



**COWLEY COLLEGE  
& Area Vocational Technical School**

**COURSE PROCEDURE FOR**

**CAD/CAM II  
MTT3573 4 Credit Hours**

**Student Level:**

This course is open to students on the college level in either the freshman or sophomore year and to area high school vocational students.

**Catalog Description:**

**MTT 3573 - CAD/CAM II (4 hrs)**

An advanced class using CAD/CAM and an introduction to the machinery used in the metalworking industry of today, including job planning, assembly, and tooling for production. Skill in the operation of such machines as CNC lathes, and CNC mills.

**Prerequisites:**

MTT3572 CAD/CAM I

**Controlling Purpose:**

This course is an advanced course to offer the student the function of production machinery as applied to the metalworking industry. The curriculum will include skill development in the operation of CAD/CAM programs and operation of such machines as the CNC Mill, CNC Lathe. Students will learn the process of production, from design to implementing the product into production.

**Learner Outcomes:**

After completing this unit the student will be able to draw, program and produce parts similar to what they will see in industry. The student will also demonstrate safety of and use of the equipment to perform linear moves, angular moves, circular movements, CNC lathe turning and threading. In addition the student will demonstrate to other students the skills they need assistance in.

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

**Units Outcomes and Criterion Based Evaluation Key for Core Content:**

The following defines the minimum core content not including the final examination period. Instructors may

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add other content as time allows.

Evaluation Key:

- A = All major and minor goals have been achieved and the achievement level is considerably above the minimum required for doing more advanced work in the same field.
- B = All major goals have been achieved, but the student has failed to achieve some of the less important goals. However, the student has progressed to the point where the goals of work at the next level can be easily achieved.
- C = All major goals have been achieved, but many of the minor goals have not been achieved. In this grade range, the minimum level of proficiency represents a person who has achieved the major goals to the minimum amount of preparation necessary for taking more advanced work in the same field, but without any major handicap of inadequacy in his background.
- D = A few of the major goals have been achieved, but the student's achievement is so limited that he is not well prepared to work at a more advanced level in the same field.
- F = Failing, will be computed in GPA and hours attempted.
- N = No instruction or training in this area.

## UNIT 1: Advanced Milling Operations

Outcomes: Upon completion of this unit, the student will be able to successfully perform operations on both a Hass CNC mill and a Cincinnati CNC mill.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Calculate and set speeds, feeds, and depth of cut for CNC mill.
						Align the vise on the CNC mill.
						Establish zero reference point on work piece to be machined.
						Align CNC Mill axes.
						Align Tool Carriages.
						Set Part Zero.
						Load Programs.
						Find and correct program errors.
						Run Graphics.
						Demonstrate first part run.
						Verify first part.
						Set tool length offsets.
						Load programs from disk and manually.
						Estimate cost of part production.

## UNIT 2: Performing CNC Lathe Machining

Outcomes: Upon completion of this unit the student will be able to successfully use the CNC lathe to produce external and internal threads of various forms, and turn tapers as well as use this skill to help new students to understand the basics of such operations.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Align tools.
						Adjust and set tool X and Z offsets.
						Turn tapers.
						Thread external diameters on the CNC lathe.
						Write and edit programs for threads.
						Cut radius forms.
						Identify machining problems, determine the cause.
						Plan sequence of lathe operations and correct problems.
						Set up CNC lathe for production work.
						Determine availability of machines, supplies, and materials.
						Set and use cutter compensation left and right.
						Load programs from disk and manually

### **Projects Required:**

As assigned

### **Textbook:**

Contact Bookstore for current textbook.

### **Materials/Equipment Required:**

None

### **Attendance Policy:**

Students should adhere to the attendance policy outlined by the instructor in the course syllabus.

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**Grading Policy:**

The grading policy will be outlined by the instructor in the course syllabus.

**Maximum class size:**

Based on classroom occupancy

**Course Timeframe:**

The U.S. Department of Education, Higher Learning Commission and the Kansas Board of Regents define credit hour and have specific regulations that the college must follow when developing, teaching and assessing the educational aspects of the college. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one semester hour of credit or an equivalent amount of work over a different amount of time. The number of semester hours of credit allowed for each distance education or blended hybrid courses shall be assigned by the college based on the amount of time needed to achieve the same course outcomes in a purely face-to-face format.

**Refer to the following policies:**

[402.00 Academic Code of Conduct](#)

[263.00 Student Appeal of Course Grades](#)

[403.00 Student Code of Conduct](#)

**Disability Services Program:**

Cowley College, in recognition of state and federal laws, will accommodate a student with a documented disability. If a student has a disability, which may impact work in this class which requires accommodations, contact the Disability Services Coordinator.