

NIULPE Low Pressure Boiler Examination Syllabus

National Institute for the Uniform Licensing of Power Engineers (NIULPE)

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Purpose

The Low Pressure Boiler Examination evaluates the knowledge and competency required for the safe operation, maintenance, and inspection of low pressure steam and hot water boilers. The examination is intended for individuals seeking certification through the National Institute for the Uniform Licensing of Power Engineers (NIULPE).

Examination Objectives

Upon successful completion of the examination, candidates should demonstrate knowledge of:

- Safe boiler operation
 - Boiler safety devices and controls
 - Boiler components and accessories
 - Water treatment principles
 - Combustion fundamentals
 - Boiler maintenance practices
 - Steam distribution systems
 - Boiler codes and operating terminology
 - Safe operating procedures and emergency response
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Examination Content

Module 1 – Boiler Fundamentals

Topics include:

- Types of low pressure boilers
 - Firetube and water tube boilers
 - Cast iron sectional boilers
 - Boiler terminology
 - Boiler components
 - Boiler accessories
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Module 2 – Boiler Operation

Topics include:

- Shift change procedures
 - Startup procedures
 - Normal operation
 - Boiler shutdown
 - Placing boilers online
 - Maintaining proper water level
 - Steam production
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Module 3 – Boiler Safety

Topics include:

- Safety valves
 - Low water fuel cutoffs
 - Water column and gauge glass
 - Try cocks
 - Furnace explosion prevention
 - Hydrostatic testing
 - Emergency procedures
 - Boiler operator responsibilities
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Module 4 – Boiler Valves and Controls

Topics include:

- Main steam stop valves
 - Globe valves
 - Gate valves
 - Check valves
 - Feedwater regulators
 - Steam traps
 - Pressure gauges
 - Siphons
 - Pressure controls
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Module 5 – Water Treatment

Topics include:

- Hard water
 - Soft water
 - Scale formation
 - Corrosion
 - Oxygen removal
 - Sodium sulfite treatment
 - Blowdown procedures
 - Water chemistry fundamentals
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Module 6 – Combustion and Fuel Systems

Topics include:

- Natural gas combustion
 - Burner operation
 - Air-to-fuel ratio
 - Combustion controls
 - Flame characteristics
 - Fuel system safety
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Module 7 – Pumps and Feedwater Systems

Topics include:

- Feedwater pumps
 - Vacuum pumps
 - Condensate systems
 - Feedwater heaters
 - Economizers
 - Boiler feedwater regulation
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Module 8 – Steam Distribution

Topics include:

- Steam piping
 - Steam traps
 - Steam strainers
 - Condensate return
 - Water hammer
 - Priming
 - Carryover
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Module 9 – Boiler Performance

Topics include:

- Heat transfer
 - Steam generation
 - Draft measurement
 - Manometers
 - Induced draft fans
 - Boiler efficiency
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Examination Format

- Multiple-choice examination
- Fifty (50) questions
- Questions are based on practical boiler operation and accepted industry practices.

Recommended Study Topics

Candidates should be familiar with:

- Boiler operation and maintenance
- Steam generation
- Boiler safety devices
- Water treatment
- Combustion
- Boiler controls
- Pumps
- Steam systems
- Pressure measurement
- Draft systems
- Boiler inspections
- Safe operating practices

Passing Requirements

Passing requirements shall be established by NIULPE in accordance with current certification policies.

This syllabus is provided for candidate guidance and is intended to identify the major knowledge areas covered by the NIULPE Low Pressure Boiler Examination. It does not represent every question or topic that may appear on the examination.