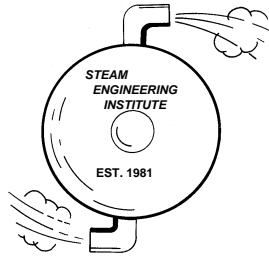


# STEAM ENGINEERING INSTITUTE



## FIRST CLASS ENGINEER'S COURSE

Length of course:	Twenty-Five Lessons
Completion time:	Eighteen weeks. Students are expected to complete all assignments of this course in eighteen weeks. Extensions will be granted for legitimate reasons by writing to the School.
Course Hours:	130 Hours
Diploma requirements:	Students are required to complete all lessons, assignments, quizzes and tests. A diploma will be granted to all students with a final grade of 70% or above.
Text:	STEAM PLANT OPERATIONS, by Woodruff & Lammers, Eight Ed. Pub. McGraw-Hill Co.
Notebook	700+ pages of course descriptive notes and assignments.
Testing:	Ten quizzes, two tests and a final examination.
Videos:	Over eight and one half hours of video tape instruction.

### Course outline:

- Lesson 1  
Chapter 146 Mass General Laws
- Lesson 2  
Steam fundamentals, steam tables, and properties of steam. Video: **What is Steam**
- Lesson 3  
Steam tables. Mollier Chart.
- Lesson 4  
Steam and its importance. Video: **Water Hammer**
- Lesson 5  
Boilers, types, superheaters, air preheaters, economizers.
- Lesson 6  
Boilers construction and design.
- Lesson 7  
Combustion of fuels; flue gas analysis. Video: **Fuels & Combustion**
- Lesson 8  
Boiler settings & combustion systems.

# STEAM ENGINEERING INSTITUTE

## Lesson 9

Boiler accessories

## Lesson 10

Boiler operation and maintenance; feed water treatment. Video: **Low Water Safeguards**

## Lesson 11

Boiler operation and maintenance. Video: **Boiler Entry**

## Lesson 12

Power plant formulas and calculations; turbine and boiler efficiency.

## Lesson 13

Steam turbines and staging fundamentals. Video: **Co-Gen & Other Turbine Cycles**

## Lesson 14

Turbine governors: types, operation, control valves. Video: Video: **Steam Turbine Construction**

## Lesson 15

Steam Condensers, construction, and operation.

## Lesson 16

Turbine condenser operation and maintenance

## Lesson 17

Turbine operation and maintenance

## Lesson 18

Reheat turbines; turbine staging; turbine classification; regenerative cycle.

## Lesson 19

Hydrogen cooled generators, synchronizing, turbine overspeed testing. Video: **Generators**

## Lesson 20

Condenser problems and solutions. Loosing vacuum and solutions.

## Lesson 21

Review turbines and condensers.

## Lesson 22

Turbine balancing, turning gears, auxiliary oil pumps.

## Lesson 23

Auxiliary steam plant equipment: water softeners; demineralizers; deaerators, boiler residuals.  
Video: **Steam Traps** Video: **Humidity**

## Lesson 24

Environmental control systems.

## Lesson 25

National Board & pressure inspection code, welding. Video: **ASME & National Board**  
ASME code: Video **National Board**

## Lesson 26

Steam plant problem. Video: **Gas Turbines: Major Components**

## Lesson 27

Gas Turbines Video: **Gas Turbine Control & Protection**