



**2017-2018 PROGRAM REQUIREMENTS**  
**Degree: Technical Certificate**  
**Program of Study: Manufacturing Technology**  
**Specialization: CAD/CAM**

**About This Major . . .**

Through the use of Computer-aided Manufacturing (CAM) and Computer-aided Design (CAD), the student will learn the techniques of basic drafting principles and methods used in today's manufacturing industry. Dimensioning, and geometric construction will be explored with CAD/CAM software and transferred to Computer Numerical Controlled (CNC) machines to operate machine tools and related machinery in the manufacturing and design of work pieces.

For more information on what you can do with this major, go to <http://www.coloradomesa.edu/wccc/programs.html>.

All CMU certificate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

1. Use written and oral communication skills needed for entry level employment in the manufacturing industry. (Communication Fluency)
2. Apply mathematical concepts to perform machining tasks. (Quantitative Fluency)
3. Distinguish between tolerances and dimensions, as used in the machining industry. (Critical Thinking)
4. Summarize business practices, principles and application of associated technical skill in the machining in industry. (Specialized Knowledge)
5. Apply the necessary machining skill sets to perform specified manufacturing processes. (Applied Learning)
6. Determine ethical and civil responsibility necessary for employees in the machining industry. (Specialized Knowledge)

**Advising Process and DegreeWorks**

This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a certificate. Some courses are critical to complete in specific semesters while others may be moved around. Meeting with an academic advisor is essential in planning courses and discussing the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended certificate.

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a certificate and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

**Graduation Process**

Students must complete the following in the first two months of the semester prior to completing their certificate requirements (for one semester certificates complete in the first week of class):

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at <http://www.coloradomesa.edu/registrar/graduation.html>.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

### **INSTITUTIONAL CERTIFICATE REQUIREMENTS**

The following institutional requirements apply to all CMU technical certificates. Specific programs may have different requirements that must be met in addition to institutional requirements.

- Consists of 5-59 semester hours.
- Primarily 100-200 level courses.
- At least fifty percent of the credit hours must be taken at CMU.
- 2.00 cumulative GPA or higher in all CMU coursework.
- A grade lower than “C” will not be counted toward meeting the requirements.
- A course may only be used to fulfill one requirement for each degree/certificate.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed twenty-five percent of the semester credit hours required for a technical certificate.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Certificate Requirements.
- The Catalog Year determines which program sheet and certificate requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See “Requirements for Undergraduate Degrees and Certificates” in the catalog for a complete list of graduation requirements.

### **PROGRAM-SPECIFIC CERTIFICATE REQUIREMENTS**

- 19 semester hours for the Technical Certificate in Manufacturing Technology – CAD/CAM.

### **TECHNICAL CERTIFICATE: MANUFACTURING TECHNOLOGY - CAD/CAM REQUIREMENTS (19 semester hours)**

- MAMT 105 – Print Reading/Sketching (2)
- MAMT 106 – Geometric Tolerancing (2)
- MAMT 115 – Intro to Machine Shop (3)
- MAMT 251 – CNC Machining I (3)
- Complete one of the following courses:
  - CADT 109 – CAD-Mechanical Advanced (3)
  - ENGR 125 – Computer-Aided Design & Fabrication (3)
- MAMT 148 – CNC Applications (3)
- MAMT 255 – CNC Machining II (3)