South Central College

CIM 2207  Machining & Process Theory

Common Course Outline

Course Information

Description  This course explores concepts in machining such as raw materials, heat treatment, standard and digital gages. Students will have hands-on opportunities in a lab setting to interact with the concepts. Teamwork and critical thinking are emphasized in this course.
(Prerequisite: CIM 2108 - Applications II)

Total Credits  2.00
Total Hours  48.00

Types of Instruction

Instruction Type | Credits/Hours
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Lecture | 1/16
Lab | 1/32

Pre/Corequisites

Prerequisite  CIM 2108 - Applications II

Institutional Core Competencies

Analysis and inquiry: Students will demonstrate an ability to analyze information from multiple sources and to raise pertinent questions regarding that information.

Critical and creative thinking: Students will develop the disposition and skills to strategize, gather, organize, create, refine, analyze, and evaluate the credibility of relevant information and ideas.

Teamwork and problem-solving: Students will demonstrate the ability to work together cohesively with diverse groups of persons, including working as a group to resolve any issues that arise.

Course Competencies

1  Differentiate raw material composition.
   Learning Objectives
   - Describe ferrous and nonferrous metals.
   - Explain tempering.
   - Characterize Hardness Scales.
   - Test a variety of specimen.

2  Compare and contrast heat treating methods.
   Learning Objectives
Define oil-quench tool steel.
Define water-quench tool steel.

3 **Categorize heat treatment of metals.**

Learning Objectives
Distinguish between direct, surface, and case hardening.
Describe tempering, anodizing, and normalizing.
Analyze hardness scales and testing.

4 **Choose proper heat treating temperatures.**

Learning Objectives
Locate material preheat temperature.
Determine material critical temperature.
Select appropriate temperature for a given task.

5 **Explain gage blocks.**

Learning Objectives
Identify gage blocks and their uses.
Define gage block ringing.
Perform gage block ringing.

6 **Identify characteristics of gage blocks.**

Learning Objectives
Define digital gage and precision gage.
Calculate gage block stack.
Describe preventative gage block maintenance.

7 **Illustrate precision height gage measurements.**

Learning Objectives
Identify precision height gage.
Describe use of precision height gage.
Perform measurement with precision height gage.

**SCC Accessibility Statement**

If you have a disability and need accommodations to participate in the course activities, please contact your instructor as soon as possible. This information will be made available in an alternative format, such as Braille, large print, or cassette tape, upon request. If you wish to contact the college ADA Coordinator, call that office at 507-389-7222.

Disabilities page [http://southcentral.edu/academic-policies/disability-rights.html](http://southcentral.edu/academic-policies/disability-rights.html)