Course Name	**Storage Tanks**
Credit Hours	2 Hours
Instructor(s)	Ralph Stevens
Fee	$29.00

Course Description

This course provides a basic understanding of water storage tanks and storage tank facilities; it offers general training for water operators. This course includes an introduction to storage tanks—common types and methods of classification, sizes and common materials, important components, and basic operation. It includes an overview of how water demand affects storage and the storage tank facility. The course also presents general regulations and standards that govern storage tank facilities, including those pertaining to specific features, facility and tank construction, and general use. General maintenance and safety concerns are covered, including disinfection and sanitation.

Learning Objectives

At the end of this class, students will be able to:

- Discuss common types of storage tanks and their classification.
- Identify sizes and common materials used in constructing storage tanks.
- Identify important storage tank components and explain basic operations.
- Explain the relationship between water demand and the selection and use specific types of storage tanks.
- Identify specific regulations and standards for storage tanks in the United States.
- Explain required and recommended maintenance for storage tanks used in specific types of environments and facilities.
- Explain proper disinfection and sanitation processes for storage tanks.
- Discuss common safety and security protocols for storage tanks.
- Identify proper maintenance techniques and recommended Inspections for water storage tanks.

Equipment Requirements

You must have an active, working internet connection to access this course online, as well as a platform to access the internet, such as a computer, tablet, or phone. All popular web browsers are supported, including Google Chrome, Mozilla Firefox, Safari, and Opera. No specialized software, speaker, microphone, or web camera is required.

Schedule and Location

This course is available online at any time at www.AYPOTech.com. Upon enrolling in the course, students will have access for 365 days or until the agency-issued course expiration date, whichever comes first. After the access expiration date, the student may re-activate their course if the course approval has not expired. If they do not re-activate, the course will be removed from the student's account and any progress in the course will be lost. Before the access expiration date, the student may sign in and out of the course as many times as needed to complete the course.

Student Support

Both general and technical support is available to the student before, during, and after taking the course online. Students have access to general customer support via phone, chat, and email. Students have access to the course instructor via email. All questions, concerns, and comments received will be responded to within one business day.

Participation/Interactivity Verification

Timed Logs - Per our company's record retention policy, each student's every log-in, log-out, and lesson/assessment completion time is tracked and retained as part of the student record.

Review Questions - After each section of text, students must answer a review question. Students cannot progress in the course until the question between sections has been answered correctly.

Global Timer - Students will not get credit until they spend a minimum of 120 active minutes total in the course.

Identity Verification

Unique Username/Password - Each student that wants to complete a training course with us must create an account by registering a unique personal email address and password. The student must enter this unique identifier every time they take a break from the course.

Assessment Details

Review Questions - The student must successfully answer all review questions between sections to get credit for the course. If their first response is incorrect, students will have to try again until they choose the correct answer.

Storage Tanks Timed Outline

Section	Title	Questions	Minutes
1	**An Introduction to Storage Tanks and Their Facilities**		**1.3**
	a. Introduction to Storage Tanks		**3.1**
	1. Objectives		**0.9**
	a. Course Structure		**0.9**
	2. Resources		**0.3**
	Review Question	**1**	**1.0**
2	**Common Types and Classification**		**2.4**
	a. Storage Methods		**0.1**
	1. Aboveground Storage Tanks		**1.2**
	2. Underground Storage Tanks		**1.3**
	b. Materials and Pressure		**0.3**
	1. Elevated Storage Tanks		**1.6**
	2. Standpipes		**2.1**
	3. Ground Storage Tanks		**2.6**
	a. Additional Tanks		**0.9**
	Review Question	**2**	**2.0**
3	**Sizes and Common Materials**		**1.2**
	a. Capacity		**0.6**
	b. Sizing		**1.9**
	1. Calculations		**0.4**
	a. Rectangular or Square Tank		**0.4**
	b. Cylindrical Tank		**0.2**
	c. Quick Calculation		**0.2**
	Review Question	**1**	**1.0**
4	**Storage Tank Components**		**0.9**
	a. Foundation/Base		**0.8**
	1. Support Structure for Elevated Tanks		**0.3**
	a. Roof/Cover		**1.0**
	b. Inlet and Outlet Pipes		**2.0**
	c. Drainage System		**0.5**
	d. Overflow Pipe		**0.7**
	e. Access Hatch or Manhole		**1.1**
	f. Level Indicator		**0.4**
	g. Ventilation System		**1.8**
	Review Question	**1**	**1.0**
5	**Basic Operation**		**0.7**
	a. Water Quality Management		**1.4**
	1. Level and Flow Management		**2.4**
	2. Pressure Control		**0.8**
	3. Pump Operation		**0.6**
	a. Temperature Control		**0.8**
	b. Regulatory Compliance		**0.5**
	c. Emergency Procedures		**0.4**
	Review Question	**2**	**2.0**

6	**Water Demand**		**1.7**
	a. Available Space		**0.4**
	1. Mixing & Circulation Frequency		**0.5**
	2. Refill Frequency		**1.0**
	a. Balancing Cost & Capacity		**1.0**
	b. Installation cost		**0.4**
	c. Special Note on Environmental Factors		**6.2**
	Review Question	**2**	**2.0**
7	**Regulations and Standards**		**0.5**
	a. EPA Regulations		**3.0**
	b. International Construction Council (ICC) Standards		**7.2**
	Review Question	**2**	**2.0**
8	**Regulations and Standards: Facility and Tank Construction**		**0.2**
	a. Concrete		**1.0**
	b. Fiberglass		**0.8**
	c. Polyethylene		**0.7**
	d. Steel		**0.4**
	1. Stainless Steel		**0.7**
	2. Carbon Steel (bolted steel)		**0.8**
	3. Corrugated Steel		**0.8**
	4. Galvanized Steel		**0.5**
	e. Cast-in-Place		**0.5**
	f. Precast Panels		**0.6**
	g. Welded Steel		**0.5**
	h. Bolted Steel		**0.3**
	i. Plastic and Fiberglass Water Storage Tanks		**0.2**
	1. Rotational Molding (Rotomolding)		**0.4**
	2. Fiberglass Reinforced Plastic (FRP)		**1.1**
	Review Question	**1**	**1.0**
9	**General Maintenance**		**0.3**
	a. Required and Recommended Maintenance		**0.6**
	1. Regular Maintenance		**1.8**
	2. Preventative Maintenance		**1.2**
	3. Corrective or Emergency Maintenance		**1.1**
	4. Quality-Based Maintenance		**0.7**
	a. Annual Cleaning Disinfection & Sanitation		**0.6**
	b. Tank Anti-Corrosion Coating		**1.6**
	c. Filtration		**0.7**
	Review Question	**2**	**2.0**
10	**Disinfection and Sanitation**		**2.4**
	a. Effective Methods		**0.3**
	1. Preparation & Safety Precautions		**0.7**
	a. Inspection		**0.3**
	b. Draining the Tank		**0.3**
	c. Cleaning		**0.6**
	d. Disinfection		**0.2**
	e. Prepare and Apply Solution		**0.7**
	f. Rinsing		**0.3**

	g. Water Source		**0.3**
	h. Final Chlorine Check		**0.7**
	Review Question	**2**	**2.0**
11	**Safety**		**0.3**
	a. Standards		**0.1**
	1. Personal Protective Equipment		**0.4**
	2. Fall Protection		**0.6**
	3. Barriers		**0.5**
	4. Safety & Health Training		**0.4**
	5. Recordkeeping		**0.3**
	6. Reporting		**1.1**
	7. Enforcement		**1.0**
	a. EPA		**2.1**
	b. Contaminant Safety Limits		**0.8**
	c. Contaminates & Regulations Review		**0.9**
	d. Enforcement		**0.5**
	e. Water Quality Testing		**1.3**
	f. Microbiological Contaminants		**1.0**
	g. Chemical Contaminants		**1.5**
	h. Security		**3.0**
	i. Considerations		**1.9**
	b. Tank Location & Position		**0.3**
	1. Turnover Rate and Flexibility		**0.6**
	2. Redundancy		**0.2**
	a. Monitoring and Control		**0.3**
	b. Roof Hatches		**0.6**
	c. Ladders		**1.5**
	Review Question	**1**	**1.0**
12	**Security**		**0.3**
	a. Risk and Resilience Assessments (RRAs)		**2.9**
	b. Physical Barriers and Access Control		**2.1**
	c. Emergency Protocols		**0.2**
	d. Automated Shutoff or Lockdown Mechanisms		**0.2**
	e. Education		**1.5**
	f. Intrusion Detection Equipment		**0.1**
	1. Door or Hatch Sensors		**0.4**
	2. Motion Sensors		**0.6**
	3. Glass Break Sensors		**0.3**
	4. Vibration Sensors		**0.4**
	5. Perimeter Sensors		**0.5**
	6. Cybersecurity Risk		**0.5**
	Review Question	**1**	**1.0**
13	**Inspections**		**5.1**
	Review Question	**1**	**1.0**
14	**Conclusion**		**1.8**
	Review Question	**1**	**1.0**
	Totals:	**20**	**145.9**
	Student Minimum Time Required:		**120.0**

Attendance Policy

At Your Pace Online's online courses are available anytime to any licensee with a computer and Internet connection. The courses are self-paced and can be completed over multiple sessions. The licensee must complete all multiple-choice questions between sections correctly to get credit for the course. If their first response is incorrect, students will have to try again until they choose the correct answer. After the course is successfully completed, the user must affirm they are the one who completed the course and verify that their registration information is correct.

Attendance Record Form

We store all of our student records in a database. We can supply attendance reports to the Board upon request.