

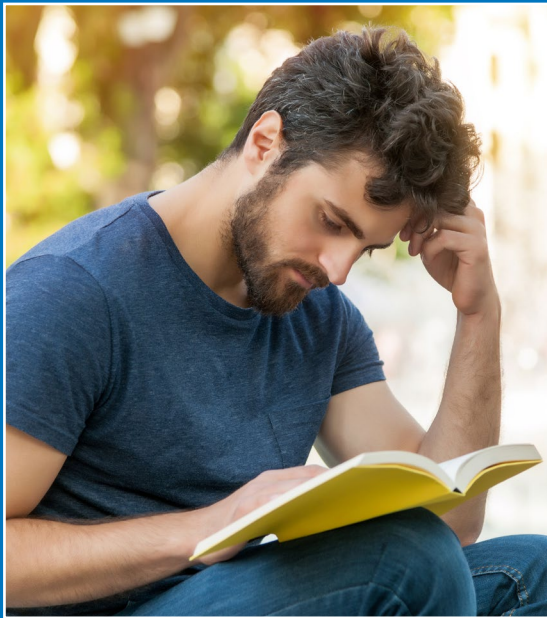
2019**Educational Resources Catalog**

Your primary source for
irrigation-related resources



Textbooks
Exam References
Teaching Kits
Training Tools
Online Offerings

Order online at www.irrigation.org/store or call 703.536.7080.



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

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

Book discounts are available on a single-title bulk purchase when shipped to a single address. Bulk purchase discounts cannot be combined with any other discounts or specials. (Bookstores and schools should call for discount information.)

20-49 books – 8% | 50-99 books – 12%

100 or more books – 15%

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.

What's Inside

Welcome to the Irrigation Association 2019 educational resources catalog — your comprehensive source for increasing your industry knowledge and expertise. Created for irrigation and green industry professionals, instructors and students, this catalog is divided into three sections for ease of use:

Textbooks — Grouped by market application (agriculture or turf/landscape/golf), this section offers a wide range of titles for everything from basic theory to advanced techniques. Upgrade your knowledge and skills with relevant, field-tested references from the IA.

Industry Extras and Online Learning — Hone your competitive edge with IA resources to help review for certification exams and monitor the latest developments and best practices. Learn more about face-to-face classes, online learning and the IA's technical paper library.

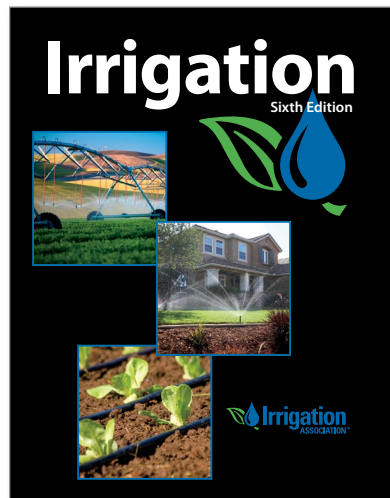
Training Resources — Geared toward career seekers, employers and educators, training resources include workbooks and teaching kits. These materials have been developed to introduce irrigation and water management theory and basic principles, with practical examples for on-the-job or in-class exercises.

No matter your level or area of expertise, you'll find the 2019 educational resources catalog has something to offer everyone. Simply turn the page to find the right products for you.

Agriculture & Turf/Landscape/Golf

Irrigation, Sixth Edition

By: Irrigation Association



The most current and relevant information available on irrigation today.

Best Seller!

Irrigation, Sixth Edition is a must-have reference for all water managers and those interested in advancing their professional knowledge.

This Irrigation Association publication was written and reviewed by industry experts with more than 1,500 years combined experience and condensed into a 1,100-page volume on irrigation systems, technologies and practices.

Irrigation, Sixth Edition is the most up-to-date compilation of industry topics. Presented in 30 chapters, this resource covers agricultural, landscape, turfgrass and other applications of irrigation systems.

New and expanded chapters on

- the role of efficient irrigation in managing and conserving water resources.
- using microirrigation in both agricultural and landscape applications.
- performance auditing procedures for irrigation systems.
- utilizing chemigation and fertigation to improve crop performance and yield.
- planning and designing irrigation systems.

(1,089 pg., hard cover, ISBN: 978-1-935324-50-8) (2011)

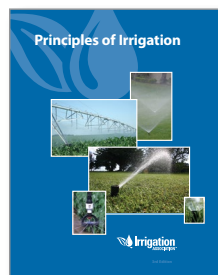
Member \$153 | Nonmember \$205 | Academia \$130

Code: IRRIG6TH

Principles of Irrigation (3rd Edition)

By: Irrigation Association

Best Seller



This manual covers the theory and application of irrigation principles. Chapters address system types, soil-plant-water, uniformity concepts, precipitation rates, scheduling, backflow prevention, pipe and fittings, hydraulics, pumps, and electric principles and wire sizing. Extensive appendices include a glossary, tables, formulas and more. (manual for Principles of Irrigation class; CLWM, CID and CLIA exam reference)

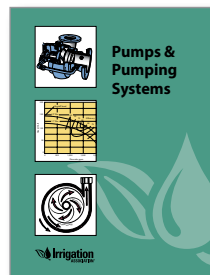
(369 pg., soft cover, ISBN: 978-1-935324-12-6) (2015)

Member \$66 | Nonmember \$90 | Academia \$45

Code: POI3

Pumps & Pumping Systems

By: Irrigation Association



This manual covers types of pumps used in irrigation with emphasis on centrifugal pumps. It covers the basics of pumps, pump curves and pump selection, including an introduction to computer-based pump selection and system curves. Families of pump curves and affinity laws are covered in depth leading to a discussion of variable frequency drives and their applications in irrigation systems. Types of power plants and decision-making regarding pumping system alternatives wrap it up. (manual for Pumps and Pumping Systems class)

(146 pg., soft cover, ISBN: 978-1-935324-30-0) (2015)

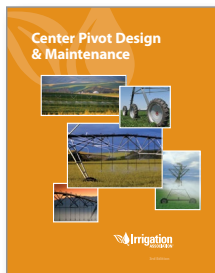
Member \$50 | Nonmember \$68 | Academia \$35

Code: PPS

Agriculture

Center Pivot Design & Maintenance (3rd Edition)

By: Irrigation Association



This up-to-date guide to center pivot systems includes a review of soils and hydraulics principles applicable to center pivots. Developed by industry experts, the book presents guidelines for sprinkler package selection, drive systems, tire selection and system capacity. Additional topics include chemigation and system maintenance. *(manual for Center Pivot Design class)*

(146 pg., soft cover, ISBN: 978-1-935324-56-0) (2016)

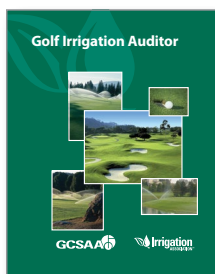
Member \$54 | Nonmember \$73 | Academia \$40

Code: CPD3

Turf/Landscape/Golf

Golf Irrigation Auditor

By: Irrigation Association



Evaluate golf course water use and irrigation system uniformity with this easy-to-follow reference. Structured sequentially, the manual outlines how to evaluate system uniformity and develop clear and simple schedules to save water, while keeping golf courses beautiful and playable. This manual includes worksheets, checklists and examples to streamline the process. *(manual for Golf Irrigation Auditor class; CGIA exam reference)*

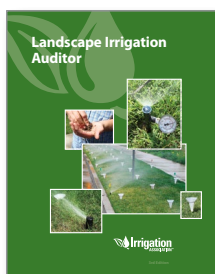
(279 pg., soft cover, ISBN: 978-1-935324-18-8) (2010)

Member \$50 | Nonmember \$68 | Academia \$35

Code: CGIA

Landscape Irrigation Auditor (3rd Edition)

By: Irrigation Association



Audit irrigation systems and develop watering schedules with this step-by-step guide. Originally developed by California Polytechnic for the California Department of Water Resources Landscape Water Management Program, the handbook has undergone several modifications to meet current demands for improved irrigation efficiency. *(manual for Landscape Irrigation Auditor class; CLIA exam reference)*

(237 pg., soft cover + software, ISBN: 978-1-935324-13-3) (2013)

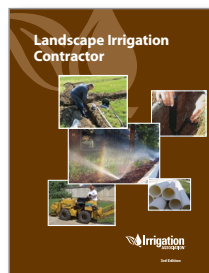
Member \$55 | Nonmember \$75 | Academia \$40

Code: LIAM3

Turf/Landscape/Golf cont.

Landscape Irrigation Contractor (3rd Edition)

By: Irrigation Association



Improve irrigation contracting skills with this extensive reference manual. Topics include soil-plant-water relationships, distribution uniformity and efficiency, scheduling, precipitation rates, pumps, wire sizing, plans and specifications, contracts, safety, plumbing and electrical codes, OSHA regulations, hydraulics and more. *(manual for Landscape Irrigation Contractor class; CIC exam reference)*

(427 pg., soft cover, ISBN: 978-1-935324-20-1) (2014)

Member \$66 | Nonmember \$90 | Academia \$45

Code: CIC3

Advanced Landscape Irrigation Design & Management (2nd Edition)

By: Irrigation Association



With this in-depth analysis of water distribution, learn how to achieve the highest distribution uniformity using pressure, spacing, hydraulics and equipment selection to impact the overall result. This resource for intermediate to advanced designers outlines how the principles of uniformity (DU, CU and SC) and efficiency should influence the irrigation design process. *(manual for Advanced Irrigation Design for Water Conservation class)*

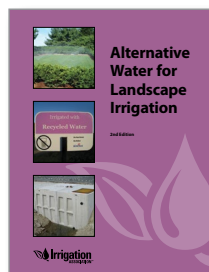
(68 pg., soft cover, ISBN: 978-1-935324-10-2) (2015)

Member \$33 | Nonmember \$45 | Academia \$25

Code: AID

Alternative Water for Landscape Irrigation (2nd Edition)

By: Irrigation Association



This book explores the use of alternate water sources. Topics include rainwater harvesting, reclaimed and recycled water. Learn about the regulatory, water quantity, water quality and economic implications of using alternative water resources, as well as how to assess and mitigate associated risks. *(manual for Alternative Water for Landscape Irrigation class)*

(96 pg., soft cover, ISBN 978-1-935324-43-0) (2013)

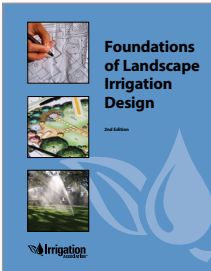
Member \$33 | Nonmember \$45 | Academia \$25

Code: AWLI

Turf/Landscape/Golf cont.

Foundations of Landscape Irrigation Design (3rd Edition)

By: Irrigation Association



Master the basics of irrigation design. Developed by IA instructors with years of teaching experience, this beginner reference focuses on designing a simple residential or small commercial system. Organized to follow the typical design process, topics include gathering site information, calculating system capacity, soil-plant-water relationships, pipe sizing, hydraulics, head layout, uniformity,

zoning and plan presentation. *(manual for Landscape Irrigation Design class)*

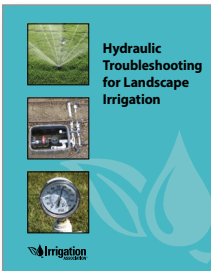
(124 pg., soft cover, ISBN: 978-1-935324-17-1) (2015)

Member \$33 | Nonmember \$45 | Academia \$25

Code: FLID

Hydraulic Troubleshooting for Landscape Irrigation

By: Irrigation Association



This publication introduces the field technician to the basic concepts of water movement in pipes, sprinklers and valves for landscape irrigation systems. Having a basic understanding of how pressure, flow and sprinkler spacing are interrelated allows the technician to make good decisions in the field when making changes to the system or troubleshooting problems with sprinklers or valves when

water is not being delivered correctly. *(manual for Hydraulic Troubleshooting for Landscape Irrigation class)*

(64 pg., soft cover, ISBN: 978-1-935324-66-9) (2016)

Member \$33 | Nonmember \$45 | Academia \$25

Code: HT

Landscape Drainage Design (2nd Edition)

By: Irrigation Association



Improve surface and subsurface drainage design and installation with this reference manual. Topics include soil and water relationships, topography and grades, and drainage materials and applications.

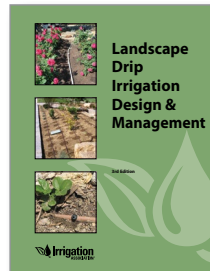
(89 pg., soft cover, ISBN: 978-1-935324-23-2) (2014)

Member \$33 | Nonmember \$45 | Academia \$25

Code: LDD2

Landscape Drip Irrigation Design & Management (3rd Edition)

By: Irrigation Association



This intermediate-level resource for drip design in the landscape includes a review of soils and water availability. It provides background and guidelines for emitter spacing, emitter flow rates and system design, including wetting pattern of emitters. The book also includes guidelines for installation and maintenance, access to Excel spreadsheets for drip system design and information

about microsprinkler design. *(manual for the Landscape Drip Design and Management class)*

(85 pg., soft cover, ISBN: 978-1-935324-15-7) (2016)

Member \$41 | Nonmember \$55 | Academia \$30

Code: DIL3

Landscape Irrigation System Installation & Maintenance (2nd Edition)

By: Irrigation Association



An excellent resource for field personnel and those new to the industry, this manual covers the basics of irrigation system installation and maintenance. This book addresses blueprint reading, tools, basic hydraulics, field wiring, controllers, working with valves, pipe fitting, troubleshooting basics and more. *(manual for Landscape Irrigation Technician class; CIT exam reference)*

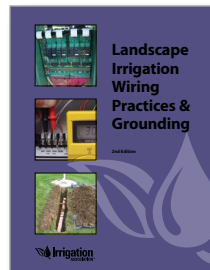
(167 pg., soft cover, ISBN: 978-1-935324-21-8) (2013)

Member \$50 | Nonmember \$68 | Academia \$35

Code: ISIM2

Landscape Irrigation Wiring Practices & Grounding (2nd Edition)

By: Irrigation Association



Today's irrigation control systems have become much more sophisticated. This book covers troubleshooting the new generation of two-wire systems, including decoders, wire sizing and wire connections, solar-powered or battery-operated controllers and proper grounding techniques. *(manual for Advanced Irrigation Wiring Methods and Troubleshooting class)*

(101 pg., soft cover, ISBN: 978-1-935324-36-2) (2013)

Member \$33 | Nonmember \$45 | Academia \$25

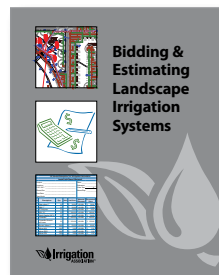
Code: IWPG

Industry Extras/Classes

Business Publications

Bidding & Estimating Landscape Irrigation Systems

By: James Huston and Chris Pine, CIC, CID, CIT, CLIA, CLWM



Learn how to develop an accurate and profitable bid with this detailed guide to the bidding process. Designed for improved comprehension and immediate application, this workbook includes detailed, progressive examples for easy reference and a supporting spreadsheet (requires Microsoft Excel 97 or higher). (*manual for Bidding and Estimating Landscape Irrigation Systems class*)

(140 pg., soft cover + software, ISBN: 978-1-935324-37-9) (2011)

Member \$83 | Nonmember \$112 | Academia \$55 Code: BE

Tailgate Training

Pipes, Fittings & Assembly (Beginner Level)

Save time and costs by training staff on-site with the IA's on-the-go Tailgate Training. Lessons include PVC pipe identification and fittings; cutting and assembling PVC pipe; and polyethylene pipe identification, fittings and clampings. Each kit contains five water-resistant 20- to 30-minute training lessons, trainer notes, digital copies of each lesson and student progress sheets.



(133 pg., flip chart with stand and PDF download) (2016)

Available in Spanish!

Member \$199 | Nonmember \$249

Code: TTPFA

Member \$179 | Nonmember \$225 (PDF only)

Code: TTPFAE

Technical Paper Library

The education conference at the Irrigation Show is where those in the know go to learn about cutting-edge industry developments. Now, more than 800 technical papers are available for free download by IA members and nonmembers. Visit www.irrigation.org/technicalpapers to browse or search the IA's collection.

IA Classes

IA classes teach practical skills and knowledge you can implement immediately — in the office and in the field. Choose from more than 25 classes for beginners and experienced irrigation professionals. Classes are offered at the Irrigation Show and locations across North America; visit www.irrigation.org/educationclasses for a complete list. (*IA classes are not required for certification or endorsed by the IA Certification Board.*)



IA Certification — The Smart Decision

Whether you work in the agriculture, turf/landscape or golf sector, or if you design, install, audit or maintain irrigation systems, IA certification gives you a competitive edge. Below is a list of IA certifications that are available for irrigation professionals. Start preparing to ace your certification exam today with our expert-developed, industry-recommended study references:

- **Certified Agricultural Irrigation Specialist (CAIS)**
Ag-Irrigation Management (Published by ITRC.
To order a copy, go to www.irrigation.org/store.)
- **Certified Irrigation Contractor (CIC)**
Landscape Irrigation Contractor (3rd Edition)
Principles of Irrigation (3rd Edition)
- **Certified Irrigation Designer (CID)**
Irrigation, Sixth Edition
Principles of Irrigation (3rd Edition)
- **Certified Irrigation Technician (CIT)**
Landscape Irrigation System Installation & Maintenance (2nd Edition)
- **Certified Golf Irrigation Auditor (CGIA)**
Golf Irrigation Auditor
- **Certified Landscape Irrigation Auditor (CLIA)**
Landscape Irrigation Auditor (3rd Edition)
- **Certified Landscape Water Manager (CLWM)**
Landscape Drip Irrigation Design & Management (3rd Edition)
Principles of Irrigation (3rd Edition)
Landscape Irrigation Contractor (3rd Edition)
Landscape Irrigation Auditor (3rd Edition)

For more information about the IA's certification programs and the complete collection of exam references, visit www.irrigation.org/certification.

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. *(IA online classes are not required for certification or endorsed by the IA Certification Board.)*

Member \$110 | Nonmember \$150

Prices are subject to change without notice.

Agriculture Irrigation Hydraulics

Understand how water pressure is created, managed and sustained in an agricultural irrigation system. This course focuses on the relationship between flow, velocity and pressure in typical agriculture systems.

Agriculture Sprinklers & Precipitation Rates

Review various types of agricultural sprinkler systems and their specific applications. Learn how to calculate precipitation rates and use them to create efficient irrigation schedules.

Electrical Troubleshooting for Landscape Irrigation Systems

Learn basic electrical terminology for landscape irrigation systems. Develop troubleshooting skills by using virtual meters to diagnose electrical problems commonly found in the field.

Introduction to Pumps

Understand when pumps are needed, how they work and interact with the irrigation system, and pump selection requirements. Learn how to read and interpret a typical pump curve.

Irrigated Soils

Gain a solid understanding of the soil-water relationship. Learn about soil components, formation, physical properties and textural classes. Topics include water movement within the soil and water uptake by plants.

Landscape Irrigation Hydraulics

Review the essentials of hydraulics for landscape irrigation, including the value and application of the "rule of three." This class focuses on the relationship between flow, velocity and pressure in landscape systems.

Landscape Irrigation Precipitation Rates

Use precipitation rates and matched rate zones to design and maintain effective landscape systems. Avoid problems and make better, faster decisions by understanding the rate at which a sprinkler system applies water.

Landscape Irrigation Scheduling

Create and implement effective irrigation schedules that supply the right amount of water at the right time. Review soil-water-plant relationships and learn how to manage irrigation scheduling to use water wisely and maintain the landscape.

Soil-Plant-Air Continuum

Learn how water moves from the soil to plants to the air and back again. 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.



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 or visit www.irrigation.org/education.

Online Learning

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. *(ITRC online classes are not required for certification or endorsed by the IA Certification Board.)*

Prices are subject to change without notice.

Basic Hydraulics

Master the core principles of how and why water moves in an irrigation system. This module covers basic terminology, static and dynamic conditions, accounting for energy in an irrigation system and basic design considerations.

Intermediate | 3 CEUs | Member \$80 | Nonmember \$105

Basic Soil-Plant-Water Relationships

Learn about the basic relationships between water, plants and soil. Topics include soil moisture terminology, available water-holding capacity, managing allowable depletion, soil moisture depletion and soil water potential.

Intermediate | 2 CEUs | Member \$55 | Nonmember \$70



Distribution Uniformity & Precipitation Rate

Master two of the most important concepts in landscape irrigation: distribution uniformity and precipitation rate. This class covers measuring DU and PR and using this information for system design and irrigation scheduling.

Intermediate | 1.5 CEUs | Member \$45 | Nonmember \$60

Evapotranspiration

Learn how to measure evapotranspiration, or how quickly water moves through the plant and evaporates from the soil surface. This module outlines factors that influence ET rates and how to use ET to schedule irrigation.

Intermediate | 1 CEU | Member \$28 | Nonmember \$38

Irrigation System Components

Discover why successful irrigation design requires understanding system components and how they work together, regardless of system size, type or location. This class provides an overview of major component types used in landscape systems.

Beginner | 3 CEUs | Member \$80 | Nonmember \$105

Landscape Irrigation Auditor

Use irrigation audits to inspect and measure how evenly sprinklers apply water. This module introduces five basic steps to prepare for and perform an audit on a landscape irrigation system.

Intermediate | 4 CEUs | Member \$110 | Nonmember \$145

Landscape Sprinkler Design

Learn nine steps to create a workable landscape irrigation system design. Topics include collecting site data, determining component sizes, choosing component locations and calculating run times.

Advanced | 8 CEUs | Member \$220 | Nonmember \$285

Scheduling for Auditors

Create irrigation schedules more easily with free tools from the Irrigation Association. This module covers how to use the IA's auditing worksheets to create a simple irrigation schedule, as well as schedules that factor in designated watering days and soil moisture.

Intermediate | 2 CEUs | Member \$55 | Nonmember \$70

Scheduling for Sprinkler Design

Learn how to schedule watering for an irrigation system. This course addresses when to water, how much to water and what to expect from a system controller.

Advanced | 1.5 CEUs | Member \$45 | Nonmember \$60

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. (IA online irrigation seminars are not required for certification or endorsed by the IA Certification Board.)

Member \$28 | Nonmember \$38

Prices are subject to change without notice.

AGRICULTURE IRRIGATION TOPICS

Auditing Ag Drip/Microirrigation Systems

Learn how to audit agriculture drip/microirrigation systems and evaluate how well emission devices are performing. Topics include implications for scheduling, optimizing yield, common problems and possible solutions.

Auditing Center Pivot Systems for Nozzle Performance

Discover how to audit center pivot systems and measure how nozzles apply water. Topics include using audit results to make better decisions about repairs and managing water resources.

Benefits of Pressure Compensation

Understand the benefits of different emission devices for agricultural drip irrigation systems. Includes real and theoretical case studies on using pressure and nonpressure compensating emission devices.

Calculating Precipitation Rates for Mechanized Ag Irrigation Systems

Learn how to calculate the rate of water application, which is essential for effective water management. Topics include creating irrigation schedules to reduce water and energy use without significant impact on yield.

Irrigating With Variable Rate Irrigation

Discover how to use variable rate irrigation as a water management strategy. Topics include defining VRI, various applications and using VRI to maximize irrigation efficiency.

Irrigation for Vegetable Crops

Make better decisions to maximize yield for high-value horticultural crops. Topics include irrigation best practices and managing water resources during drought.

Maintenance of Microirrigation Systems

Learn how to keep microirrigation systems working optimally. Topics include routine maintenance to avoid reducing the overall efficiency of microirrigation systems.

Recent Advances in Remote Sensing for Mechanized Irrigation Management

Explore how to remotely monitor center pivot or lateral move machines using sensors. This course covers best practices and recent advances in remote sensing.

Solutions for Maximizing Irrigated Areas Using Moving Sprinkler Systems

Discover economic solutions to maximize the irrigated area, increase yield and simplify irrigation management.

Water Movement in Soils

Understand important aspects of the soil-water relationship. Learn how to apply these concepts and principles to improve irrigation decisions and increase water-use efficiency.

TURF/LANDSCAPE IRRIGATION TOPICS

Analyzing Water Sources for Landscape Irrigation

Learn how to analyze available water sources and choose the best solution for the needs of a specific landscape site.

Auditing Landscape Drip Irrigation Systems

Review which factors can be measured and verified when auditing drip irrigation systems. Topics include calculating application rates to improve schedules.

Auditing: Soil Moisture vs. Catch Cans

Learn about both auditing methods and how they help correlate sprinkler performance with soil moisture uniformity to affect irrigation scheduling and ultimately the appearance of turfgrass.

Automating Water Flow Measurement With Sensors

Explore the use of flow sensors, which are critical to managing water resources. Topics include using flow sensors and measuring water flow.

Basics of Filtering

Learn about the many different types of filters. Topics include an overview of available filters for landscape irrigation projects that use alternate water supplies.

BMP — Basis of Design

Discuss what a basis of design is, what needs to be included and how it is used once an irrigation system has been installed.

Catchment Systems for Alternate Water Sources

Review the types of storage tanks available that enable the use of alternative water for irrigation as presented by the American Rainwater Catchment Systems Association.

Online Learning

Online Irrigation Seminars cont.

Commissioning an Irrigation System

Discuss the commissioning process. New green codes and standards are being adopted, which often require that the irrigation system be inspected and commissioned.

Deficit Irrigation for Managing Landscapes

Learn different controller programming strategies and how to use them to reduce water use while maintaining healthy lawns and landscapes.

Do's & Don'ts of Backflow Prevention Devices

Discover how to use backflow prevention devices to protect water sources coming from multiple points of connection.

Earning Points for Green Projects

Look at various green volunteer programs such as LEED, Sustainable Sites and Green Globes and consider the prerequisites and how points for irrigation systems and using alternative water sources are awarded.

Estimating Landscape Plant Water

Learn how to estimate plant water use in urban settings with this guide for landscape irrigation systems.

ET & Irrigation Management

Understand how evapotranspiration is calculated, including where the weather stations are located compared to the site being managed. Learn what to consider when modifying the reference ET to estimate landscape water requirements for different types of plants.

Field Study of Uniformity Improvements From Multistream Rotational Spray Heads

Review actual field applications of how new nozzles perform in existing irrigation systems. Discover how to use innovative nozzles to improve distribution uniformity.

Graywater Irrigation

Find out how to use graywater as an alternate source. Topics include code requirements; water quality issues; and selecting equipment to harvest, store and distribute graywater.

Irrigating Green Roofs

Explore what information is needed to design an irrigation system for a green roof, what types work best and how to manage the system to use water efficiently.

Impacts of Irrigation in Building Rating Systems



Hear an overview of the various rating methods being introduced in green building programs and the potential to influence landscape design and irrigation methods.

Low-impact Development & Irrigation: Navigating the Maze of Regulations



Become more knowledgeable about low-impact development regulations that affect landscape and irrigation design and consider smart design practices including the use of irrigation technology that meet the reduced water use requirements.

Measuring Landscape Water Use

Hear findings about the amount of water used in the landscape compared to estimated water demand. Look at both irrigation performance and landscape composition and how irrigation efficiency can be improved.

A New Way to Evaluate Sprinkler Performance

Learn how sprinkler operational efficiency evaluates how sprinklers distribute water when used in different spacing configurations.

Join the IA & Save on Valuable Programs & Services

In addition to saving money on all the items in this catalog, as an Irrigation Association member, you'll enjoy many additional benefits, such as

- classes and certification exams at substantial discounts.
- special rates to attend and exhibit at the Irrigation Show and Education Conference.
- listing in the IA's searchable, online membership directory.
- an IA member logo to include on your marketing materials for enhanced credibility.
- *IA Times*, a monthly newsletter with quick updates on association news.
- the IA's website, www.irrigation.org, loaded with resources for you and your customers.



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Online Irrigation Seminars cont.

Pressure Regulation to Improve Irrigation Efficiency

Explore the options of controlling excess pressure at the point of connection, the zone control valve and the individual sprinkler.

Proper Grounding Techniques

Master the theory of electrical surges. Learn how to make better decisions when specifying or installing grounding equipment.

Rainwater Harvesting — Engineered Failures

Learn about common problems in rainwater harvesting. Topics include solutions to avoid potential problems and ensure success.

Rainwater Harvesting for Irrigation

Review the components and equipment needed for rainwater harvesting. Topics include collection and storage, plus using rainwater for landscape irrigation.

Rainwater Harvesting — Underground Storage Design & Construction

Evaluate the pros and cons of various underground rainwater storage options, plus tips for proper installation.

Refining the Landscape Coefficient for Improved Irrigation

Learn to create more effective irrigation schedules in this session, which covers how to better estimate plant water needs when using evapotranspiration data.

Return on Investment for Irrigation Upgrades

Review how to calculate the return on investment on innovative products and system upgrades to improve efficiency.

Smartphone Apps for Irrigation Management

Learn about the latest tools for managing irrigation systems and their differences. Discover how to implement them to become a more effective water manager.

Solvent Welding PVC Pipe

Learn the basics about cutting, fitting and using primer and cements for solvent welding.

Starting With Efficiency

Learn different methods to achieve high efficiency. From a water provider's point of view, designing or installing an irrigation system should start with high efficiency.

Sustainable Landscapes & Water-use Efficiency

Learn key principles of sustainable landscapes and their impact on reducing water use. Understand how landscape modifications and the use of technology provide new opportunities for irrigation professionals to become part of the solution to managing water resources.

Treating Alternative Water for Irrigation

Learn about various ways to treat alternative water so it can be used for irrigation systems. Considering the many codes in place dealing with alternative water today, this session is a must for irrigation professionals.

Using Drones to Improve Irrigation Management



Learn practical irrigation applications for using unmanned aerial vehicles, including the types of sensors that are useful, analyzing the data and some basic rules for safe operation.

Using Water Budgets as a Management Tool

Consider strategies used to reduce water use and still maintain a viable landscape even during drought conditions.

Water Movement in Soils & Its Implications for Drip Irrigation

Understand how water moves in the soil and the implications for landscape drip systems. Topics include how to position emitters or microsprays to apply water to encourage good root development.

Water Quality of Alternate Water Sources

Review water quality issues with various sources of alternate water, including considerations related to either treating the water before applying to the landscape or determining it can't be used.

Water Quality for Ornamental Plants/Landscaping

Consider the use of alternate water supplies and the water quality requirements of plants in the managed landscape.

Watering Within the Lines: Water Use Restrictions vs. Water Budgets

Hear information about programs that have worked to accomplish water savings through setting watering day, time and quantity restrictions.

Weather-based Irrigation Controllers: Features That Maximize Performance



Consider the features of weather-based irrigation controllers that maximize performance and how to program the controllers to achieve the maximum benefit. Compare a number of popular controllers and how they performed over an entire season.

Workforce Training

Explore how adults learn and ways to do effective in-house training and share proven methods for delivering information.

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. *(IA recorded webinars are not required for certification or endorsed by the IA Certification Board.)*

Member \$25 | Nonmember \$40

Prices are subject to change without notice.

Advance Wire Troubleshooting: Using Volts, Ohms & Amperage

Learn how to identify and troubleshoot issues on both conventional and two-wire systems.

Basics of Water-efficient Irrigation Products

Learn what makes a product or a practice efficiently use water and what should be done to ensure the results will be as good as possible.

Drip Irrigation Design for Plant Establishment & Long-term Maintenance

Hear how water applied by drip emitters moves through the soil, how soil type affects water movement and how this affects drip system design.

ET & Plant Factors: Dealing With Drought & Deficit Irrigation

Look at the relationship between plants, soils and water and what tools are available to increase water-use efficiency and document conservation efforts while maintaining a high-quality sports field.

Fertigation/Chemigation for Agriculture & Landscape Irrigation

Learn about this injection technology and how it can provide increased automation resulting in better efficiency and simplicity in the landscape and grower markets.



Filtration for Agriculture & Landscape Irrigation

Learn about the many different types of filtration practices available and how choosing the correct one can make or break your system.

How to Match Precipitation Rates on Rotors

Review common errors that occur in the field when rotors with different arcs are installed on the same valve.

Implementing Variable Rate Center Pivot Irrigation

Learn steps for successful implementation of variable rate irrigation with a center pivot and how to continue being economically successful using VRI.

Keeping Water on Target: Impacts on Uniformity & Efficiency

Hear about nozzle performance and different methods for measuring landscape water application, as well as other factors that can affect irrigation efficiency.

Methods & Materials for Restraining Pipes & Fittings

Learn about the various options available for restraining irrigation pipe and its associated fittings, both above and below ground.

Mobile Drip Irrigation Demonstration Results

Review the use of mobile drip irrigation as an irrigation application device for center pivot systems.

Pressure Regulation & Check Valves for Landscape Irrigation

Learn about how pressure regulation and check valves help conserve water resources.

Refining the Landscape Watering Coefficients for Your Sites

Review practical steps toward conserving water in irrigated landscapes in regions with dry climates and approaches for verifying the adequacy of irrigation management practices.

Upgrading Points of Connection for Master Valves & Flow Sensors

Learn about the equipment options and design considerations associated with upgrading existing irrigation water source points-of-connection to provide master valve and flow sensor capabilities.

Using Soil Moisture Sensors

Learn about the most commonly used methods to measure soil moisture and how the sensors work.

VFD Pump Operation

Learn the basics of variable frequency drive pump operation, advantages of VFD and diagnosing problems.

Wi-Fi Controllers for Landscape Irrigation

Hear about the advantages of Wi-Fi-enabled controllers and the opportunities that this technology brings to the landscape irrigation market.

Enhance Your Expertise

The Irrigation Association has developed a number of training resources for use by employers to help educate and train their staff or by teachers to use in a classroom. Teaching kits, workbooks and field exercises can be used as primary training tools or to supplement your current training program. These resources are available to anyone in the industry and are excellent resources for irrigation basics.



TEACHING KITS

Teaching kits include

- PowerPoint slide deck.
- teaching manual with a screenshot of each PowerPoint slide and teaching notes.
- workbooks with answers to practice problems and quizzes.
- additional teaching resources, such as sample spreadsheets, graphics, material lists and suggested questions for quizzes and tests.

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

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

WORKBOOKS

Workbooks are used to learn single-subject principles and concepts. Contents include practice problems, tables, calculation worksheets, glossary of terms and various other references. Workbooks are three-hole-punched binder inserts.

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

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

CURRICULUM SUGGESTIONS

The table below 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.

AGRI-CULTURE	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	5	6	2
Design Capacity & Available Pressure	5		4		6	7	4
Electrical Troubleshooting for Landscape Irrigation Systems			11	3			11
Irrigation Components: Residential/Small Commercial Systems		3	5	4			5
Irrigation Hydraulics Laboratory	3		13	5			13
Irrigation Pipe Sizing	6		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
Irrigation Systems Performance Audit			14				14
Precipitation Rates for Agriculture	7				3	4	18
Precipitation Rates for Turf/Landscape			6		4	5	6
Soil-Plant-Air Continuum	13		17				19
Sprinkler Efficiency & Management	10		9			10	9
Sprinkler Irrigation Uniformity	9		8		8	9	8
Sprinkler Spacing	8		7		7	8	7

Training Resources

Save now! 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. Contact the IA at education@irrigation.org or 703.536.7080.

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

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