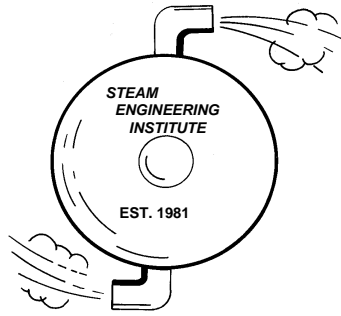


STEAM ENGINEERING INSTITUTE



FIRST CLASS FIREMANS CORRESPONDENCE COURSE

Length of course:	Twenty-Four Lessons
Completion time:	Eighteen Weeks. Students are expected to complete all assignments of this course in 18 weeks. Extensions of this time will be granted for legitimate reason in writing to the President.
Diploma	Students are required to complete all requirements: lessons, assignments, quizzes and tests. A diploma will be granted to all students with a final grade of 70% or above.
Text:	STEAM PLANT OPERATION, by Woodruff and Lammers, Eight Ed. Pub. McGraw-Hill.
Handouts:	Mass. General Laws Ch. 146 and additional handouts compiled by the Steam Engineering Institute.
Training videos:	Reels # 1 & 2

Course outline:

- Lesson 1.
Properties of steam, steam tables.
- Lesson 2.
Water tube and fire tube boilers, heat transfer in boilers.
- Lesson 3.
Steam separators, superheaters, heat recovery equipment: economizers & air preheaters.
- Lesson 4.
Boiler materials, tubes, shells, drums, welding, riveting, braces. **Video: Applications & Theory**
- Lesson 5.
Combustion process, air supply, theory of combustion. Quiz.
- Lesson 6.
Fuels: coal-oil-gas. Combustion control. Video: **Applications & Theory**.
- Lesson 7.
Firing fuel: coal-oil-gas. Chimneys, draft, air pollution control.
- Lesson 8.
Water columns, steam gages, feed water regulators, safety valves. Quiz.
- Lesson 9.
Safety valves, blowdown apparatus, and soot blowers, valves: globe, gate and check. Video: **Types & Construction**

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Lesson 10.

Water columns; blow off lines, boiler valves. Quiz.

Lesson 11.

Boiler operation: normal and emergency. Feed water treatment.

Lesson 12.

Boiler operation, priming, foaming, idle boilers, maintenance, boiler inspection. Video: **Water & Steam Fittings & Accessories**. Quiz.

Lesson 13.

Boiler efficiency, operation, repairs. Video: Boiler Entry.

Lesson 14.

Duplex pumps, simple and rotary pumps. Video: **Water Hammer**.
Video: **Maintenance & Testing**. Quiz.

Lesson 15.

Centrifugal pumps. Pump operation: starting and stopping.

Lesson 16.

Reciprocating and centrifugal pump review. Quiz.

Lesson 17.

Steam turbine construction and operation.

Lesson 18.

Turbine operation, governors, vibration problems. Quiz. Video: **Steam Traps & Testing**

Lesson 19.

Feed water heaters: open & closed. Feedwater treatment.

Lesson 20.

Boiler blowdown, steam traps, lubrication. Quiz.

Lesson 21.

Heating systems: one & two pipe. vacuum systems. Video: **Humidity**.

Lesson 22.

Direct and indirect heating systems. Large outdoor air systems. Video: **Air Handling System**
Video: **Taking Over a Shift**.

Lesson 23.

State license laws. Quiz. Video: **Low Water Safeguards**.

Lesson 24.

Course Review. Quiz. Video: **What is Steam?**

FINAL EXAMINATION.