



Tennessee Specific Industry Certification Horticulture Science Content Area Resource

This Tennessee Specific Industry Certification (TSIC) resource provides additional guidance as you prepare your horticulture science instructional materials. The general knowledge and skills are provided as a guide for developing lessons and lab activities that lead to deeper understanding of content. The list of sample terms are just that, a list of industry-specific terms that will build each student's knowledge base for this content area.

General knowledge and skills for Water Management

- Apply maintenance strategies to maintain a healthy water garden or pond, addressing the minimum considerations: pH, nitrate, dissolved oxygen, algae, pollutants, filter requirements, and fish feed schedules.
- Compare and contrast different irrigation systems and explain their advantages and disadvantages.
- Identify irrigation systems and tools and explain their function and/or application.
- Calculate the water supply flow rate, head pressure requirements, and pipe and pump size considerations for a water garden, pool, pond and/or irrigation system.
- Identify the plumbing skills required to install irrigation and water features in a landscape or turf setting.
- Discuss the design requirements for an irrigation system for a residential landscape.
- Explain the components of a bid presentation, including the project timeline, required permits, costs of installation, and selected materials.
- Distinguish between runoff and erosion.
- Explain the importance of a riparian zone and its significance to the environment.
- Discuss the correct procedure for collecting water samples from different surface water sources, such as a pond, river, etc., and city water sources.
- Evaluate the pH of water samples with a pH meter or litmus paper.
- Compare how pH changes with the introduction of a base or acid and describe the difference.
- Explain how water samples for salt and nutrient content are taken and analyzed.
- Justify the most effective type of irrigation system for specific crops on sites based on available water resources.
- Determine the appropriate irrigation pump size, pipe, and delivery system to fit the needs of a simulated horticultural crop.
- Explain the key components of a water management system.
- List the key factors that indicate water quality and ways to manipulate each factor.
- Explain the impact of different types of pumps, flow rates of pipe sizes ½" to 10" in gallons per minute, friction loss, and the correlation between pressure and volume when calculating GPM.
- Calculate the flow and pressure requirements of a landscape irrigation system.
- Describe basic management operations of a hydroponic system.



Sample terms associated with content area:

- Acidic
- Animal and plant cycling
- Animal waste
- Aquaculture system
- Aquatic
- Aquatic vegetation
- Arid regions
- Baking Soda
- Band placement
- Best Management Practices (BMP's)
- Boron
- Cabbage
- Centrifugal pumps
- Cloudless skies
- Codes department
- Commercial landscape
- Contour farming
- Control valves
- Cucumbers
- Delayed
- Demolition phase
- Digestive system
- Directly irrigation
- Dissolved oxygen
- Dissolved oxygen levels
- Drip irrigation
- Dynamic pressure
- Dynamic pressure
- Electrical conductivity
- Elevation change
- Environmental factors
- Erosion control
- Eutrophication
- Excessive algae
- Fertigation
- Fertilizer
- Fertilizer injector
- Flooding
- Flush plugs
- Foot pounds
- Friction factor
- Friction loss
- Furrow irrigation
- Gallons Per Minute (GPM)
- Grab sampling
- Gravity
- Green manure
- Hydrogen ion concentration
- Hydrologic function
- Hydroponic system
- inert mineral
- Irrigation
- Irrigation flushing
- Lettuce
- Manganese
- Mechanical aeration
- Micro mist irrigation
- Milligrams Per Liter (mpl)
- Mixed fertilizers
- Mountain ranges
- Nitrogen sources
- No-till program
- Nutrient
- Nutrient cycling
- Organic materials
- Parts Per Million (ppm)
- Peat-moss
- Pelleted limestone
- Peppers
- Perlite
- Permits
- pH
- pH range
- pH range for fish
- Phosphorus
- Plant Installation
- Plastic pipe value
- Ponds
- Potassium
- Pounds per Square Inch (PSI)
- Pressure regulator
- Primary shut-off valves
- Protein in feed
- Pump
- PVC cleaner and glue
- Quick coupler
- Regional environmental protection agency



- Regional planning office
- Residential landscape
- Riparian zone
- Rivers
- Rockwool
- Rumen
- Runoff
- Shrink-swell
- Silt fence
- Siphon
- Site preparation
- Soil tilth
- Soilless potting mix
- Spinach
- Sprinkler
- Sprinkler irrigation
- Sprinkler zone
- State planning office
- Strawberries
- Sub-irrigation
- Submerged
- Sweetening the joint
- Tomatoes
- Tree protection
- Turbidity
- Upland terraces
- Value
- Valve manifolds
- Vinegar
- Volts
- Water gardens
- Water pollution
- Water pressure
- Water quality
- Water soluble fertilizers
- Water table
- Water velocity