



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 SYLLABI

For

Refrigeration Plant Operator



REFRIGERATION PLANT OPERATOR (1st Class)

SYLLABUS

Introduction

This Syllabus is intended to assist candidates studying for the Refrigeration Plant Operator (2nd 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.



REFRIGERATION PLANT OPERATOR (1st Class)

SYLLABUS

Reference Syllabus for Refrigeration Plant Operator (1st Class) Examination Candidates

Topic 1 Legislation and Codes

Topic 2 Introduction to Thermodynamics

Topic 3 Thermodynamics of Refrigeration

Topic 4 Introduction to Basic Mechanics

Topic 5 Welding Methods and Inspection

Topic 6 Welding Terms, Forge and Fusion Welding Processes

Topic 7 Types of Pumps

Topic 8 Pump Operation and Maintenance

Topic 9 Introduction to Piping and Pipe Fittings

Topic 10 Introduction to Valves

Topic 11 Lubrication Principles

Topic 12 Air Compression

Topic 13 Fires and Extinguishing Media

Topic 14 Portable Fire Extinguishers

Topic 15 Building Safety

Topic 16 First Aid and CPR for Adult Casualties

Topic 17 Introduction to Electricity

Topic 18 Refrigerants

Topic 19 Environmental Impact of Chlorinated Hydrocarbons

Topic 20 Compression Refrigeration Systems

Topic 21 Absorption Refrigeration Systems

Topic 22 Refrigeration Compressors

Topic 23 Heat Exchangers for Refrigeration Systems

Topic 24 Cooling Towers

Topic 25 Refrigeration Metering Devices

Topic 26 Refrigeration Accessories

Topic 27 Refrigeration Cycle Controls



REFRIGERATION PLANT OPERATOR (1st Class)

SYLLABUS

Topic 28 Compression Refrigeration System Pre-Startup Procedures

Topic 29 Compression Refrigeration System Operations

Topic 30 Absorption Refrigeration System Operation and Maintenance

Topic 31 Psychrometric Properties of Air

Topic 32 Application of the Psychrometric Chart

Topic 33 Fans for Air Distribution Systems

Topic 34 Ventilation and Air Filters

Topic 35 Air Conditioning Duct Systems

Topic 36 Humidification

Topic 37 Coil Types

Topic 38 Coil Operation

Topic 39 Air Conditioning Systems I

Topic 40 Air Conditioning Systems II

Topic 41 Air Conditioning Heat Recovery Systems

Topic 42 Air Conditioning System Controls



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REFERENCE SYLLABUS

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**Refrigeration Plant Operator
(2nd Class)**



REFRIGERATION PLANT OPERATOR (2nd CLASS)

SYLLABUS

Introduction

This Syllabus is intended to assist candidates studying for the Refrigeration Plant Operator (2nd Class) Examination.

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REFRIGERATION PLANT OPERATOR (2nd CLASS)

SYLLABUS

Reference Syllabus for Refrigeration Plant Operator (2nd Class)
Examination Candidates

Major Topic: Heating Systems and Human Comfort

Topic 1 Heat Gains and Losses

Topic 2 Steam Heating Equipment

Topic 3 Steam Heating Systems

Topic 4 Hot Water Heating Systems

Topic 5 Hot Water Heating System Equipment and Operation

Topic 6 Warm Air Heating System Equipment

Topic 7 Warm Air Furnace Components and Maintenance

Topic 8 Ventilation and Air Filters

Topic 9 Infrared and Electric Heating

Topic 10 Humidification

Topic 11 Electric Controls for Heating Systems

Major Topic: Refrigeration

Topic 12 Refrigeration Theory

Topic 13 Refrigerants

Topic 14 Compression Refrigeration Systems

Topic 15 Refrigeration Compressors

Topic 16 Heat Exchangers for Refrigeration Systems

Topic 17 Refrigeration Accessories

Topic 18 Cooling Towers

Topic 19 Air Conditioning Systems

Major Topic: Refrigeration and AC System Controls

Topic 20 Refrigeration Metering Devices and Capacity Controls

Topic 21 Refrigeration Cycle Controls

Topic 22 Compression Refrigeration System Pre-Startup Procedures

Topic 23 Compression Refrigeration System Operations

Topic 24 Air Compression

Topic 25 Introduction to Electricity



REFRIGERATION PLANT OPERATOR (2nd CLASS)

SYLLABUS

Major Topic: Introduction to Plant and Fire Safety

Topic 26 Introduction to Plant Safety

Topic 27 Plant Safety Programs

Topic 28 Handling of Dangerous Materials

Topic 29 Plant Fire Safety

Topic 30 Fire Extinguishing Methods and Equipment



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REFERENCE SYLLABUS

For

Refrigeration Plant Operator Recreation



REFRIGERATION PLANT OPERATOR RECREATION SYLLABUS

Introduction

This Syllabus is intended to assist candidates studying for the Refrigeration Plant Operator Recreation 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.



REFRIGERATION PLANT OPERATOR RECREATION SYLLABUS

Reference Syllabus for Refrigeration Plant Operator Recreation Examination
Candidates

Major Topic: **Acts, Regulations, and Codes**

Topic 1 Boiler and Pressure Vessels Act

Topic 2 Introduction to CSA and ASME Codes for Boilers

Topic 3 Introduction to Plant Safety

Topic 4 Refrigeration Plant Safety

Major Topic: **Basic Communication**

Topic 1 Technical Communications

Topic 2 Plant Communications

Major Topic: **Elementary Science**

Topic 1 SI Units

Topic 2 Basic Arithmetic Operations

Topic 3 Transposition

Topic 4 Areas and Volumes of Solids

Topic 5 Application of Basic Mechanics

Topic 6 Introduction to Thermodynamics

Topic 7 Introduction to Matter and Chemistry

Topic 8 Introduction to Electricity

Major Topic: **Safety**

Topic 1 Fire Safety and Site Hazards

Topic 2 Building Safety

Major Topic: **Environmental**

Topic 1 Gas Detection and Monitoring

Topic 2 Environmental Impact of Refrigerants



REFRIGERATION PLANT OPERATOR RECREATION SYLLABUS

Major Topic: Principles of Refrigeration

Topic 1 Applied Thermodynamics

Topic 2 Refrigerants

Topic 3 Basic Refrigeration Cycles

Major Topic: Refrigeration Equipment and Components

Topic 1 Refrigeration Compressors

Topic 2 Oil Separators

Topic 3 Compressor Lubrication

Topic 4 Condensers

Topic 5 Cooling Towers

Topic 6 Evaporators

Topic 7 Metering Devices

Topic 8 Cooling Coils

Major Topic: Refrigeration Controls and Instrumentation

Topic 1 Fundamentals Measuring Devices

Topic 2 Basic Operational Controls

Topic 3 Basic Safety Controls

Major Topic: Refrigeration System Operation and Maintenance

Topic 1 Checks

Topic 2 Safety Devices and Functions

Topic 3 Troubleshooting

Topic 4 Procedures