



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**QUALITY CONTROL AND INSPECTION
MTT3564 1 Credit Hour**

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 3564 - QUALITY CONTROL AND INSPECTION (1 hr)

Students have the opportunity to learn the processes of inspection and are introduced to geometric dimensions and tolerances. Students are introduced to the science of dimensional metrology and its applications to ensure form and function of machined parts and assemblies using semi-precision and precision measuring instruments.

Prerequisites:

None

Controlling Purpose:

Students are introduced to the science of dimensional metrology and its applications to ensure form and function of machined parts and assemblies using semi-precision and precision measuring instruments.

Learner Outcomes:

- A. Operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines.
- B. Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings and shop sketches.
- C. Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.
- D. Apply safety principles in a work environment to minimize hazards and prevent losses to productivity.
- E. Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields.
- F. Use CAD and CAM programs to design parts and program manufacturing machines.

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

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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.
- 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: Perform First Piece Inspection						
Outcomes: Upon completion of this course students will be able to demonstrate how to perform first piece inspection using micrometers, calipers, blueprints, height gauges, and telescoping gauges.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Select the proper measuring tool to inspect first piece and verify that it is within tolerance.
						Identify if part is out of specification and if it can be reworked to make it within specifications.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 2: Inspect Surface Finishes

Outcomes: Upon completion of this course students will be able to demonstrate how to inspect surface finishes using comparator gauges.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify the surface finish required and compare it to surface gauges. Verify if surface finish is with specifications.
						Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields.

UNIT 3: Inspect Parts Using Radius Gauges

Outcomes: Upon completion of this course students will be able to demonstrate how to inspect radii with radius gauges.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify radius specifications and utilize proper radius gauge for inspection.
						Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields.

UNIT 4: Inspecting Parts Using Angle Gauges

Outcomes: Upon completion of this course students will be able to demonstrate how to inspect angles using angle gauges.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify angle specifications and utilize the proper angle gauge for the application.
						Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields.

UNIT 5: Inspect Parts Using Dial Indicators

Outcomes: Upon completion of this course students will be able to demonstrate how to inspect parts using various dial indicators.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize the proper dial indicator for inspection.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 6: Measure Parts Using Vernier Measuring Tools

Outcomes: Upon completion of this course students will be able to demonstrate how to measure parts using vernier calipers and vernier height gauges.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize the vernier measuring tool needed for inspection.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 7: Measure Parts Using Special Micrometers

Outcomes: Upon completion of this course students will be able to demonstrate how to measure parts using inside micrometers and thread micrometers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize the proper micrometer for inspection.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 8: Measure Parts Using Telescoping Gauges

Outcomes: Upon completion of this course students will be able to demonstrate how to measure holes with telescoping gauges and micrometers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize the proper size telescoping gauge for inspection.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 9: Measure Parts With Height Gauges

Outcomes: Upon completion of this course students will be able to demonstrate how to measure parts using vernier and dial height gauges.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize the height gauge for inspection.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 10: Measure Threads

Outcomes: Upon completion of this course students will be able to demonstrate how to measure threads using thread wires and thread micrometers

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize the proper method of measuring for the accuracy indicated in the specifications.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 11: Measure Parts Using Small Hole Gauges

Outcomes: Upon completion of this course students will be able to demonstrate how to use go and no go hole gauges.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize the proper gauges for inspection.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 12: Measure Parts Using Dial Calipers

Outcomes: Upon completion of this course students will be able to demonstrate how to measure parts with dial calipers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize dial calipers for inspection.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 13: Measure Parts Using Outside Micrometers

Outcomes: Upon completion of this course students will be able to demonstrate how to measure parts with outside micrometers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize outside micrometers for inspection.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 14: Measure Parts Using Depth Micrometers

Outcomes: Upon completion of this course students will be able to demonstrate how to measure parts using depth micrometers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize depth micrometers for inspection.
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 15: Inspect Parts With Comparison Measuring Tools

Outcomes: Upon completion of this course students will be able to demonstrate how to inspect parts using comparison measuring tools.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify specifications and utilize the proper comparison measuring tools for inspection.
						Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields.

UNIT 16: Determine What To Do With A Part That Does Not Meet Specifications

Outcomes: Upon completion of this course students will be able to demonstrate what to do with a part that does not meets specifications.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking.

UNIT 17: Clean And Store Precision Measuring Tools

Outcomes: Upon completion of this course students will be able to demonstrate how to clean and store precision measuring tools such as gauge blocks.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Apply safety principles in a work environment to minimize hazards and prevent losses to productivity.
						Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields.
						Demonstrate how to clean and store precision measuring tools.

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.