

Course discipline/number/title: FST 1540: Power Plant Operation

A. CATALOG DESCRIPTION

1. Credits: 4
2. Hours/Week: 8
3. Prerequisites (Course discipline/number): None
4. Other requirements: Enrollment in the FAST program or instructor permission
5. MnTC Goals (if any): NA

B. COURSE DESCRIPTION: This course will provide students the opportunity to operate a High-Pressure Boiler, turbine generator, related appurtenances and connect to the electric grid. Students will become familiar with fittings, accessories, water treatment, computerized controls, fuels, and combustion and flue gas analysis. Power Plant operations such as OSHA safety and EPA regulations will be discussed. Student will also earn required boiler hours toward the Minnesota 2A operator's license.

C. DATE LAST REVISED (Month, year): December, 2021

D. OUTLINE OF MAJOR CONTENT AREAS:

1. High Pressure boilers and safe system operations.
2. Turbine generator operations.
3. Steam/condensate cycle, trapping, condensers and returns.
4. Water treatment, testing and Boiler chemicals.
5. Power Plant systems maintenance and trouble shooting.
6. Fuels and combustion controls, EPA regulations.

E. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Operate high pressure computerized controlled boilers, generate electricity, and connect to the city electrical grid.
2. Operate, maintain and troubleshoot related systems.
3. Test and treat make up, feed and return water systems.
4. Operate and control fuel/draft systems to maintain EPA requirements.
5. Take and analyze draft and flue gas recordings.
6. Describe and draw the 4 major systems w/fittings and accessories.
7. Prepare boiler for inspections.
8. Properly use PPE, Lock-out- Tag-out and Power Plant safety procedures.
9. Record, Log and communicate Plant information.
10. Earn hours toward 2A licensing requirements.

F. LEARNING OUTCOMES (MNTC): NA

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to:

1. Operating quizzes.
2. Operation observations
3. Parts Identification tests
4. Final exam.

H. RCTC CORE OUTCOME(S). This course contributes to meeting the following RCTC Core Outcome(s): Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

I. SPECIAL INFORMATION (if any):

1. Hazardous materials usage