



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**CNC MACHINING
MTT3570 3 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 3570 - CNC MACHINING (6 hrs)

This is an advanced course in CNC programming using the Haas control, O'Kuma L518 Cincinnati 850, and the General Numeric (Fanuc) GN6 control. Instruction will cover CNC programming of a lathe and milling machine.

Prerequisites:

MTT3567 Machining IV

Controlling Purpose:

This lab course is intended to provide the student with the advanced knowledge, concepts, and principles of computerized numerical control machining (CNC).

Learner Outcomes:

After completing this unit the student will be able to demonstrate the use of the CNC milling machine and the CNC lathe as well as write and proof programs for both types of CNCs.

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 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.

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DISCLAIMER: THIS INFORMATION IS SUBJECT TO CHANGE. FOR THE OFFICIAL COURSE PROCEDURE CONTACT ACADEMIC AFFAIRS.

- 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: CNC Vertical Machining Centers

Outcomes: Upon completion of this unit, the students will be able to successfully perform set-ups of both the Cincinnati Mill and the Haas machining centers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Read job orders and process sheets to determine tooling and set-up information.
						Load tools in tool drum.
						Load tools in turret.
						Dial cutter compensation.
						Load program in computer.
						Set controls to operating position and start machine.
						Dry run machine with machine locked.
						Machine first piece to verify accuracy of set-up.
						Change cutting tools.
						Change or replace cutting tool.
						Adjust cutter compensation 10 and Interpret operator related messages on screen.
						Edit program.
						Initiate program restart from zero.
						Interrupt cycle.
						Differentiate between machine controls.
						Modify manual data input program.
						Perform drilling operations.

						Perform boring operations.
						Perform reaming operations.

UNIT 2: CNC Lathe

Outcomes: Upon completion of this unit, the student will be able to successfully demonstrate set-ups and turning operations on the Baxter CNC lathe using the Fanuc NC6 controller.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Turn on/off power.
						Call up program in distributed numerical control.
						Key in program on machine.
						Align holding device with machine axis.
						Clamp dial indicator to tool holder.
						Change tool holder.
						Adjust tool offset manually.
						Control spindle speed over-ride.
						Control feed-rate over-ride.
						Activate automatic cycle mode.
						Interrupt automatic cycle mode manually.
						Set manual mode control.
						Select manual feed/jog mode.
						Perform sequence search.
						Interpret status lights.
						Change spindle speed.

						Check cutting fluids.
						Check surface finish.
						Check cut dimension.
						Index turret.
						Set cycle dwell.
						Adjust depth of cut.
						Reset tool cycle time.

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.

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.