



South Central College

MTT 2110 Concept Engineering II

Course Outcome Summary

Course Information

Description	This course is an introduction to the grinding process as it pertains to machining. This includes an understanding of using pedestal grinders and an introduction to surface grinding. Fundamentals of grinding, such as appropriate wheel identification and use, will be addressed. Proper set-up, operation and safety of the bench, pedestal and surface grinders will be introduced in a lab setting. (Prerequisite: MTT 1210)
Total Credits	4
Total Hours	96

Types of Instruction

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

Pre/Corequisites

MTT 1210

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. Grind parts on surface grinder within a tolerance of +/- .001"

Learning Objectives

Demonstrate the correct way to touch wheel off on part
Use appropriate depth of cut

2. Discern surface finish problems

Learning Objectives

Identify a loaded wheel
Identify different surface finishes

3. Discuss the purpose and functions of jigs and fixtures

Learning Objectives

Utilize the objectives of tool design
Describe the design intent and operation

4. Identify types of functions of jigs and fixtures

Learning Objectives

Describe the different styles of jigs and fixtures
Identify applications of specific jigs and fixtures

5. Describe supporting and location principles

Learning Objectives

Identify the types of locators and supports used in jigs and fixtures
Discuss the use of locators and supports

6. Discuss clamping and workholding principles

Learning Objectives

Explain the basic principles of workholding devices
Identify the types of workholding devices

7. Discuss basic construction principles of jigs and fixtures

Learning Objectives

Identify various drill bushings
Discuss the proper placement and clearance for drill bushings

8. Discuss design economics

Learning Objectives

Identify the principles of design economics
Complete an economic analysis of a tool design

9. Explain how to develop an initial design

Learning Objectives

Discuss how designs for jigs and fixtures are planned
Discuss human factors involved in tool design
Identify safety factors related to tool design

10. Discuss jig and fixture tool drawings

Learning Objectives

Identify types of tool drawings
Discuss methods to simplify tool drawings
Identify dimensional forms

11. Identify wheel composition

Learning Objectives

Read wheel identification from blotter
Identify max recommended revolutions per minute (RPM) from blotter
Name major wheel composition

12. Install grinding wheel

Learning Objectives

Demonstrate proper ring test of wheel
Identify wheel for defects

13. Identify electrical discharge machine (EDM) (wire/sinker)

Learning Objectives

Use EDM holding accessories
Demonstrate wire EDM operation on projects
Describe EDM sinker operation

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

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