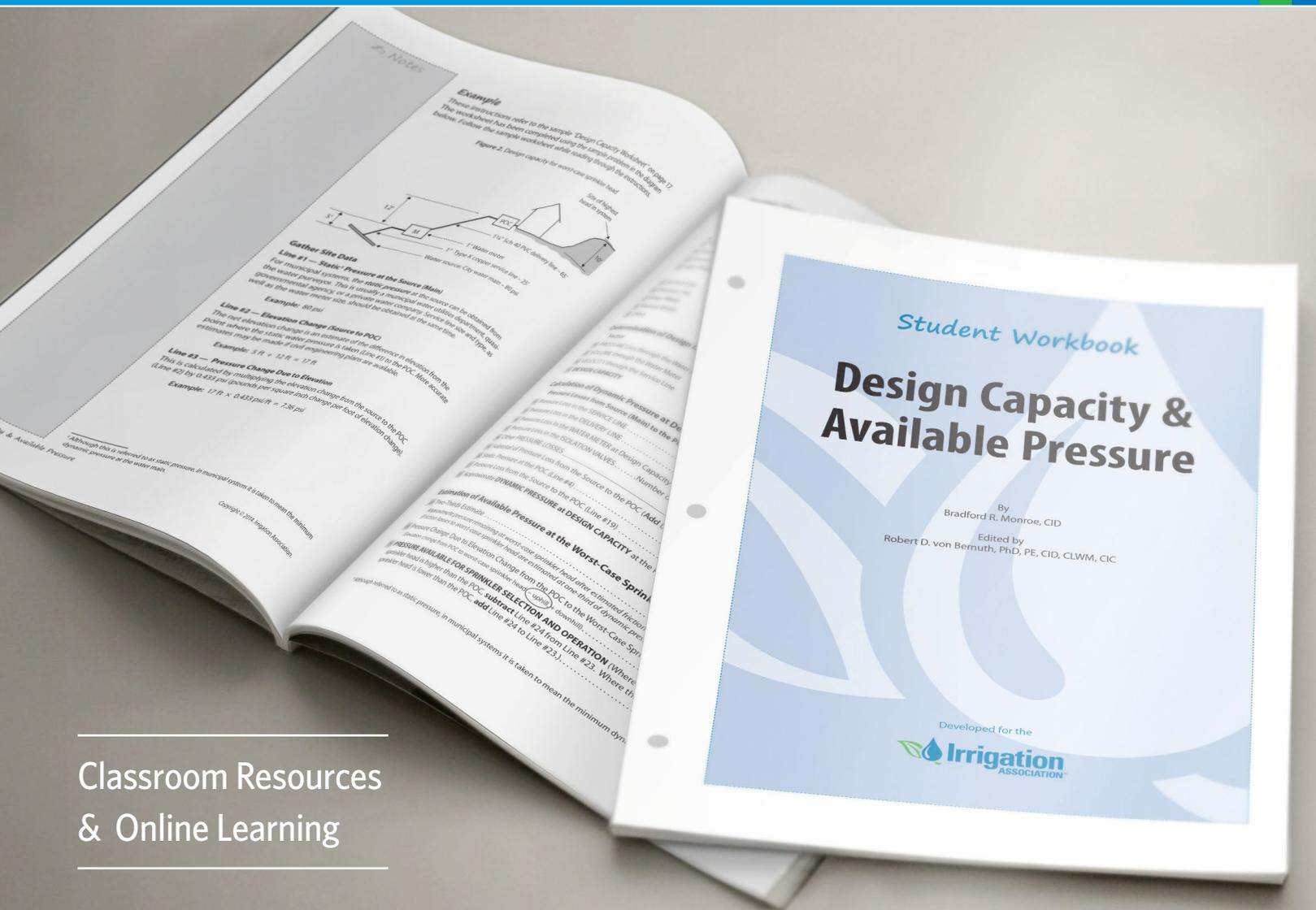


**2019**
**Educational Resources Catalog  
 Educator Edition**

Building a stronger industry workforce


 Classroom Resources  
 & Online Learning

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## Building a Stronger Industry Workforce

The Irrigation Association is committed to strengthening the industry's workforce of today and tomorrow by creating quality education resources for continuing professional development.

### ABOUT THE IRRIGATION ASSOCIATION

Dedicated to promoting efficient irrigation, the IA is the leading membership organization for irrigation equipment and system manufacturers, dealers, distributors, designers, consultants, contractors and end users. The IA works to improve industry proficiency, advocate sound water management and grow demand for water-efficient technologies, products and services.

### VISIT THE IA ONLINE STORE

Visit the IA store to access the most current listing of IA education resources, register for certification exams, learn about IA events and more.

[www.irrigation.org/store](http://www.irrigation.org/store)

## Ordering Information

### PAYMENT

Remit payment in US\$ on a U.S. bank, payable to the Irrigation Association. Foreign orders may pay with money orders payable in U.S. currency or via credit card (Visa, MasterCard, Discover or American Express).

### SHIPPING & HANDLING

Orders must be delivered to a street address (no post office boxes). All orders are shipped standard ground service. Express shipping is available for an additional fee. When ordered online, shipping and handling will automatically be added. Please contact the IA office for further shipping information.

### DISCOUNTS

Discounts are available for teaching packages. The subjects offered can make up a full course or part of a course. Buy any five as a package and receive a **30 percent discount**.

If a combination of materials fits your purposes, the IA offers special pricing for purchase of more than one classroom resource.

### RETURN POLICY

Returns will be accepted only within 30 days of receipt of order. Please contact the Irrigation Association to request a return authorization. All returns are subject to a 20 percent restocking fee.

**For more information, email [education@irrigation.org](mailto:education@irrigation.org) or call 703.536.7080.**

## IA Classroom Resources

### TEACHING KITS

Instructional lecture materials are designed for a 50-minute class unless otherwise indicated. Lab materials are designed for two- to three-hour laboratory classes. Teaching kits include

- PowerPoint slide deck.
- teaching manual with a screenshot of each PowerPoint slide and teaching notes.
- workbook with practice problems and quizzes.
- additional teaching resources, such as sample spreadsheets, graphics, materials lists and suggested quiz and test questions.

**Academia \$60 | IA Member \$220 | Nonmember \$320**

*Irrigation Components: Academia \$80 | Member \$330 | Nonmember \$480*

### WORKBOOKS

Workbooks are focused on single-subject principles and concepts. Workbook contents include the following:

- practice problems
- tables
- calculation worksheets
- glossary of terms
- other references

**Academia \$15 | IA Member \$20 | Nonmember \$25**

*Irrigation Components: Academia \$20 | Member \$25 | Nonmember \$35*

*Descriptions of the available subjects are listed on the following pages. Workbooks are three-hole-punched binder inserts.*

**Visit [www.irrigation.org/store](http://www.irrigation.org/store) for the most up-to-date listing of the IA's education resources.**

## Agriculture & Turf/Landscape/Golf

### Advanced Pumps

By: Robert D. von Bernuth, PhD, PE, CID, CLWM, CIC

This course is designed to enhance understanding of how pumps really work. It covers centrifugal pump curve development starting with basic descriptions and analogies leading to an in-depth discussion of H-Q curves. The families of curves for differing impeller diameters are developed step by step as are efficiency curves. Cavitation is discussed in detail. Positive displacement pumps, their performance curves and appropriate use are covered. Variable frequency drives are discussed.

(28 pg., ISBN: 978-1-935324-65-2) (2013) Code: EF\_AP\_SM

### Basic Irrigation Hydraulics

By: Ramesh Kumar, PhD, CGIA, CIC, CID, CLIA, and Eudell Vis, CID, CLIA



Introduce students to basic hydraulic principles and how they are applied in irrigation systems. This workbook addresses how pressure is created, the difference between static and dynamic pressure and flow, as well as an introduction to friction loss in piping, fittings and other irrigation system components.

(67 pg., ISBN: 978-1-935324-01-0) (2013) Code: EF\_BH\_SM

### Introduction to Pumps

By: Robert D. von Bernuth, PhD, PE, CID, CLWM, CIC

Understand when pumps are needed, how they work and how to select a pump. Explore how to extract the information from a typical pump curve and understand how the pump interacts with the system.

(24 pg., ISBN: 978-1-935324-31-7) (2013) Code: EF\_IP\_SM

### Irrigated Soils

By: Robert D. von Bernuth, PhD, PE, CID, CLWM, CIC

Learn about the components of soils, formation, physical properties, textural classes, water movement within the soil, and water uptake by plants. Gain a solid grasp of the soil/water relationship in this course, which is essential for anyone in the industry.

(39 pg., ISBN: 978-1-935324-14-0) (2013) Code: EF\_IS\_SM

### Irrigation Hydraulics Laboratory

By: Ronald E. Sneed, PhD, PE, CAIS, CIC, CID, CLIA

Help students understand hydraulic principles by seeing them in action. This laboratory exercise provides hands-on experience at reading meters and gauges and observing how hydraulic principles impact sprinkler performance. It is a companion to *Basic Irrigation Hydraulics*.

(48 pg., ISBN: 978-1-935324-48-5) (2014) Code: EF\_IH\_SM

### Soil-Plant-Air Continuum

By: Robert D. von Bernuth, PhD, PE, CID, CLWM, CIC

Learn how water moves from the soil to plants to the air and back again as part of the soil-plant-air continuum. This course covers how plants use water for transpiration and photosynthesis, store energy from the sun for use by other living things, and use and emit carbon and oxygen in a continuous cycle that is essential to life.

(21 pg., ISBN: 978-1-935324-26-3) (2014) Code: EF\_SPAC\_SM

### Sprinkler Spacing

By: Kenneth H. Solomon, PhD, PE; Ronald E. Sneed, PhD, PE, CAIS, CIC, CID, CLIA; Robert D. von Bernuth, PhD, PE, CID, CLWM, CIC; Brian Vinchesi, CGIA, CIC, CID, CLIA, CLIM, CLWM; and Lynda Wightman, CGIA, CLIA

This is the first of a three-part set on designing fixed spacing sprinkler systems. A key step in the design of any sprinkler system is deciding where to place the sprinklers. To make the right placement decisions, you need to understand that the underlying objective is to provide a uniform application of water. Uniformity of application is related to sprinkler spacing through the concept of overlap. This module explains the terminology, concepts and considerations used in making sprinkler spacing decisions.

(40 pg., ISBN: 978-1-935324-57-7) (2012) Code: EF\_SS\_SM

### Sprinkler Irrigation Uniformity

By: Robert D. von Bernuth, PhD, PE, CID, CLWM, CIC

Part two of the set presents sprinkler distribution uniformity. Sprinkler systems should be designed to apply water as uniformly as is economically practical. While the description of uniformity involves mathematics, this module is designed to graphically convey the concept of overlapping sprinklers and the resulting uniformity. The mathematical formulae for describing uniformity are explained and are related to a visual presentation of the uniformity.

(35 pg., ISBN: 978-1-935324-59-1) (2012) Code: EF\_SU\_SM

### Sprinkler Irrigation Efficiency & Management

By: Robert D. von Bernuth, PhD, PE, CID, CLWM, CIC

Part three of the series shows how irrigation efficiency relates to uniformity and how management affects uniformity. Continuing to use graphics, the module shows how management affects efficiency and how uniformity and management together can maximize efficiency.

(15 pg., ISBN: 978-1-935324-61-4) (2012) Code: EF\_SEM\_SM

## Agriculture

### Agricultural Sprinklers

By: Ronald E. Sneed, PhD, PE, CAIS, CIC, CID, CLIA

Growers, farmers, regulatory agencies and environmentalists are driving advances in technology by demanding irrigation systems that better manage water and energy resources. This workbook covers sprinkler irrigation systems used in production agriculture, including criteria to select the best option based on crop type and site-specific growing conditions.

(29 pg., ISBN: 978-1-935324-44-7) (2014)

Code: EF\_AS\_SM

### Precipitation Rates for Agricultural Sprinkler Systems

By: Ronald E. Sneed, PhD, PE, CAIS, CIC, CID, CLIA

Learn how to calculate precipitation rates and develop irrigation schedules for sprinkler systems used in production agriculture. This workbook includes practice problems for different scenarios using sprinklers to irrigate crops. It is a companion to *Agricultural Sprinklers*.

(32 pg., ISBN: 978-1-935324-46-1) (2014)

Code: EF\_PRAS\_SM

## Turf/Landscape/Golf

### Basic Electricity for Irrigation Systems

By: Vince Nolletti and Robert D.

von Bernuth, PhD, PE, CID, CLWM, CIC

This workbook is a basic primer for electricity in irrigation systems. It reviews electrical terminology, the rationale behind electrical codes and safety requirements, typical circuits used in control system wiring, and calculating the correct wire size and length.

(24 pg., ISBN: 978-1-935324-38-6) (2012)

Code: EF\_BE\_SM

### Design Capacity & Available Pressure

By: Bradford R. Monroe, CID



Evaluate various water sources for irrigation system designs. This workbook teaches students to determine the maximum safe flow and calculate water and pressure requirements to meet the irrigation demands of a particular field or landscape.

(58 pg., ISBN: 978-1-935324-03-4) (2014)

Code: EF\_DC\_SM

### Electrical Troubleshooting for Landscape Irrigation Systems

By: Donald D. Franklin, CID, CLIA



Learn how to diagnose common irrigation faults found in the field. This workbook covers meters commonly used in landscape systems, how to read them and the recommended sequence to troubleshoot electrical problems. It is appropriate for use as a lecture or laboratory exercise.

(38 pg., ISBN: 978-1-935324-40-9) (2013)

Code: EF\_ET\_SM

## Turf/Landscape/Golf cont.

### Introduction to Two-wire Technology

By: Tone Ware

This workbook introduces two-wire systems as an alternative to multiwire systems. General design criteria are identified and the advantages and disadvantages of the two systems are compared. Characteristics of components and operation of two-wire systems are covered in detail. System cost examples are presented.

(41 pg., ISBN: 978-1-935324-64-5) (2014)

Code: EF\_TW\_SM

### Irrigation Components: Residential/ Small Commercial Systems

By: Kurt Thompson, CGIA, CIC, CID, CIT, CLIA, CLWM



Understanding the parts that make up a residential or small commercial landscape is fundamental to designing, installing or troubleshooting a system. This manual describes the components of these systems from the point of connection until the water hits the ground, the control systems, and how they work with the whole system.

(83 pg., ISBN: 978-1-935324-42-3) (2013)

Code: EF\_IC\_SM

### Irrigation Pipe Sizing

By: Bradford R. Monroe, CID

Learn how to properly size pipe for more economical irrigation systems that perform correctly. This workbook covers the friction factor and velocity methods and provides guidance on when to use which method. Practice problems help students develop skills, including using friction loss charts.

(69 pg., ISBN: 978-1-935324-02-7) (2014)

Code: EF\_PS\_SM

### Irrigation Systems Performance Audit Laboratory

By: Eugene W. Rochester, PhD, PE, CID, CLIA; Brent Q. Mecham, CID, CLWM, CIC, CAIS; and Robert D. von Bernuth, PhD, PE, CID, CLWM, CIC

Learn the basics of auditing irrigation systems. This laboratory exercise provides hands-on experience with conducting an audit, including measuring sprinkler head performance, net precipitation rate and distribution uniformity, and creating irrigation schedules.

(30 pg., ISBN: 978-1-935324-05-8) (2012)

Code: EF\_ISPA\_SM

### Precipitation Rates for Turf/Landscape Sprinkler Systems

By: Bradford R. Monroe, CID

Calculate how fast water is applied to the landscape by irrigation systems. This workbook explains how nozzle flow rate and sprinkler spacing impact precipitation rates, as well as the relationship between matched precipitation rates and sprinkler uniformity.

(43 pg., ISBN: 978-1-935324-09-6) (2014)

Code: EF\_PRTL\_SM

# Curriculum Suggestions

This table is intended to be a guide for choosing the right materials to support the type of irrigation training being presented.

There are four categories of tools:

- **Introduction** — a general overview but without the depth needed to design or troubleshoot
- **Design** — introductory material and more in-depth content to support teaching system design
- **Complete** — all the material for either agriculture or turf/landscape, including introductory, design, troubleshooting and supplemental material
- **Troubleshooting** — material to support troubleshooting turf/landscape systems with an emphasis on components, electricity and hydraulics

The complete package would easily supply enough material for a thorough in-house training program for your irrigation staff or for classroom learning. The numbers are the suggested order for presentation for the selected training resources.



**Save on training packages**

The subjects offered can make up a full course or part of a course. **Buy any five as a package and receive a 30 percent discount.**

	AGRICULTURE	TURF/LANDSCAPE			AGRICULTURE & TURF/LANDSCAPE			
	Complete	Introduction	Design	Complete	Troubleshooting	Introduction	Design	Complete
Advanced Pumps	12			16				16
Agricultural Sprinklers	4					2	2	17
Basic Electricity for Irrigation Systems				10	1			10
Basic Irrigation Hydraulics	2	2	2	2	2	5	6	2
Design Capacity & Available Pressure	5		4	4		6	7	4
Electrical Troubleshooting for Landscape Irrigation Systems				11	3			11
Irrigation Components: Residential/Small Commercial Systems		3	5	5	4			5
Irrigation Hydraulics Laboratory	3			13	5			13
Irrigation Pipe Sizing	6		3	3	6		3	3
Introduction to Pumps	11			15				15
Introduction to Two-wire Technology				12	7			12
Irrigated Soils	1	1	1	1		1	1	1
Irrigation Systems Performance Audit				14				14
Precipitation Rates for Agriculture	7					3	4	18
Precipitation Rates for Turf/Landscape			6	6		4	5	6
Soil-Plant-Air Continuum	13			17				19
Sprinkler Efficiency & Management	10		9	9			10	9
Sprinkler Irrigation Uniformity	9		8	8		8	9	8
Sprinkler Spacing	8		7	7		7	8	7

# Online Learning

## Online Classes

The IA's online learning center makes continuing education easier and more affordable than ever. Hands-on, interactive lessons let you study whenever and wherever you're most focused and ready to learn, without having to attend a formal class. You can work at your own pace and take intermittent quizzes to test progress. A beginning student can learn the basics, or a veteran can refresh on principles. It is also a good way to gain CEUs to support your certification. Courses are 4 CEUs and are accessible for 90 days.

Member \$110 | Nonmember \$150

*Prices are subject to change without notice.*

- Agriculture Irrigation Hydraulics
- Agriculture Sprinklers & Precipitation Rates
- Electrical Troubleshooting for Landscape Irrigation Systems
- Introduction to Pumps
- Irrigated Soils
- Landscape Irrigation Hydraulics
- Landscape Irrigation Precipitation Rates
- Landscape Irrigation Scheduling
- Soil-Plant-Air Continuum

*IA online learning opportunities are not required for certification or endorsed by the IA Certification Board.*

**For more information about online classes, irrigation seminars and recorded webinars, visit [www.irrigation.org/learningondemand](http://www.irrigation.org/learningondemand).**

## ITRC Online Classes

The Irrigation Association has partnered with Cal Poly's Irrigation Training and Research Center to offer a new series of online courses for landscape irrigation.

Each ITRC class includes videos, reading, interactive assignments and online quizzes. Pricing and CEUs vary based on class length. Member pricing is listed first followed by nonmember pricing. CEUs are designated in the listing below, and courses are accessible for 90 days.

*Prices are subject to change without notice.*

- Basic Hydraulics  
Intermediate | 3 CEUs | Member \$80 | Nonmember \$105
- Basic Soil-Plant-Water Relationships  
Intermediate | 2 CEUs | Member \$55 | Nonmember \$70
- Distribution Uniformity & Precipitation Rate  
Intermediate | 1.5 CEUs | Member \$45 | Nonmember \$60
- Evapotranspiration  
Intermediate | 1 CEU | Member \$28 | Nonmember \$38
- Irrigation System Components  
Beginner | 3 CEUs | Member \$80 | Nonmember \$105
- Landscape Irrigation Auditor  
Intermediate | 4 CEUs | Member \$110 | Nonmember \$145
- Landscape Sprinkler Design  
Advanced | 8 CEUs | Member \$220 | Nonmember \$285
- Scheduling for Auditors  
Intermediate | 2 CEUs | Member \$55 | Nonmember \$70
- Scheduling for Sprinkler Design  
Advanced | 1.5 CEUs | Member \$45 | Nonmember \$6



## License a Class

IA classes are available for those who want to become an IA class provider or to organizations that would like to offer IA classes multiple times. For more information, contact the IA education department at [education@irrigation.org](mailto:education@irrigation.org) or visit [www.irrigation.org/education](http://www.irrigation.org/education).

## Online Irrigation Seminars

The IA has introduced a new series of irrigation seminars from the Irrigation Shows. Seminars are offered in two tracks: one for agricultural interests and one for landscape interests. Seminars address irrigation industry best practices, including the underlying concepts and implementation “how tos” of efficient irrigation and water management. Earn 1 CEU for each one-hour seminar. Seminars are accessible for 90 days.

Member \$28 | Nonmember \$38

*Prices are subject to change without notice.*

### AGRICULTURE IRRIGATION TOPICS

- Auditing Ag Drip/Microirrigation Systems
- Auditing Center Pivot Systems for Nozzle Performance
- Benefits of Pressure Compensation
- Calculating Precipitation Rates for Mechanized Ag Irrigation Systems
- Irrigating With Variable Rate Irrigation
- Irrigation for Vegetable Crops
- Maintenance of Microirrigation Systems
- Recent Advances in Remote Sensing for Mechanized Irrigation Management
- Solutions for Maximizing Irrigated Areas Using Moving Sprinkler Systems
- Water Movement in Soils

### TURF/LANDSCAPE IRRIGATION TOPICS

- Analyzing Water Sources for Landscape Irrigation
- Auditing Landscape Drip Irrigation Systems
- Auditing: Soil Moisture vs. Catch Cans
- Automating Water Flow Measurement With Sensors
- Basics of Filtering
- BMP — Basis of Design
- Catchment Systems for Alternate Water Sources
- Commissioning an Irrigation System
- Deficit Irrigation for Managing Landscapes
- Do's & Don'ts of Backflow Prevention Devices
- Earning Points for Green Projects
- Estimating Landscape Plant Water
- ET & Irrigation Management
- Field Study of Uniformity Improvements From Multistream Rotational Spray Heads
- Graywater Irrigation
- Irrigating Green Roofs
- Impacts of Irrigation in Building Rating Systems — **NEW!**
- Low-impact Development & Irrigation: Navigating the Maze of Regulations — **NEW!**
- Measuring Landscape Water Use
- A New Way to Evaluate Sprinkler Performance
- Pressure Regulation to Improve Irrigation Efficiency

- Proper Grounding Techniques
- Rainwater Harvesting — Engineered Failures
- Rainwater Harvesting for Irrigation
- Rainwater Harvesting — Underground Storage Design & Construction
- Refining the Landscape Coefficient for Improved Irrigation
- Return on Investment for Irrigation Upgrades
- Smartphone Apps for Irrigation Management
- Solvent Welding PVC Pipe
- Starting With Efficiency
- Sustainable Landscapes & Water-use Efficiency
- Treating Alternative Water for Irrigation
- Using Drones to Improve Irrigation Management — **NEW!**
- Using Water Budgets as a Management Tool
- Water Movement in Soils & Its Implications for Drip Irrigation
- Water Quality of Alternate Water Sources
- Water Quality for Ornamental Plants/Landscaping
- Watering Within the Lines: Water Use Restrictions vs. Water Budgets
- Weather-based Irrigation Controllers: Features That Maximize Performance — **NEW!**
- Workforce Training

## Recorded Webinars

Webinar sessions feature industry experts addressing best practices and techniques for implementation in the field. Topics cover both landscape and agriculture irrigation and focus on issues current and relevant to those working in the industry today. Earn 1 CEU for each one-hour seminar.

Member \$25 | Nonmember \$40

*Prices are subject to change without notice.*

- Advance Wire Troubleshooting: Using Volts, Ohms & Amperage
- Basics of Water-efficient Irrigation Products
- Drip Irrigation Design for Plant Establishment & Long-term Maintenance
- ET & Plant Factors: Dealing With Drought & Deficit Irrigation
- Fertigation/Chemigation for Agriculture & Landscape Irrigation
- Filtration for Agriculture & Landscape Irrigation
- How to Match Precipitation Rates on Rotors
- Implementing Variable Rate Center Pivot Irrigation
- Keeping Water on Target: Impacts on Uniformity & Efficiency
- Methods & Materials for Restraining Pipes & Fittings
- Pressure Regulation & Check Valves for Landscape Irrigation
- Refining the Landscape Watering Coefficients for Your Sites
- Upgrading Points of Connection for Master Valves & Flow Sensors
- Using Soil Moisture Sensors
- VFD Pump Operation
- Wi-Fi Controllers for Landscape Irrigation

AGRICULTURE



## SHAPE THE FUTURE OF IRRIGATION

The mission of the Irrigation Foundation is to promote careers in irrigation. Its vision is a future where the irrigation industry is thriving with an ample supply of educated, highly skilled professionals. The Foundation introduces students to exciting irrigation careers and works with academics to teach irrigation curriculum via its programs:

- Irrigation E3
- Irrigation Faculty Academy
- Irrigation Scholarships
- Excellence in Education Award
- Irrigation Career Link

[www.irrigationfoundation.org](http://www.irrigationfoundation.org)

LANDSCAPE

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