turning centers. This program will also teach the basics of Rapid Prototyping.

### Embedded Certificate

This program contains one or more embedded certificates which will automatically be awarded if the certificate requirements are met unless the student completes and submits the Program of Study Change Form (<https://dynamicforms.ngwebsolutions.com/Submit/Page/?form=cb323104-5510-4a17-9ec2-24b622c51a33&section=164598&page=179074&token=0vrjvDzc3LZCmV640G3NSta6oQoD0c0jwZ1EP5WIo>) requesting to opt out of the embedded certificate.

## Mission Statement

The mission of the Machine Tool Technology program at Greenville Technical College is to provide the college's local service area with a pool of skilled entry-level Machinist, Tool Makers, CNC Operators and CNC Programmers. The program will graduate students who can enter the workforce with little supervision and will be trained on equipment that is current with industry.

## Entrance Requirements

High school diploma or GED

## Type of Program

Day or evening

## Professional Credentials

This associate degree program meets the academic requirements of the South Carolina Chapter of the National Tooling and Machining Association Apprentice Program.

## Employment Opportunities

Large and small machine shops, job shops and manufacturing companies

Visit our web page at <https://www.gvltec.edu/cnc/>.

## Recommended Program Schedule

Listed below is the ideal grouping of courses in order by semester. This plan assumes a full-time schedule. Note, however, that many variables can affect this plan, and not every course is offered every semester. Please see your advisor to map out your own personalized progression toward graduation.

**Note:** Please contact your advisor for recommended evening schedules.

### Preferred Sequence

| First Semester              |  | Hours     |
|-----------------------------|--|-----------|
| MTT 120                     | Machine Tool Print Reading               | 3         |
| MTT 121                     | Machine Tool Theory I                    | 3         |
| MTT 122                     | Machine Tool Practice I                  | 4         |
| ENG 165                     | Professional Communications <sup>1</sup> | 3         |
| <b>Total Semester Hours</b> |  | <b>13</b> |

### Second Semester

|                             |  |           |
|-----------------------------|--|-----------|
| MTT 141                     | Metals and Heat Treatment                          | 3         |
| MTT 126                     | Machine Tool Practice III                          | 4         |
| MTT 241                     | Jigs and Fixtures I                                | 2         |
| MAT 170                     | Algebra, Geometry, and Trigonometry I <sup>1</sup> | 3         |
| <b>Total Semester Hours</b> |  | <b>12</b> |

### Third Semester

|                             |                                |           |
|-----------------------------|--------------------------------|-----------|
| MTT 145                     | Machining of Metals            | 3         |
| MTT 211                     | Die Theory                     | 3         |
| MTT 224                     | Tool and Diemaking Practice II | 4         |
| <b>Total Semester Hours</b> |                                | <b>10</b> |

### Fourth Semester

|                             |  |           |
|-----------------------------|--|-----------|
| MTT 250                     | Principles of CNC                        | 3         |
| MTT 251                     | CNC Operations                           | 3         |
| MTT 254                     | CNC Programming I                        | 3         |
| MTT 243                     | Adv Dimensional Metrology for Machinists | 3         |
| <b>Total Semester Hours</b> |  | <b>12</b> |

### Fifth Semester

|                             |                                      |           |
|-----------------------------|--------------------------------------|-----------|
| MTT 252                     | CNC Setup and Operations             | 4         |
| MTT 255                     | CNC Programming II                   | 3         |
| MTT 245                     | Rapid Prototype Setup and Operations | 3         |
| SOCIAL SCIENCE ELECTIVE     | Social Science Elective <sup>3</sup> | 3         |
| <b>Total Semester Hours</b> |                                      | <b>13</b> |

### Sixth Semester

|                                      |  |           |
|--------------------------------------|--|-----------|
| MTT 261                              | Adv Multi-Axis Program & Operations II | 4         |
| Social Science Elective <sup>3</sup> |  | 3         |
| Humanities Elective <sup>3</sup>     |  | 3         |
| <b>Total Semester Hours</b>          |  | <b>10</b> |

**Total Required Credit Hours 70**

<sup>1</sup> MAT 110 College Algebra recommended if placement allows or considering 4 year transfer

<sup>2</sup> ENG 101 English Composition I is recommended if placement allows or considering 4 year transfer, SPC 205 Public Speaking is required.

<sup>3</sup> See faculty advisor for specific elective recommendations.

Students planning to pursue a Bachelor's degree:

South Carolina Act 26 of 2021, the "REACH Act", requires undergraduate students completing a baccalaureate degree to complete a three-credit course that requires, at a minimum, the reading of the U.S. Constitution, the Declaration of Independence, the Emancipation Proclamation, five Federalist Papers, and one document foundational to the African American Struggle; collectively known as the "Founding Documents." Therefore, students graduating from the BAS.MFG program are required to successfully complete either PSC 201 (American Government) as the social science requirement or one

of the general education elective requirements OR HIS 201 (American History – Discovery to 1877) as the humanities requirement or one of the general education elective requirements.