



www.niulpe.org
email: info@niulpe.org

NATIONAL INSTITUTE FOR THE UNIFORM LICENSING OF POWER ENGINEERS, INC.
PO BOX 16369
PITTSBURGH, PA 15242-0369
PHONE: (888) 648-5566 FAX: (888) 648-5577

REFERENCE SYLLABUS

For

International Power Engineer (3rd Class)



INTERNATIONAL POWER ENGINEER (3RD CLASS)

SYLLABUS

Introduction

This Syllabus is intended to assist candidates studying for the International Power Engineer (3rd Class) Examination.

Recommended Study Program:

It is recommended that, before undertaking this examination, the candidate completes Power Engineering Course of study, offered through a recognized and approved technical institute or training provider which addresses the Syllabus Outline.



INTERNATIONAL POWER ENGINEER (3RD CLASS)

SYLLABUS

Reference Syllabus for International Power Engineer (3rd Class) Examination Candidates

Major Topic: **Applied Mechanics, Thermodynamics and Chemistry**

Topic 1 Algebraic Operations, Logarithms and Problem Solving

Topic 2 Trigonometry

Topic 3 Mensuration

Topic 4 Forces and Friction

Topic 5 Work, Power, Energy: Linear and Angular Motion

Topic 6 Strength of Materials; Bending of Beams

Topic 7 Simple Machines; Pressure, Density, Flow

Topic 8 Heat, State Change, Calorimetry

Topic 9 Thermal Expansion and Heat Transfer

Topic 10 Steam Properties and Calculations

Topic 11 Gas Laws and Calculations

Topic 12 Chemistry Fundamentals

Topic 13 Metallurgy and Materials

Topic 14 Corrosion Principles

Topic 15 Industrial Drawings

Major Topic: **Boiler Codes, Electrical and Instrumentation Theory**

Topic 1 Legislation and Codes for Power Engineers

Topic 2 Code Calculations - ASME Section I

Topic 3 Fuels, Combustion, and Flue Gas Analysis

Topic 4 Piping Design, Connections, Support

Topic 5 Steam Traps, Water Hammer, Insulation

Topic 6 Valves and Actuators

Topic 7 Electrical Theory and DC Machines

Topic 8 AC Theory and Machines

Topic 9 AC Systems, Switchgear, Safety

Topic 10 Electrical Calculations

Topic 11 Control Loops and Strategies

Topic 12 Instrument and Control Devices

Topic 13 Distributed and Logic Control

Topic 14 Safety Management Systems

Topic 15 Fire Protection Systems



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Major Topic: Pumps and Boilers

Topic 1 Watertube Boiler Designs

Topic 2 Special Boiler Designs

Topic 3 Boiler Construction

Topic 4 Boiler Heat Transfer Components

Topic 5 High Pressure Boiler Fittings

Topic 6 Burner Designs and Supply Systems

Topic 7 Boiler Draft and Flue Gas Equipment

Topic 8 Boiler Control Systems

Topic 9 Boiler Procedures

Topic 10 Internal Water Treatment for Boilers

Topic 11 Boiler Water Pretreatment

Topic 12 Pump Designs and Operation

Topic 13 Pump Head Calculations

Topic 14 Welding Procedures and Inspection

Topic 15 Pressure Vessels

Major Topic: Prime Movers and Refrigeration

Topic 1 Steam Turbine Principles and Design

Topic 2 Steam Turbine Auxiliaries and Operation

Topic 3 Turbine Condenser Systems

Topic 4 Gas Turbine Principles and Designs

Topic 5 Gas Turbine Auxiliaries and Operation

Topic 6 Internal Combustion Engines

Topic 7 Cogeneration Systems and Operation

Topic 8 Compressor Theory and Designs

Topic 9 Compressor Auxiliaries and Operation

Topic 10 Refrigeration Principles and Systems

Topic 11 Refrigeration Auxiliaries and Operation

Topic 12 Heat Exchangers and Cooling Towers

Topic 13 Fired Heaters

Topic 14 Wastewater Treatment

Topic 15 Plant Maintenance and Administration