CATALOG DESCRIPTION:

This lab course, geared toward on-campus students, will fulfill one of the technical elective credits for the Renewable Energy Technology Program. This lab gives hands on exposure to pumps, valves, compressors, and heat exchanges. It will explain the proper procedure on how to start, operate and shutdown pumps. Troubleshooting common operating problems of centrifugal pumps will be discussed. Functions & characteristics of reboilers, cooling towers, and condensers will be covered in detail.

AUDIENCE: Trainees for process operation and plant personnel.

LENGTH OF COURSE: 1_credit (0 lecture, 1 lab, 0 other)

THIS COURSE IS USUALLY OFFERED:
Every other year ☐ fall X spring ☐ summer ☐ undetermined ☐

Four goals are emphasized in courses at Minnesota West Community & Technical College:

1) ACADEMIC CONTENT: This course will provide a basic knowledge of machinery commonly found in a process facility such as pumps, valves, heat exchangers, cooling towers, centrifuges, compressors, thermal oxidizers, distillation towers, evaporators, and molecular sieves.

2) THINKING SKILLS: The student will understand the information required to identify the components and apply the concepts discussed in this course.

3) COMMUNICATIONS SKILLS: The student will demonstrate both written and oral communication skills.

4) HUMAN DIVERSITY: The student will gain self-awareness regarding the feelings towards people regardless of culture, values or socioeconomic status.
TOPICS TO BE COVERED:

1. List and physically identify motors, pumps, valves, heat exchangers, cooling towers, centrifuges, compressors, thermal oxidizers, scrubbers, distillation towers, evaporators, and molecular sieves.
2. Describe the internal workings and characteristics of major process equipment.
3. Explain the significance of major process equipment and their interaction within a process system.
4. Understand the safety hazards associated with equipment and the process systems in which they are used.

EXPECTED STUDENT LEARNING OUTCOMES:

The student will develop a basic understanding and identification of major process equipment and how each component works. Startup, shutdown, operation and troubleshooting of each of these mechanical systems will be touched upon.

LEARNING/TEACHING TECHNIQUES used in the course are:

- X Collaborative Learning
- X Problem Solving
- X Student Presentations
- X Interactive Lectures
- X Creative Projects
- X Individual Coaching
- □ Lecture
- □ Films/Videos/Slides
- X Demonstrations
- □ Other (describe below)
- X Lab

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:

- X Reading
- X Oral Presentations
- X Textbook Problems
- □ Group Problems
- □ Lecture
- X Tests
- X Worksheets
- □ Papers
- □ Term Paper
- X Individual Projects
- X Collaborative Projects
- □ Portfolio

The information in this course outline is subject to revision

Veteran Services: Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or Minnesota Relay Service at 800-627-3529 or by using your preferred relay service.

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