



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**SURFACE TOOLPATHS
MTT3554 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 3554 - SURFACE TOOLPATHS (3 hrs)

This is an advanced course designed to give the student an understanding on surface machining. It will build on information from the beginning classes and on wireframe/surface creation.

Prerequisites:

MTT3553 3D Wireframe Drawing and Surfaces or instructor approval.

Controlling Purpose:

This course is designed to help the student increase his/her knowledge concerning the use of Mastercam to program complicated parts for machining and to make efficient use of machining time.

Learner Outcomes:

Upon completion of the course, the student will be able to create programs, using surfaces that will run efficiently on CNC machine tools.

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.

Rev: 6/01/2016

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- 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: Generate Roughing Toolpaths
 Outcomes: Upon completion of this course, the student will be able to demonstrate the ability to describe the 8 surface roughing functions, create surface toolpaths, and verify them.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain the 8 surface roughing functions.
						Describe the features of the eight surface roughing functions.
						List the parameters used in surfacing toolpath function.
						Demonstrate each of the surface roughing functions.
						Demonstrate verifying roughing toolpath.

UNIT 2: Finish Surface Toolpaths

Outcomes: Upon completion of this course, the student will be able to demonstrate the ability to create surface finish toolpaths, set stock parameters, and verify toolpaths.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						List the restmaterial parameters.
						Explain how mastercam computes remaining stock.
						Verify finish toolpaths.

UNIT 3: Surfaces

Outcomes: Upon completion of this course, the student will be able to demonstrate the ability to explain what drive surface, open edges, max step-down parameter, causes of gaps, and demonstrate the use of check surfaces.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain what a drive surface is.
						Demonstrate the use of check surfaces.
						Explain the max stepdown parameter.
						Explain possible causes of gaps.
						Explain what is meant by open edges.

Projects Required:

As assigned by instructor.

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.