Faculty members are required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

DEPT.  RNEW  COURSE NUMBER:  1175

NUMBER OF CREDITS:  2  Lecture:  2  Lab:  0  OJT 0

Course Title:
Industrial Water Treatment

Catalog Description:
Industrial Water Treatment covers the basic understanding of primary water treatment systems and chlorination. Students will be able to describe problems that can be caused by impurities in the water and explain how they can be removed physically and chemically. This course will also familiarize students with the basic concepts of treating industrial wastewater so it can be reused or discharged into the environment.

Prerequisites or Necessary Entry Skills/Knowledge:
None

FULFILLS MN TRANSFER CURRICULUM AREA(S)
Goal 1: Communication: ____ by meeting the following competencies:

Goal 2: Critical Thinking: ____ by meeting the following competencies:

Goal 3: Natural Sciences: ____ by meeting the following competencies:

Goal 4: Mathematics/Logical Reasoning: ____ by meeting the following competencies:

Goal 5: History and the Social and Behavioral Sciences: ____ by meeting the following competencies:

Goal 6: The Humanities and Fine Arts: ____ by meeting the following competencies:

Goal 7: Human Diversity: ____ by meeting the following competencies:

Goal 8: Global Perspective: ____ by meeting the following competencies:

Goal 9: Ethical and Civic Responsibility: ____ by meeting the following competencies:

Goal 10: People and the Environment: ____ by meeting the following competencies:
### Topics to be Covered

- Chemistry of water
- Scale
- Corrosion
- Microbial fouling
- Water treatment methods
- Steam generation and condensation
- Boiler systems
- Water cooling systems
- Wastewater treatment systems
- Basic analytical procedures
- Monitoring and control systems
- Chemicals and safety

### Student Learning Outcomes

1. Describe the chemical and physical properties associated with water.
2. Describe the effects that scale, corrosion and microbial fouling can have on water treatment systems.
3. Explain the role of steam generation and cooling systems in water treatment programs.
4. Identify and describe the social, economic, and environmental benefits of proper industrial water treatment.

### Is this course part of a transfer pathway:  

- Yes  ☐  
- No  ☒  

Revised Date: January 2021