

WESTERN IOWA TECH COMMUNITY COLLEGE
Course Syllabus

Term:
Course Number and Section: MFG 466 ____
Course Title: Predictive Maintenance - Thermography and Ultrasound
Semester Hours: 2.00
Meeting time/location:
Instructor:
Phone: 712.274.8733 Ext.
E-mail: @witcc.edu
Office Location:
Office Hours:

COURSE DESCRIPTION AND PREREQUISITES/COREQUISITES:

This course is designed to provide knowledge and skills working in the area of prevention and predictive maintenance. Subjects to be covered include thermography and ultrasounds.

Prerequisite: None
Corequisite: None

REQUIRED TEXTBOOKS/MATERIALS

COURSE OBJECTIVES

The course will provide information which should enable the student to:

1. Describe infrared energy, its behavior, and use in a predictive maintenance program
2. List different types of heat transfer
3. Discuss principles of thermography
4. Identify equipment used to record thermographic images
5. Describe basic considerations for taking thermographic measurements
6. Discuss characteristics and capabilities of thermal imagers
7. Explain steps for conducting condition-based infrared monitoring program
8. Identify correct procedures for working with infrared imaging equipment
9. Discuss thermal behavior of target materials
10. Recognize questions to ask when choosing thermographic equipment
11. Identify causes of electrical problems identified with thermography
12. Discuss how thermography used in condition-based monitoring of industrial equipment and assists in locating and evaluating problems
13. Identify causes of electrical problems identified with thermography
14. Define sound and ultrasound
15. Describe ultrasound use for diagnostics and predictive maintenance, leak detection and non-destructive testing
16. Identify ultrasound detector components and explain their functioning
17. Set up and use an ultrasound unit for leak detection
18. Test steam traps and valves for leaks
19. Inspect anti-friction bearings
20. Track bearing performance
21. Interpret inspection data and detect electrical problems

CONTENT OUTLINE:

- I. Thermography
 - A. Basic operations
 - B. Operational procedures
 - C. Applications
- II. Ultrasonic inspection
 - A. Basic principles
 - B. Leak detection
 - C. Mechanical and electrical inspection

COMPETENCIES:

At the conclusion of the course the student will be able to:

1. Predict the failure of mechanical components involved in machine operations
2. Operate thermography equipment in the analysis and prevention of untimely component failure
3. Apply ultrasound techniques to predict failure of components and establish maintenance routines

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