A Partner in Medical Gas Education & Safety

_Education has always been a foundation of BeaconMedaes’ relationships with our customers._

Because we are known for education, we are often asked about credentialing and CEU opportunities through BeaconMedaes. We have always tried to direct them to the best available schools, but we have always been concerned if they were getting what they needed.

In order to assure that our client’s education is the best that they can obtain, we have decided to offer these classes and credentials formally through our _MyMedGas_ program.

Most courses listed this catalog are available for on-site instruction. To schedule an on-site session, please email us at _mymedgas.edu@beaconmedaes.com_.

Our course list and schedule is still evolving, so be sure to go to _www.mymedgas.com_ and register. Once you register you can see the most recent course list and schedule, or to sign up for any of the available courses.
ASSE and HTM Definitions

- ASSE (the American Society of Sanitary Engineering standard 6000 is the companion standard to NFPA 99 for the education and credentialing of medical gas professionals. It is referenced in the NFPA 99 and in some local standards.
- It has 7 parts: 6005 for Generalists, 6010 for Installers, 6015 for Bulk Station Installers, 6020 for Inspectors, 6030 for Verifiers, 6035 for Bulk Station Verifiers, 6040 for Maintenance Personnel and 6050 for Instructors.
- The HTM (Health Technical Memorandum) 02-01 is the guide to implementing the ISO 7396-1 in the UK, and is the equivalent standard to the NFPA in the U.S.
- In HTM 02-01 Part B, the requirements for persons working on medical gases is defined. Installers and maintenance personnel should have a CP (Competent Person) credential, and each facility is required to have an AP (Authorized Person) available. In addition there are requirements for the Responsible Person and the AE (Authorizing Engineer).

Recommended Courses by Role

Healthcare Facility managers or maintainers
- ASSE 6040 Medical Gas Maintenance – Credentialed
- ASSE 6040 Medical Gas Maintenance – Non Credentialed
- ASSE 6020
- ASSE 6010
- ASSE 6005
- HTM AP/CP
- Medical Gas Basic Series

Engineers
- Medical Gas Basic Series
- ASSE 6005
- ASSE 6020
- Medical Gas Design Guide Seminar

Contractors
- Medical Gas Basic Series
- ASSE 6010

Clinical Staff
- Medical Gas Basic Series
**Course of Catalog Descriptions**

*MEDICAL GAS SYSTEMS CREDENTIAL AND CED COURSES*

**ASSE 6005 Medical Gas Generalist**

6005 is a general interest course for any person with an interest in knowing more about medical gas systems and equipment, the standards that govern them, general safety when working with them, or has any other interest in the subject. The course provides an introduction to the rules of NFPA 99, the NFPA 55 and the ASSE 6000 Series, along with an understanding of the role of the gases, environment of the medical gas system and safety when working with these systems. The safety of the patient is the central theme of the course.

ASSE defines the medical gas generalist as any person having a general interest in the medical gas and vacuum systems and equipment and the course leads to that credential.

Typical attendees might include architects, engineers, medical staff, and government officials.

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The Generalist Course In Medical Gases and Vacuum Systems

- Alphabet Soup - The standards which apply
- The 10 Hazards - Safety around Medical Gases
- Building Blocks I - The major subsystems and familiarity with medical gas terms
- The First Rule of Medical Gas
- Building Blocks II - Valves and Alarms
- Building Blocks III - How a medical air system is constructed around the First Rule
- The Second Rule of Medical Gas
- Building Block IV - Complying with the Second Rule by good installation practices
- Build Blocks V - Enforcing Compliance with testing
- The Installer and Verifier Peak Performance - Maintaining a Medical Gas and Vacuum System
- What's Documented is Done - Testing and Record keeping
- Exam
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<tr>
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<th><strong>Credential:</strong> 6005 Generalist (Exam Required)</th>
<th><strong>Course Hours:</strong> 24 hrs</th>
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<tr>
<td><strong>Text Book Required:</strong> NFPA 99 2018</td>
<td><strong>Formats:</strong> Available on-line and at select on-site locations</td>
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**ASSE 6005 Medical Gas Generalist with Design Emphasis**

This course formatted specifically for design professionals. The course will focus on the considerations, decisions and methods required when designing, sizing and selecting equipment. The course is woven into the design exercise to impart the same broad understanding of medical gases and medical gas and vacuum systems along with an introduction to the rules of NFPA 99, NFPA 55, the ASSE 6000 Series and the FGI Guidelines. The participant can expect to finish the course understanding how a medical gas and vacuum system is laid out, selected, and sized. Participants will engage in the design of systems for a mock facility. The course is intensive and may require some work out of class.

6005 is a general interest credential for any person with an interest in knowing more about medical gas systems and equipment, the standards that govern them, general safety when working with them, or has any other interest in the subject. The safety of the patient is the central theme. ASSE defines the medical gas generalist as any person having a general interest in the medical gas and vacuum systems and equipment and the course leads to that credential. An exam is administered for the 6005 and successful completion of the design exercise will entitle the participant to have their credential notated as including “Emphasis in Medical Gas Design”.

Typical attendees might include plumbing engineers, P3 (Build-Operate-Transfer) managers, design build engineers and facilities planning managers.

**The Generalist Course in Medical Gases and Vacuum Systems**

- **Alphabet Soup** - The standards which apply
- **The 10 Hazards** - Safety around Medical Gases
- **Building Blocks I** - The major subsystems and familiarity with medical gas terms
- **Design I** - Outlet placements, patient environment equipment and applications
- **The First Rule of Medical Gas**
- **Building Blocks II** - Valves and Alarms
- **Design II** - Valves and their rationale
- **Design III** - Alarms and their rationale
- **Building Blocks III** - How a medical air system is constructed around the First Rule
- **The Second Rule of Medical Gas**
- **Design IV** - Locating sources
- **Building Block IV** - Complying with the Second Rule by good installation practices
- **Design V** - Routing and sizing pipe
- **Build Blocks V** - Enforcing Compliance with testing
- **The Installer and Verifier Peak Performance** - Maintaining a Medical Gas and Vacuum System
- **What’s Documented is Done** - Testing and Record keeping
- **Exam**

**Prerequisite:** None  
**Credential:** 6005 Generalist (Exam Required)  
**Course Hours:** 24 hrs

**Text Book Required:** NFPA 99 2018  
**Formats:** Available at select on-site locations
ASSE 6020 Medical Gas Inspector

The ASSE 6020 credential is intended for persons who need to oversee the work of others, primarily on the job site but also possibly in a design firm or engineering office. Course is designed to provide a broad understanding of medical gases and medical gas systems with the expectation that the participant will be prepared to visit job sites and identify common problems with installations. An introduction to the rules of NFPA 99, NFPA 55 and the ASSE 6000 Series is provided, along with an understanding of the role of the gases, environment of the medical gas system and safety when working around these systems.

Identifying and understanding the flaws in a system installation which can affect the safety of the patient and the testing methods which can identify those is the central theme of the course.

Typical attendees might include government officials, supervising engineers, site managers, design engineers who perform site reviews, and facilities managers.

The Medical Gas Inspector Course
- **Alphabet Soup** - The standards which apply
- **The 10 Hazards** - Safety around Medical Gases
- **Building Blocks I** - The major subsystems and familiarity with medical gas terms
- **The First Rule of Medical Gas**
- **Building Blocks II** - Valves and Alarms
- **Building Blocks III** - How a medical air system is constructed around the First Rule
- **The Second Rule of Medical Gas**
- **Building Block IV** - Complying with the Second Rule by good installation practices
- **Build Blocks V** - Enforcing Compliance with testing
- **Peak Performance** - Testing and Second Rule. Post-maintenance
- **What's Documented is Done** - Testing and Record keeping
- **Exam**

**Prerequisite:** 2 years of practical work with medical gas installations  
**Credential:** 6020 Inspector (Exam Required)  
**Course Hours:** 24 hrs

**Text Book Required:** NFPA 99 2018  
**Formats:** Available on-line and at select on-site locations
**ASSE 6020 Medical Gas Inspector with Design Emphasis**

The Medical Gas Inspector course formatted specifically for design professionals. Course will focus on the considerations, decisions and methods required when designing, sizing and selecting medical gas and vacuum equipment. The course is woven into the design exercise with the expectation that participants will be prepared to review plans or visit job sites and identify common problems. Participants can expect to finish the course understanding how a medical gas and vacuum system is laid out, selected, and sized. Participants will engage in the design of systems for a mock facility. The course is intensive and may require some work out of class.

The credential is intended for persons who need to oversee the work of others, primarily on the job site. The Design Emphasis portion of this course will also help that individual act as a resource for others in the design and engineering of the systems. The course will introduce the rules of NFPA 99, NFPA 55, and the ASSE 6000 Series and the design portion will review the FGI Guidelines. The role of the gases, environment of the medical gas system and safety when working around these systems is discussed.

Identifying and understanding the flaws in a system design or installation which can affect the safety of the patient and the testing methods which can identify those is the central theme of the course. This course also discusses some of the legal issues involved with the standards.

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**The Medical Gas Inspector with Design Emphasis Course**

- **Alphabet Soup** - The standards which apply
- **The 10 Hazards** - Safety around Medical Gases
- **Building Blocks I** - The major subsystems and familiarity with medical gas terms
- **Design I** - Outlet placements, patient environment equipment and applications
- **The First Rule of Medical Gas**
- **Design II** - Valves and their rationale
- **Design III** - Alarms and their rationale
- **Building Blocks II** - Valves and Alarms
- **Building Blocks III** - how a medical air system is constructed around the First Rule
- **The Second Rule of Medical Gas**
- **Design IV** - Locating sources
- **Building Block IV** - Complying with the Second Rule by good installation practices
- **Design V** - Routing and sizing pipe
- **Build Blocks V** - Enforcing Compliance with testing
- **What's Documented is Done** - Testing and Record keeping
- **Exam**

**Prerequisite:** 2 years of practical work with medical gas installations  
**Credential:** 6020 Inspector (Exam Required)  
**Course Hours:** 24 hrs  
**Text Book Required:** NFPA 99 2018  
**Formats:** Available at select on-site locations
**ASSE 6040 Medical Gas Maintenance**

The ASSE 6040 credential is intended for persons who perform maintenance on medical gas and vacuum system components. *(Note: The course and credential should be considered as an introduction for persons doing this work and is not alone sufficient for training a maintenance technician, as the practical activities are limited).* An introduction to the rules of NFPA 99, NFPA 55 and the ASSE 6000 Series is provided, but the emphasis is not on the rules themselves but on the why behind the rules. Alongside these we discuss the role of the gases, environment of the medical gas system and safety when working around these systems.

Practical exercises will be included as practical within the format of the course. Safety and protection of the patient through careful work practices are the central theme of the course. Test methods for troubleshooting will be discussed.

The course is intended for maintenance personnel employed by a medical facility or a maintenance subcontractor working for a medical facility.

### The Medical Gas Maintenance Personnel Course

- **Alphabet Soup** - The standards which apply
- **The 10 Hazards** - Safety around Medical Gases
- **Building Blocks I** - The major subsystems and familiarity with medical gas terms
- **Understanding Upstairs** - How the Medicos Use medical gases and what they need from them
- **Protecting the Patient** - Work practices with medical gases
- **The First Rule of Medical Gas**
- **Building Blocks II** - Redundancy, operation and testing the cascade
- **Building Blocks III** - Typical failure modes of medical gas and vacuum identification
- **The Second Rule of Medical Gas**
- **Building Block IV** - Basic maintenance operations
- **Build Blocks V** - Testing after maintenance operations
- **When to call the verifier**
- **What’s Documented is Done** - Testing and Record keeping
- **Exam**

**Prerequisite:** 2 years of practical work with medical gas installations

**Credential:** 6040 Medical Gas Maintenance Person *(Exam Required)*

**Course Hours:** 24 hrs

**Text Book Required:** NFPA 99 2018

**Formats:** Available on-line and at select on-site locations
ASSE 6010 Medical Gas Installer

This is the Medical Gas Installer course leading to the ASSE 6010 qualification. The ASSE 6010 credential is mandatory for persons who install medical gas and vacuum systems, particularly those who will perform brazing operations.

An in depth introduction to the rules of NFPA 99, NFPA 55 and the ASSE 6000 Series is provided. Alongside these we discuss the role of the gases, installation practices, environment of the medical gas system and safety when working around these systems.

Training on the proper method to braze medical gas piping is given. The credential is awarded after a written exam. Three sample brazes are performed and checked.

The course is intended for persons who are installing medical gas pipelines and equipment.

The Medical Gas Installer Course

- Alphabet Soup - The standards which apply
- The 10 Hazards - Safety around Medical Gases
- Construction - The process of installing medical gases
- Building Blocks I - The major subsystems and familiarity with medical gas terms
- Protecting the Patient - Good and bad in medical gas installation
- Building Blocks II - Installation practices and techniques
- Building Blocks III - Testing after installation - the Installer’s responsibility and how to do the tests
- When to call the verifier
- What’s Documented is Done - Labeling, testing and record keeping
- Exam

Prerequisite: 4 years of practical work with medical gas installations  
Credential: 6010 Medical Gas Installer (Exam Required) & Braze Qualification  
Course Hours: 32 hrs

Text Book Required: NFPA 99 2018  
Formats: Available on-line and at select on-site locations. Please note the brazing part must be performed at an on-site location (1 day).
HTM AP02 Authorized Person Course

This course leads to the HTM 02-01 or HTM 2022 Authorized Person credential. Course reviews in detail the rules in the HTM 02-01 standard, including differences with the HTM 2022 as appropriate. Basic operating rules for working with the systems are reviewed, along with safety with medical gases, the role of the gases, and environment of the medical gas system. The central course theme is ensuring patient safety through the rules of the standard.

Participants will learn how to design and size, install and commission medical gas and vacuum systems. We will review how to perform the required engineering tests and how to manage a Permit to Work system for the systems. We will cover assessing an existing system for compliance and proper operation, and how to adjust elements of the system for correct operation.

The course is intended for persons who will be installing, maintaining or administering medical gas pipeline systems. Typical participants will include persons designated by a Health Service organization to operate their medical gases, supervisory employees of contractors performing medical gas work, and designers and engineers who are designing, sizing and selecting equipment for these systems.

The Authorized Person Course

- Alphabet Soup - The standards which apply
- The 10 Hazards - Safety around Medical Gases
- Building Blocks I - The major subsystems and familiarity with medical gas terms
- Design I - Outlet placements, patient environment equipment and applications
- The First Rule of Medical Gas
- Design II - Valves and their rationale
- Design III - Alarms and their rationale
- Building Blocks II - How medical gas systems are constructed around the First Rule
- Design IV - Sources
- Building Blocks III - Installation practices and brazing
- Design V - Sizing pipe
- Building Blocks IV - The permit to work system
- Build Blocks V - System set up and adjustment
- Building Blocks VI - Testing
- What’s Documented is Done - Record keeping
- Exam

Prerequisite: Experience in medical gas work. CP credential is recommended.

Credential: Authorized Person to HTM 02-01 (Exam Required)

Course Hours: 40 hrs

Text Book Required: HTM 02-01

Formats: Available at select on-site locations
HTM CP02 Competent Person Course

This course leads to the HTM 02-01 or HTM 2022 Competent Person credential. Course reviews in detail the rules in the HTM 02-01 standard, including differences with the HTM 2022 as appropriate. Basic operating rules for working with the systems and components are reviewed, along with safety with medical gases, the role of the gases, and environment of the medical gas system. The central course theme is ensuring patient safety through the rules of the standard.

The participant will learn how to work on medical gas and vacuum systems and their key components. We will review work practices within a Permit to Work system. We will cover installation and maintenance practices and methods.

The course is intended for persons who will be installing or maintaining medical gas pipeline systems. Typical participants will include persons working within a Health Service organization maintenance department, and employees of contractors performing medical gas work.

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<td>• Build Blocks V - Maintenance operations</td>
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<td>• Building Blocks VI - The permit to work system</td>
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<td>• Building Blocks VII - System set up and adjustment</td>
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<td>• Building Blocks IX - Testing</td>
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<td>• Exam</td>
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**Prerequisite:** Experience in medical gas work or intent to work in the field

**Credential:** Competent Person to HTM 02-01 (Exam Required)

**Course Hours:** 40 hrs

**Text Book Required:** HTM 02-01

**Formats:** Available at select on-site locations
**Medical Gas Basic Series**

This fundamentals series of courses walks you through the basics of piped medical gas systems including alarms, medical air, and vacuum systems. These NFPA based courses focus on medical gas equipment theory, application and NFPA 99 guidelines. Build your own medical gas program or let BeaconMedaes make recommendations for your specific needs.

**Medical Gas Alarms Course**

This two lesson NFPA based course focuses on medical gas alarm theory, application, and NFPA 99 2018 guidelines. You will learn the fundamentals of medical gas alarms, what they are used for and application in a hospital.

**Vacuum & Waste Anesthetic Gas Disposal (WAGD)**

This 3 lesson NFPA based course focuses on Medical Vacuum and Waste Anesthetic Gas Disposal (WAGD) theory, application, and NPFA 99 2018 guidelines. You will learn the fundamentals of Medical Vacuum and WAGD, what it is used for, and application in a hospital.

**Valves & Outlets**

This NFPA based course focuses on Medical Gas Valves and Outlet theory, application, and NPFA 99 2018 guidelines. You will learn the fundamentals of Medical Gas Valves and Outlets, what they are, and their specific application in a hospital.

**Central Supply Systems**

This NFPA based course focuses on Medical Gas Central Supply theory, application, and NPFA 99 2018 guidelines. You will learn the fundamentals of Medical Gas Central Supply, what they are used for, and application in a hospital.

**Installation**

This 2 lesson NFPA based course focuses on Medical Gas Installation theory, application, and NPFA 99 2018 guidelines. You will learn the fundamentals of Medical Gas Installation, and application in a hospital.

**Medical Air**

This 2 lesson NFPA based course focuses on Medical Air theory, application, and NPFA 99 2018 guidelines. You will learn the fundamentals of Medical Air, what it is used for, and application in a hospital.

**On-site Oxygen**

This NFPA based course focuses on Medical On-Site Oxygen theory, application, and NPFA 99 2018 guidelines. You will learn the fundamentals of Medical On-Site Oxygen, what it is used for, and application in a hospital.

**Operations and Subsystems**

This NFPA based course focuses on Medical Gas Operations and Subsystems theory, application, and NPFA 99 2018 guidelines. You will learn the fundamentals of Medical Gas Operations and Subsystems, what they are, and application in a hospital.
**Medical Gas Basic Series - Continued**

**Rules of Medical Gas**
This 2 lesson NFPA based course focuses the Rules for Medical Gas theory, application, and NPFA 99 2018 guidelines. You will learn the fundamental Rules for Medical Gas and how they are specifically applied in a hospital.

**Terminology & Safety**
This 3 lesson NFPA based course focuses the Medical Gas Terminology and Safety. You will learn the importance of the standards and the fundamental requirements for working with Medical gas in a hospital environment.

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<th>Course Hours: Course duration can vary.</th>
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