



South Central College

# MTT 1210 Concept Engineering I

## Course Outcome Summary

### Course Information

<b>Description</b>	In this course, students will continue developing their understanding of machining and use of tools. Their skills are more fully developed in terms of lathe, milling, grinding and drill press. Hands-on experience and practical application opportunities allow students to increase proficiency with machine tools. (Prerequisites: MTT 1130 and MTT 1140)
<b>Total Credits</b>	4
<b>Total Hours</b>	96

### Types of Instruction

Instruction Type	Credits/Hours
Lecture	2/32
Lab	2/64

### Pre/Corequisites

MTT 1130 and MTT 1140

### Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

### Course Competencies

#### 1. Exhibit safe practices in the shop

##### Learning Objectives

- Demonstrate use of Personal Protective Equipment (PPE)
- Adapt PPE as needed
- Explain OSHA guidelines and apply to shop situations

#### 2. Explain a variety of symbols and notations used on machining prints

##### Learning Objectives

Identify different nomenclature of engineering drawings  
Differentiate between symbols and notations and their meaning

**3. Interpret usage of tolerances**

**Learning Objectives**

Compare bilateral and unilateral tolerances  
Identify limit tolerances  
Formulate appropriate application of Maximum Material Condition (MMC)

**4. Use planning methods that ensure quality**

**Learning Objectives**

Calculate average and standard deviation  
Utilize sampling and inspection plans to check quality

**5. Explain major machine tools**

**Learning Objectives**

Discuss the different uses for machines  
Differentiate hand tools  
Identify proper use for lathe, mill, drills and tooling

**6. Demonstrate precision layout**

**Learning Objectives**

Use height gage as needed  
Demonstrate the use of the precision angular and vernier bevel protractor  
Use sine tools

**7. Demonstrate clamping and workholding skills**

**Learning Objectives**

Differentiate between C-clamp, parallel clamp and hinged clamp  
Select appropriate clamp or workholding for a given task  
Use clamps and workholding fixtures

**8. Identify pedestal grinder parts**

**Learning Objectives**

Label basic components of the pedestal grinder  
Identify major safety components of the pedestal grinder

**9. Identify surface grinder parts**

**Learning Objectives**

Label basic components of the surface grinder  
Identify safety features and guards on the surface grinder

**10. Demonstrate dressing grinding wheels properly**

**Learning Objectives**

Use diamond to dress surface grinder wheels  
Use dresser to dress pedestal grinder wheels

**11. Demonstrate tool grinding**

**Learning Objectives**

Grind drill bits  
Grind high speed steel lathe tools

**12. Apply engineering drawing specifics to projects**

**Learning Objectives**

Utilize information to determine steps of projects  
Develop a plan based on print components  
Consult drawing to create parts

## **SCC Accessibility Statement**

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: [www.southcentral.edu/disability](http://www.southcentral.edu/disability)

This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.