

Facilities Maintnc. Specialist

FMS 100 (P/T) 2 Credits
INTRO TO FACILITIES MAINTENANCE SYS

Quarters: Offered as needed

This hands-on course introduces students to the fundamental principles and practices of industrial facility maintenance. Students will gain practical experience with essential maintenance tools, equipment diagnostics, and OSHA-approved safety procedures. The course covers systematic approaches to preventive maintenance, mechanical systems troubleshooting, and basic repair techniques for industrial equipment. At the end of this course, students will be able to perform basic maintenance procedures, conduct safety inspections, and troubleshoot common facility maintenance issues in an industrial setting.

FMS 101 (P/T) 2 Credits
REFRIGERATION I

Quarters: Offered as needed

This introductory course explores the fundamental principles of refrigeration, including heat transfer, temperature, and the basic physics and gas laws that govern refrigeration systems. Students will study the operation and application of basic refrigeration cycles and learn to use industry-standard tools and instruments for charging, evacuation, and recovery methods in a laboratory setting. Emphasis is placed on safe and effective practices within the refrigeration industry. At the end of this course, students will be able to apply fundamental refrigeration principles, safely operate basic refrigeration systems, and perform essential maintenance procedures using industry-standard tools and techniques.

FMS 102 (P/T) 2 Credits
REFRIGERATION II

Quarters: Offered as needed

This course builds upon the foundational knowledge from Refrigeration I, focusing on the operation and analysis of refrigeration system components. Topics include compressors, condensers, evaporators, refrigerants, and metering devices. Laboratory sessions emphasize hands-on experience with system components, compressor testing methods, and advanced charging, evacuation, and recovery techniques. Safety, industry standards, and environmental regulations are emphasized throughout the course. At the end of this course, students will be able to evaluate and service major refrigeration components, perform advanced system maintenance procedures, and implement industry-standard safety protocols and environmental compliance measures. Prerequisites: Pass FMS 101

FMS 103 (P/T) 2 Credits
REFRIGERATION III

Quarters: Offered as needed

This advanced course focuses on the operation and maintenance of refrigeration and HVAC systems, with an emphasis on controls, troubleshooting, and system optimization. Students will gain practical experience in identifying, diagnosing, and resolving system issues while mastering advanced evacuation and charging techniques. Lab sessions will simulate real-world scenarios to prepare students for industry challenges. At the end of this course, students will be able to independently diagnose complex system malfunctions, implement effective repair solutions, and optimize HVAC/R systems for peak performance and efficiency. Prerequisites: Pass FMS 102

FMS 111 (P/T) 2 Credits
REFRIGERATION ELECTRICAL I

Quarters: Offered as needed

This foundational course introduces the basic theory and applications of electrical concepts essential for refrigeration and HVAC systems. Topics include Ohm's Law, electric power, and the operation of electric circuits. Students will also explore alternating current (AC) theory, power distribution, and the interpretation of wiring diagrams and schematics for HVAC system installation. The course combines theoretical instruction with practical laboratory exercises to develop hands-on skills. At the end of this course, students will be able to analyze electrical circuits, safely perform basic electrical measurements, and accurately interpret HVAC electrical schematics and wiring diagrams for system installation and maintenance.

FMS 112 (P/T) 2 Credits
REFRIGERATION ELECTRICAL II

Quarters: Offered as needed

This advanced course builds upon concepts introduced in Refrigeration Electrical I, focusing on the theory and application of electrical motor concepts and complex electrical circuits. Topics include control system components, detailed wiring diagrams, and schematic interpretation. The course emphasizes practical skills in analyzing, wiring, and troubleshooting control systems in HVAC applications. At the end of this course, students will be able to diagnose and repair complex motor control systems, construct advanced electrical circuits, and implement sophisticated control strategies for HVAC applications. Prerequisites: Pass FMS 111

FMS 113 (P/T) 2 Credits
REFRIGERATION ELECTRICAL III

Quarters: Offered as needed

This advanced course focuses on the development and application of schematics for the diagnosis, service, and repair of HVAC systems. Topics include advanced control applications, circuit evaluation techniques, and troubleshooting strategies. Students will gain hands-on experience with real-world HVAC systems, emphasizing critical thinking and problem-solving skills necessary for the industry. At the end of this course, students will be able to design and interpret complex HVAC schematics, diagnose system malfunctions using advanced control logic, and implement effective repair strategies based on thorough circuit analysis. Prerequisites: Pass AES 112

FMS 119 (P/T) 2 Credits

WATER TREATMENT AND DISTRIBUTION

Quarters: Offered as needed

This course provides an introduction to the fundamentals of water treatment and distribution systems, focusing on cooling towers, boilers, wastewater, and water purification processes. Students will explore common issues such as corrosion, scale, fouling, and bacterial contamination. The course will also cover the mechanical equipment involved in water treatment and distribution, along with methods for maintaining optimal system performance. Hands-on laboratory experiences will reinforce theoretical knowledge, including troubleshooting and problem-solving in water treatment systems. At the end of this course, students will be able to analyze water quality issues, select appropriate treatment methods, operate essential mechanical equipment, and implement effective solutions for common water system problems.

FMS 122 (P/T) 3 Credits

INTRODUCTION TO BOILERS

Quarters: Offered as needed

This course introduces students to the fundamentals of hydronics systems and the operation of boilers, focusing on heat loss calculations, physical properties of water, and types of boilers. Students will learn the key components of piping systems, including circulating pumps, to ensure correct fluid flow in heating systems. The course also includes practical maintenance techniques and component identification to prepare students for hands-on work with boiler systems in real-world applications. At the end of this course, students will be able to calculate heat loss requirements, select appropriate boiler systems and components, perform essential maintenance procedures, and troubleshoot common hydronic system issues.

FMS 125 (P/T) 2 Credits

NATURAL GAS EQUIPMENT I

Quarters: Offered as needed

This course introduces the fundamental principles of natural gas, including its properties, pressures, and the installation requirements for natural gas systems. Students will learn about the mechanical code requirements for the installation of natural gas piping and related equipment. Basic diagnostic procedures will also be covered, enabling students to apply their knowledge to identify and troubleshoot common issues in natural gas systems. At the end of this course, students will be able to interpret mechanical codes, design and install natural gas piping systems, perform pressure tests, and diagnose and repair common natural gas system malfunctions.

FMS 201 (P/T) 3 Credits

INTRODUCTION TO CHILLER SYSTEMS

Quarters: Offered as needed

This course provides an introduction to chiller systems and their applications in industrial and institutional settings. Students will learn about the operation of chiller compressors, refrigerants, air-cooled and water-cooled condensers, and associated controls and piping systems. Emphasis is placed on the practical aspects of chiller system installation, maintenance, and troubleshooting, providing students with the foundational knowledge needed to work with chiller systems in commercial and industrial environments. At the end of this course, students will be able to identify chiller system components, perform routine maintenance procedures, diagnose system malfunctions, and implement appropriate solutions for optimal chiller system performance.

FMS 202 (P/T) 3 Credits

DIRECT DIGITAL CONTROL ADV. TECH.

Quarters: Offered as needed

This course explores advanced applications of Direct Digital Control (DDC) technology used in commercial HVAC systems. Students will learn how DDC systems are applied to a variety of HVAC systems, from single-zone air handlers to complex multi-zone and Variable Air Volume (VAV) systems. The course covers advanced topics including valve configurations, engineering calculations, and the integration of DDC systems with life safety systems. Students will develop a deep understanding of how to design, configure, troubleshoot, and optimize these systems for energy efficiency and performance in commercial and industrial buildings. At the end of this course, students will be able to design and implement DDC control strategies, program complex control sequences, integrate multiple building systems, analyze system performance data, and optimize HVAC operations for maximum efficiency and occupant comfort. Prerequisites: Pass INED 112, or receive instructor approval

FMS 204 (P/T) 3 Credits

HEAT PUMPS

Quarters: Offered as needed

This course explores the fundamental principles and operation of heat pump systems. Students will learn through hands-on experience with modern heat pump equipment, gaining practical knowledge of system components, control systems, and testing procedures. The course combines theoretical concepts with real-world applications, emphasizing proper use of diagnostic tools and test equipment. Safety protocols and industry best practices are integrated throughout the curriculum. At the end of this course, students will be able to diagnose, service, and maintain residential and light commercial heat pump systems according to manufacturer specifications.

FMS 207 (P/T) 2 Credits

PNEUMATIC CONTROLS

Quarters: Offered as needed

This course provides HVAC service technicians with the knowledge and skills necessary to diagnose and repair malfunctions in pneumatic control systems. Focus will be placed on Honeywell control systems and other common thermostat/controllers. The course covers the elements of pneumatic systems, such as valve assemblies, dampers, controllers, thermostats, sensors, relays, and air supply equipment, offering hands-on experience in troubleshooting, repair, and maintenance of pneumatic controls. At the end of this course, students will be able to diagnose and repair complex pneumatic control systems, calibrate various types of controllers and thermostats, perform preventive maintenance on pneumatic components, and effectively troubleshoot air supply and distribution problems in commercial HVAC systems.

FMS 210 (P/T) 2 Credits

BASIC HVAC/R INSTALL AND TECHNIQUES

Quarters: Offered as needed

This course introduces students to the foundational practices and techniques involved in HVAC/R system installation. Emphasis is placed on understanding and applying code requirements and executing practical field installations. Topics include basic sheet metal fabrication, piping, venting, and adherence to industry standards. The course combines classroom instruction with hands-on lab activities to develop entry-level skills essential for HVAC/R professionals. At the end of this course, students will be able to perform basic HVAC/R installations according to code requirements, fabricate essential system components, and implement proper venting and piping techniques following industry standards. Prerequisites: FMS 101, FMS 102, and FMS 103, or; FMS 111, FMS 112, and FMS 113, or; instructor approval.

Food and Nutrition

FNUT 225 4 Credits

NUTRITION

Quarters: Summer, Fall, Winter, Spring

Examines the basic principles and practices which comprise the science of nutrition. Studies the effect of food and nutrient intake on the body. Examines retention of nutrients and food substances during processing, the role of digestion and absorption, and components of an adequate diet. Includes scientific research paper on therapeutic nutrition and 5 day Dietary Analysis. Some sections may have a low-cost text book option.

Forestry

FOR 111 3 Credits

INTRODUCTION TO FORESTRY

Quarters: Fall, Spring

This course will serve as a broad overview of the forestry discipline. Topics covered will range from importance of forest, forest recreation, forest management, forest wildlife, forest measurement, and other forest uses. Students will be exposed to current issues in forestry with particular focus on Oregon and the Pacific Northwest. Students will also learn through field trips to local forested regions.

Forestry Wildland and Range

FWR 101 (P/T) 1 Credit

NATURAL RESOURCES SEMINAR

Quarters: Fall

Provides information and self-evaluation in areas of goal setting, educational planning, student activities, electronic student accounts, study skills, and successful navigation of the college system. Emphasizes academic and career plans for students interested in Natural Resources.