

Power Engineering and Boiler Operator

Program Code 304281

Technical Diploma - Two Years, Part-Time

Offered at the Green Bay campus. For information: (920) 498-5444.

Toll-free: (800) 422-NWTC, ext. 5444.

Program Description

Power Engineering and Boiler Operator prepares students to manage, operate, and control low (<15# steam pressure and high 15> pressure) boilers and auxiliary systems in factories, plants, and buildings.

Program Outcomes

- Be skilled in the management of energy conservation.
- Define industry safety standards and concepts.
- Explain operation of power engineering equipment.
- Study the National Institute for Uniform Licensing of Power Engineering (NIULPE) Standards.
- Study American Society of Power Engineers (ASOPE) Standards and Testing.
- Describe boiler operation effects on emission.
- Describe water treatment fundamentals related to power engineering equipment.
- Describe power engineering related to control fundamentals.
- Recognize power engineering related equipment type and terminology.
- Identify power engineering firing methods for different fuel types.
- Apply natural science fundamentals to power engineering industry.
- Relate electricity basics and general principles to power engineering.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent (such as an HSED or GED® Transcript).
- NWTC Academic Skills Assessment or equivalent (See Academic Skills Assessment section for details and equivalents).
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Notes

- A two-year diploma completion schedule is only possible if adequate course enrollment is attained.
- This program is certified by ASOPE (American Society of Power Engineers).

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

3rd or 4th Class Power Engineer/Boiler Operator: controls the operation of a boiler by reading gauges and varying fuel and water inputs.

Boiler Service Technician: services and repairs valves, fittings, and boiler tubes that are leaking or malfunctioning.

Boiler Installer: installs boilers, piping, controls, and auxiliary equipment.

Boiler Chemical Sales Representative: tests boiler water for chemical content and recommends additives to correct the water chemical content.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Boiler Fuel Consultant
- Boiler Inspector
- Field Engineer
- Power Plant Supervisor

Curriculum

The Power Engineering and Boiler Operator Technical Diploma is a two-year, part-time program. Upon graduation, a student will have completed 17 credits.

Catalog No.	Description	Credits
10-196-191	Supervision	3
10-804-106	Intro to College Math	3
30-403-338	Power House-Blueprint Rdg	1
30-413-345	Power House-Control Sys	1
30-413-347	Power House-Electric Sys	2
* 30-428-344	Power Engineering I	3
30-428-337	Power House-Economics	1
* 30-428-334	Power Engineering II	3
Total Credits		17

* Students can take Power Engineering I during the first year and Power Engineering II during the second year. Students can take Power Engineering I and prepare to take the license exam for plant operator or facilities 3rd class. Students can choose to take Power Engineering II and prepare to take the 2nd class license exam. If students complete all the program courses, they can get a technical diploma in the Power Engineering and Boiler Operator program.

This program is not eligible for financial aid.

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

Course Descriptions

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-804-106 INTRODUCTION TO COLLEGE MATH

...an introductory level course designed to review and develop fundamental concepts of arithmetic, algebra, geometry, and statistics. Emphasis will be placed on computational skills and applications of rational numbers; problem solving skills with ratios, proportions, and percent; basic principles and application of algebra, geometry, graphing, and statistics; measurement skills in U.S. Customary and Metric Systems; and the use of calculators as a tool. (Prerequisite: Recommendation: TABE Level A Math Score = 9.8 GE Math or Accuplacer Arithmetic = 55)

30-403-338 POWER HOUSE-BLUEPRINT READING

...footings and foundations, floor plans, elevations, below-grade piping, above-grade piping, isometric piping diagrams, schedules and details, electrical floor plans, ventilating, and air conditioning.

30-413-345 POWER HOUSE-CONTROL SYSTEMS

...boiler controls, ignition systems, analog logic symbols, burner management sequencing, flame rod and optical systems, boiler start-up/shut down, problem solving and troubleshooting techniques.

30-413-347 POWER HOUSE-ELECTRICAL SYSTEMS

...principles of electricity, tools required to troubleshoot, safety control, low-volt systems, utility provided power, troubleshooting power systems, motors and controller, wiring methods, transformers, and testing equipment.

30-428-334 POWER ENGINEERING II ...advanced training regarding the principles and operational techniques associated with power and heating boilers. Prepare students with competencies to take the ASOPE or NIUPE exams to qualify for 3rd class licensing. (Prerequisite: 30-428-344, Power Engineering I)

30-428-344 POWER ENGINEERING I ...boiler accidents, thermodynamics principles, high pressure steam boilers, boiler construction, fittings, instrumentation, controls, operation and maintenance, power plant pumps, refrigeration, air compression, prime movers, water treatment, electrical principles, support systems.

