

APPT 139B: MEDICAL GAS INSTALLATIONS

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2024
Units:	3.5
Hours:	36 lecture, 18 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing/ Steamfitting & Pipefitting Technology Apprenticeship Program.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- A successful student will be able to define Level 1 medical air supply systems.
- A successful student will be able to describe medical-surgical vacuum systems.
- A successful student will be able to describe performance criteria and testing.

Description

Installation procedures of medical gas and vacuum systems. Apprentices learn about station outlets/inlets, manufactured assemblies, and pressure/vacuum indicators. Brazing requirements are described and proper techniques are demonstrated. Practice of brazing techniques in order to prepare for the brazing qualification exam.

Course Objectives

The student will be able to:

1. State precautions to be used when working in a health care facility
2. Describe procedures and requirements of medical gas and vacuum system installations
3. Summarize gas and vacuum system's testing procedures
4. Pass NITC medical gas exam

Course Content

1. State precautions to be used when working in a health care facility
 - a. Safety protocol
 - b. Bio hazards
2. Describe procedures and requirements of medical gas and vacuum system installations
 - a. Level 1 medical air supply systems
 - b. Medical-surgical vacuum systems

- c. Instrument air supply systems and Level 1 valves
 - d. Station outlets and inlets and manufactured assemblies
 - e. Pressure and vacuum indicators
 - f. Level 1 distribution and Level 1 warning systems
 - g. Level 1 support gases
 - h. Level 2 requirements
 - i. Level 3 requirements
3. Summarize gas and vacuum system's testing procedures
 - a. Installer performance test
 - b. Pressure test, vacuum test
 - c. Cross connection test
 - d. Purge test
 4. Pass NITC medical gas exam
 - a. Review material from sessions 1-10
 - b. Give practice exam covering all worksheet material
 - c. Administer third party exam
 - d. Describe brazing medical gas piping
 - e. Identify requirements for brazing qualification test
 - f. Provide the apprentice with opportunity to gain hands-on experience by practicing brazing
 - g. Administer brazing qualification exam

Lab Content

Students will work individually and in groups to practice brazing techniques.

Special Facilities and/or Equipment

1. Special facilities laboratory with oxy-acetylene brazing equipment, ventilation, personal protective equipment.
2. When taught via Foothill Global Access, on-going access to computer with email software and hardware; email address.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Results of written exercises and final examination
Satisfactory completion of hands-on projects
Maintenance of a student's workbook with questions drawn from text

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture
Lab assignment
Group discussion
Demonstration

Representative Text(s) and Other Materials

National Fire Protection Association. [NFPA 99 Health Care Facilities Code](#). 2021.

. [ASSE/IAPMO Series 6000-2021: Professional Qualification Standards for Medical Gas Systems Personnel](#). 2021.

We will adopt the next edition of each text, as it is published.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Readings from the textbook NFPA 99 Health Care Facilities Code
 - a. Identify manifolds for gas cylinders without reserve supply
2. Writing assignments given in laboratory
 - a. Take a quiz on the NFPA Code requirements
 - b. NITC exam writings

Discipline(s)

Plumbing