Three in-depth courses to expand your knowledge of building mechanical systems:

**Testing, Adjusting, and Balancing**
September 22–26, 2014
Madison, Wisconsin
April 20–24, 2015
Madison, Wisconsin

**DDC Controls**
October 27–31, 2014
Madison, Wisconsin

**Chilled Water Plant Design**
November 19–21, 2014
Madison, Wisconsin
Learn from Experienced Instructors

Engineering Professional Development at the University of Wisconsin–Madison is a world leader in continuing education for technical professionals, specializing in bringing together industry leaders in a proven-effective classroom environment. You will have the opportunity to discuss your particular challenges or successes as you network with your colleagues and instructors. See the course pages inside for details on the instructors in each course.

Why Invest in Professional Training?

Whether acquiring continuing education hours or building the skills needed for a promotion, attendees in Engineering Professional Development courses have made lifelong learning a priority in their careers. Professional education benefits you and your employer by offering many opportunities to:

- Refresh and hone your skills
- Discover and share new techniques
- Expand your competencies to new areas
- Step back from your daily grind and refocus
- Connect with experts in the field
- Get fresh viewpoints on your challenges
- Re-energize and “recharge your batteries”
- Set yourself apart from competitors

On-Site Courses Save Time and Money

Engineering Professional Development can offer many of our courses face-to-face or online:

- At a location of your choice
- At your convenience
- At reduced per-person cost
- Tailored to your needs

To inquire about courses available at your site, including optimal group size and costs, call 800-462-0876 and ask for Corporate Education Director Carl Vieth (608-263-7424 direct or vieth@wisc.edu). Or see epd.engr.wisc.edu/onsite.

Related Courses

For more information on the following courses, call toll free 800-462-0876 or check our website at epd.engr.wisc.edu.

Fundamentals of HVAC
September 17–19, 2014 in Madison, Wisconsin
Course #P030

Commissioning Building Enclosure Assemblies and Systems
September 23–25, 2014 in Las Vegas, Nevada
Course #P666

The Commissioning Process for Delivering Quality Constructed Projects
October 13–15, 2014 in Madison, Wisconsin
Course #P375

The Commissioning Process for LEED Projects
October 16–17, 2014 in Madison, Wisconsin
Course #P376

The Commissioning Process for Existing Buildings
October 16–17, 2014 in Madison, Wisconsin
Course #P377

Leading the Commissioning Process: Step-by-Step Strategies for New Construction Projects (BCA)
November 10–14, 2014 in Orlando, Florida
Course #P644

Fundamentals of Energy Auditing
March 16–20, 2015 in Madison, Wisconsin
Course #P370

See inside for course details…
You Will Learn
Proper maintenance and operation of HVAC air and water systems can reduce operating energy costs and improve the comfort of building occupants. New buildings must be balanced to achieve the design objectives of the consulting engineer, while existing buildings must be rebalanced as needed to acknowledge changes in functional use.

Our intensive five-day course will assist you in the process of testing, adjusting, and balancing your building environmental systems. You will learn how to:
• Balance air and water systems
• Adjust new and existing systems to provide design quantities
• Verify equipment and automatic controls performance
• Measure sound and vibration
• Estimate costs

Featuring Hands-On Labs and Workshops
Labs and workshops during this course will emphasize “how to do it” in a setting where you work on our classroom HVAC demonstration units and existing water systems. More than $25,000 in TAB equipment and test instrumentation will be available for demonstration and use. Working in small groups, you will apply classroom lectures and material in actual fieldwork. This arrangement will ensure a thorough transfer of knowledge, promote group discussion, and provide in-depth student-instructor interaction.

Who Will Benefit
Anyone with a vested interest in efficient operation of commercial buildings will benefit from a working knowledge of TAB. This course will especially assist:
• Consulting engineers who need to understand initial and supplemental testing, adjusting, and balancing requirements
• Building operations staff seeking in-depth training
• Service organization employees desiring balancing experience
• Contractors interested in operation and service of all building environmental systems

Your Instructor
Darrel J. Hermans, PE, president of T&B Services, Ltd., has more than 40 years of experience in controls, balancing, and troubleshooting HVAC system problems, from single unit to nuclear power plant ventilation systems. Prior to forming T&B Services, Ltd., in 1980, he was national manager of Fluid Engineering Services (FES), a Division of Johnson Controls, Inc. For the past 20 years he has conducted seminars for training personnel in air and water balancing. Hermans has a BSME from the Milwaukee School of Engineering. He is a registered PE in eight states, a member of ASHRAE, and former member of its technical committee for testing and balancing. He is also a member of NEBB, a national organization of testing and balancing agencies.

Earn Continuing Education Credit
By participating in this course, you will receive 36 Professional Development Hours (PDH) or 3.6 Continuing Education Units (CEU). This course is also approved for 36 GBCI CE hours for LEED credential maintenance.

Valuable Take-Home Reference Materials
You will receive an extensive notebook of materials prepared especially for this course. These materials supplement current published manuals and textbooks.

Limited Enrollment!
To ensure an ideal learning environment and optimum group size for hands-on workshops, enrollment is limited to 32. To secure your place, we encourage you to enroll early. Call toll free 800-462-0876 or enroll online at:
epd.engr.wisc.edu/webP089 for the September 22–26, 2014 course or epd.engr.wisc.edu/webP634 for the April 20–24, 2015 course

Past Participants Say…
"COURSE WAS A GOOD STARTING POINT FOR PEOPLE WITH LITTLE OR NO EXPERIENCE IN BALANCING. DARREL IS A VERY GOOD INSTRUCTOR."
Mike Habermeyer, Service Tech TweetGarot

"I LIKED THE LAB—A LOT OF PEOPLE ARE VISUAL LEARNERS AND RETAIN THE KNOWLEDGE LEARNED WHEN THEY ACTUALLY DO IT."
Michael Farland, Maintenance Mechanic Ellsworth Air Force Base

"DARREL IS A VERY KNOWLEDGEABLE INSTRUCTOR AND EASILY TRANSFERS HIS KNOWLEDGE TO HIS STUDENTS."
David McReynolds, Mechanical Designer Eaton Energy Solutions Group

"I REALLY ENJOYED THAT DARREL WAS ABLE TO TALK ABOUT REAL LIFE PROBLEMS IN THE FIELD AND HOW HE WAS ABLE TO CORRECT THEM. HE’S A CREDIBLE SOURCE BECAUSE HE’S BEEN OUT THERE."
Alberto A. Aranda, Sheet Metal Worker Milwaukee Public Schools

Note on Certifications
Please note that this course is not associated with any TAB certification programs. If you need to obtain TAB certification from AABC, NEBB, or others, please contact those organizations for more information.

Calculator Helpful!
Reminder… please bring a calculator with exponent and memory functions.

Future Date and Location
Need another option? Watch our website for a special offering of this course in Phoenix, Arizona, January 12–16, 2015 (Course #P746)!

ENROLL ONLINE TODAY! Or visit our Web site
Course Outline

Course Introduction

Duct Design
- Air flow theory
- Duct sizing
- Pressure, pressure loss, and measurement

Psychrometrics
- Properties of dry air and water vapor
- Latent, sensible, and combination processes
- Humidifying and dehumidifying
- Use of psychrometric chart

Testing and Measurement
- Instruments and use
  - manometers and pitot tubes
  - rotating vane
  - swing vane (Alnor velocimeters)
  - hot wire anemometers
  - balancing hoods
  - flow measuring stations
  - tachometers
  - thermometers
- Measurement of flow
  - selection of traverse and test points
  - temperature and altitude corrections

Instrument Lab (Optional)

This is a hands-on opportunity to use and evaluate air/water system TAB instruments.

Fans
- Types
- Performance characteristics: arrangements, noise
- Proper selection: fan and system curves, fan laws
- Installation practices: inlet and outlet, drive arrangements
- System effect factor
- Testing

Systems and Terminal Units
- Types
- Measurement and adjustment

Automatic Temperature Controls
- Types
- Control techniques
- Relationship to balancing
- Adjusting terminal unit controls

Electric Motors
- Type and application
- Motor performance evaluation
- Troubleshooting
- Safety

Air Balance Lab

Small groups of students will test, adjust, and balance an HVAC system and prepare a balance report based on course lab work.
- Preliminary procedures
- Forms
- On-the-job procedures
- Presentations and critique

Ducts and Controls
- HVAC duct systems
- Flow measurement and control locations

Water Systems and Pumps
- Types and design
- Equipment room piping practice
- Pump applications and selection: pump/system curves, closed/open systems, and pump efficiency
- Testing

Water System Balancing
- Flow measurement devices
- Flow balance procedures

Water Balance Lab

Small groups of students will test an existing hot water/chilled water system and prepare a balance report based on course fieldwork.
- Preliminary procedures
- Forms
- On-the-job procedures
- Presentations and critique

Miscellaneous Topics
- Certifications (AABC, NEBB, others)
- Commissioning
- Commissioning process

Course Schedule

Registration and course will be held at The Lowell Center, 610 Langdon Street, Madison, WI

Day 1
7:30 a.m. to 8:00 a.m. Registration and Continental Breakfast
8:00 a.m. to 4:30 p.m. Class

Day 2-4
7:30 a.m. to 8:00 a.m. Continental Breakfast
8:00 a.m. to 4:30 p.m. Class

Day 5
7:30 a.m. to 8:00 a.m. Continental Breakfast
8:00 a.m. to 12:00 p.m. Class

Continental breakfast and midmorning and midafternoon refreshment breaks will be provided each day. Noon lunch will be provided days 1 through 4.

General Information

Fee Covers
- Notebook, course materials, break refreshments, four lunches, and certificate.

Cancellation
- If you cannot attend please notify us seven days prior to the course start, and we will refund your fee. Because this course has limited enrollment, cancellations received after that date and no-shows are subject to the full course fee of $1595. You may enroll a substitute at any time before the course starts.

Location and Accommodations
- This course will be held at The Lowell Center, 610 Langdon Street, Madison, WI. We have reserved a block of guest rooms (rates starting at $89, including continental breakfast) at the Lowell Center. Reserve a room online at epd.engr.wisc.edu/lodgingP634 (for September) or epd.engr.wisc.edu/lodgingP089 (for April), or call 866-301-1753 or 608-256-2621. Room requests after August 24 (for the September course) or March 9 (for the April course) will be subject to availability. Other fees and restrictions may apply.

Need to Know More?
- Call toll free 800-462-0876 and ask for

Program Director: Joy E. Altwies, PhD, PE
Program Associate: Mary Danielson
Or e-mail custserv@epd.engr.wisc.edu
DDC Controls
October 27–31, 2014 in Madison, Wisconsin

Results-Oriented Course
This intensive, practical course is your opportunity to expand your knowledge of direct digital control systems for control of building HVAC processes. This course will enable you to:

- Define your requirements for a DDC system to serve HVAC and related building systems
- Describe the hardware and software elements that make up a DDC system
- Develop a DDC architectural master plan for your requirements
- Describe the advantages and/or liabilities of LonWorks and BACNet
- Describe the essential elements of a DDC system specification
- Define the application requirements for the building systems
- Plan for the commissioning of the DDC system

Why Learn DDC
Direct digital control systems are a manufacturer-unique composite of networks, hardware, and software used to control HVAC processes and manage energy and maintenance. The use of open protocols has increased customer expectations but has added complexity to the planning and design process.

The primary objective of this course is to give you a broad range of knowledge so that you can understand the principles and technical concepts used by the various manufacturers. This understanding is essential for the acquisition, implementation, and operation of a cost-effective system. While various manufacturers are discussed during the course, the course content is not specific to any vendor.

If you plan, design, or specify DDC systems, this course will provide you with a comprehensive understanding of the technologies available to you today. You will focus on planning fundamentals and applications, as well as design, acquisition, and commissioning concepts.

While studying the capabilities of DDC systems, you will learn:

- The importance of having a planned system architecture
- If open protocols add value with respect to your requirements
- Control strategies for a variety of HVAC system types

Who Will Benefit
This course will be highly beneficial for consulting, design, and energy engineers, commissioning authorities, applications engineers, plant engineers, architects, and planning technicians responsible for the design, acquisition, or operation of environmental control systems in commercial, institutional, or industrial facilities.

Laptop Computer Required
Due to the large volume of course materials, you will receive a CD containing printable PDFs of the instructors’ presentations and supplemental references. To follow along during the course and take digital notes, you will need to bring a laptop computer with CD drive. Lined notepaper will also be provided to all attendees. Pre-printed notebooks of the course materials will not be provided.

Earn Continuing Education Credit
By participating in this course, you will receive 36 Professional Development Hours (PDH) or 3.6 Continuing Education Units (CEU). This course is also approved for 36 GBCI CE hours for LEED credential maintenance.

Future Date and Location
Need another option? Watch our web site for another offering of this course in Las Vegas, Nevada, March 2–6, 2015 (Course #P633)!

Past Participants Say…

“I LEARNED A HUGEN BOUNT OF KNOWLEDGE FROM THESE INSTRUCTORS. THEY'RE A GREAT TEAM WITH DEEP KNOWLEDGE OF THE SUBJECT.”

- Steve Smith, Denver International Airport

“THE COURSE WAS WELL WORTH THE TIME AND OPENED MY EYES UP TO A LOT MORE ITEMS THAT SHOULD BE CONSIDERED WHEN DEALING WITH BUILDING CONTROL SYSTEMS.”

- Joshua Hinson, Nexant

“The speakers did a great job discussing in detail various mechanical systems as they relate to controls.”

- James Lowe, Architect of the Capitol

Your Instructors

Steve Briggs, PhD, electrical engineer, Facility Dynamics Engineering, Champaign, Illinois has worked on the development of guide specifications for Open Building Automation Systems based on BACnet and LonWorks for the Corps of Engineers. He is also a consultant to the Army and General Services Administration (GSA) regarding information assurance for BAS. He brings a strong electrical engineering perspective to the area of direct digital control.

Jay Santos, PE, president, Facility Dynamics Engineering, Columbia, Maryland is a consulting engineer with more than 25 years of experience in HVAC system troubleshooting, modernization, and automation. Santos has served commercial, institutional, and industrial clients worldwide. He is a highly respected educator, having supported the HVAC continuing education programs of several major universities.

David Sellers, senior engineer, Facility Dynamics Engineering, Portland, Oregon has more than 30 years of experience with commissioning, design engineering, facilities engineering, mechanical and control system contracting, and project engineering. His works spans a wide array of facilities, ranging from hospitals and semiconductor clean rooms to commercial office buildings and research/pilot projects in the energy efficiency and sustainability arena.

ENROLL ONLINE TODAY! Or visit our Web site
Course Outline

Course Introduction

Introduction to DDC
  • Basic elements of control
  • Feedback concepts
  • Loop response
  • Terminology
  • Types of hardware, software, and firmware
  • Role of the microprocessor
  • Inputs, outputs, and points

System Architecture
  • Network concepts
  • Generic components
  • Communication concepts
  • Local vs. global information
  • Installation issues

Open Protocols and Open Systems
  • Do you want an open system?
  • Understanding IT vs. DDC
  • Cautions and concerns
  • System architecture for LonWorks, BACNet, and hybrid
  • Different levels of open systems
  • Engineering issues

Input and Output Data Flow
  • AI, DI, and PI
  • Analog to digital conversion
  • Sensor types, applications, accuracy, stability, calibration, and other factors
  • Safeties and limit devices
  • Power monitoring
  • AO, DO, and PWM
  • Digital to analog conversion
  • Transducers
  • Damper actuators; valve actuators
  • Configuring network data flow
  • Important performance factors

Programming Tools
  • Types of programming
  • Logic diagrams
  • Programming symbols
  • Designing control logic

Controlling Analog Processes
  • Types of analog devices
  • Float control
  • PID
  • Selecting the right algorithm
  • PID algorithms: standard and modified
  • Non-linear control loops
  • Tuning

Application Requirements
  • Organizing your information
  • Process by process approach
  • Supervisory logic
  • End devices
  • Process variable identification
  • Control loop response
  • Parameter identification and logic
  • Discrete conditions and logic
  • Analog limits and logic
  • Sequential applications

Mixed Air Control
  • Strategies
  • IAQ issues
  • Control logic
  • Programming

Student Exercise

Air Handling Unit Control
  • Processes: heating, cooling, humidification, and reheat
  • The control logic
  • Programming

Central Plant Control
  • Secondary loop control
  • Lead/lag
  • Back-up pump concepts
  • Chiller control
  • Sequencing multiple chillers
  • Demand control

Constant Volume Systems
  • Single zone and multi-zone
  • Typical control strategies
  • DDC control logic
  • Hardware requirements

Variable Volume Systems
  • Concepts: zoning, ventilation, and heating
  • Terminal device control
  • Fan control: hardware, tracking, and measurements
  • Central station temperature control

Defining Your System
  • Architecture
  • Types of hardware
  • Integration and/or interoperability concerns
  • Operator interfaces
  • Accuracy
  • Applications
  • Training

System Acquisition Concepts
  • Plans and specifications
  • Unit pricing with master planning
  • Owner installation
  • System expansion issues

Plans and Specifications

DDC System Commissioning
  • Importance of commissioning
  • Defining the process
  • Critical specification issues
  • Commissioning agent skill set
  • Common findings

On the Horizon
  • Where is DDC going?
  • Future of open systems?
  • Migration to IP level?
  • Future of open systems?

Future of open systems?

Final Adjournment

Course Schedule

Registration and course will be held at
The Pyle Center, 702 Langdon Street, Madison, WI

Day 1
7:30 a.m. to 8:00 a.m  Registration
8:00 a.m. to 5:00 p.m  Class

Day 2-4
8:00 a.m. to 5:00 p.m  Class

Day 5
8:00 a.m. to 12:00 p.m  Class

Midmorning and midafternoon refreshment breaks and lunch will be provided on days 1 through 4 of this course. Midmorning refreshments will be provided on day 5.

Please Note: We reserve the right to alter course schedule and substitute speakers when necessary.

To Enroll

Call toll free 800-462-0876. Go online.

DDC Controls

October 27–31, 2014 in Madison, Wisconsin
Course #P483
Fee: $1795

epd.engr.wisc.edu/webP483

Fee Discounts

Team Discount: $1615 each when three or more people enroll and attend together from the same employer

Lifelong Learner Discount: Have you completed two or more EPD courses since January 1, 2012? If yes, you qualify for a reduced fee of $1595 for this course. Please request this discount when enrolling by phone or online. EPD will verify your course attendance records.

General Information

Fee Covers Instruction, course materials CD, break refreshments, four lunches, and certificate.

Reminder: You must bring a laptop computer with CD drive to view the PDF materials during the course.

Cancellation: If you cannot attend please notify us seven days prior to the course start, and we will refund your fee. Cancellations received after that date and no-shows are subject to a $150 administrative fee per course. You may enroll a substitute at any time before the course starts.

Location This course will be held at The Pyle Center, 702 Langdon Street Madison, WI. Phone messages: 608-262-1122.

Accommodations We have reserved a block of guest rooms (rates starting at $120, including shuttle) at Madison Concourse Hotel and Governor’s Club, One West Dayton Street, Madison, WI. Reserve a room online at epd.engr.wisc.edu/lodgingP483 or call 800-356-8293 or 608-257-6000 and indicate that you will be attending this course under group code 368821. Room requests after October 5 will be subject to availability. Other fees and restrictions may apply.

We have reserved a second block of guest rooms (rates starting at $109, including continental breakfast) at Lowell Center, 610 Langdon Street, Madison, WI. Reserve a room online at epd.engr.wisc.edu/lodgingP483 or call 866-301-1753 or 608-256-2621 and indicate that you will be attending this course under group code P483EPD. Room requests after September 26 will be subject to availability. Other fees and restrictions may apply.

Need to Know More?

Call toll free 800-462-0876 and ask for
Program Director: Joy E. Altwies, PhD, PE
Program Associate: Mary Danielson
Or e-mail custserv@epd.engr.wisc.edu
Advance Your Skills
Chilled water systems present many challenges for designers. Plants are often complex, with a high degree of flexibility in component selection and arrangement. The right design can provide reliability, maintainability, and energy efficiency for the life of a facility.

This intensive course features experienced instruction by specialists in chilled water plant design and construction. An interactive format, small group problem solving, and valuable reference materials will give you a practical and immersive learning experience. This is a fast and highly effective way to gain knowledge and confidence in designing successful chiller plants.

Discover Solutions that Work
This design-focused course will help you determine if chilled water is the right choice for your application, then walk you through each step of the design process. You’ll improve your ability to select chillers, choose piping and pumping configurations, solve cooling tower design issues, size your equipment, analyze costs, and more. Daily problem-solving workshops will help you practice what you learn.

Learning Objectives
After attending this course, you will be able to:
- Identify appropriate applications for chiller plants
- Recognize design criteria and select system components
- Evaluate and specify the control requirements
- Incorporate options for energy efficiency

Who Should Attend
This course will be very beneficial to anyone who needs to plan, design, analyze, or evaluate chilled water plants, including:
- Design engineers
- Plant engineers
- Design-build contractors
- Owners
- Manufacturers’ application engineers
- Technical personnel responsible for planning, designing, or specifying chillers and related equipment

Valuable Take-home References
As a participant you will receive valuable course materials including an extensive course notebook covering presented topics. These materials will assist you during the course and after you return to your job.

Earn Continuing Education Credits
By participating in this course, you will earn 20 Professional Development Hours (PDH) or 2.0 Continuing Education Units (CEU).

Who Should Attend
This course will be very beneficial to anyone who needs to plan, design, analyze, or evaluate chilled water plants, including:
- Design engineers
- Plant engineers
- Design-build contractors
- Owners
- Manufacturers’ application engineers
- Technical personnel responsible for planning, designing, or specifying chillers and related equipment

Valuable Take-home References
As a participant you will receive valuable course materials including an extensive course notebook covering presented topics. These materials will assist you during the course and after you return to your job.

Earn Continuing Education Credits
By participating in this course, you will earn 20 Professional Development Hours (PDH) or 2.0 Continuing Education Units (CEU).

Your Instructors
Jon Bovenkamp, PE, LEED AP BD+C, is senior mechanical engineer with Stanley consultants, Inc. in Muscatine, Iowa. He has more than 15 years of experience in project management and engineering design focusing on building energy systems and central plants. His recent experience involves planning and design of central chilled water facilities from Michigan to the Middle East. These plants range from 200 tons to 40,000 tons, with more than 55,000 tons of installed capacity in the last five years.

Bill Liegois is a senior project manager with Stanley Consultants, Inc. in Muscatine, Iowa. His experience since 1972 includes research and development, plant technical support in the petrochemical industry, and engineering design, including planning and design of central heating and cooling facilities. Liegois’ recent experience includes studies and design of central chilled water facilities from Texas to the Middle East, with plants ranging in size from a few thousand tons to 55,000 tons with more than 40,000 tons of installed capacity in the last few years.

Kent Martens, PE, is chief technical advisor for the Wet Cooling Division of SPX Cooling Technologies in the Americas. His professional experience has spanned more than 30 years including various roles in engineering, thermal ratings, product management, sales/marketing, and management responsibilities. In his current role, he is responsible for developing customized cooling solutions for complex projects, as well as conducting training programs for customers and representatives.

Harold D. Valencia is a product sales and marketing manager for Carrier’s Industrial Special Order Group, which focuses on developing custom centrifugal chiller configurations up to, and including, 10,000 tons of refrigeration in one machine. He has spent 38 years in the HVACR industry, performing engineered sales, distribution management, central cooling plant application services, and product management. Carrier assignments have included both domestic and international responsibilities.
Course Outline

Welcome and Introduction
Determining the Need for Chilled Water
  • Chilled water options
  • Campus master planning
  • Load definition and evaluation
  • Plant siting issues
  • Central plant
  • Central plant general arrangements
  • Financing and scheduling

Chiller Basics
  • Chiller types
  • Centrifugal chiller machine
  • Refrigerants
  • Industrial and commercial design
  • Chilled and condenser water flow rates
  • Variable speed operation
  • Air cooled and direct cooled units
  • Multiple chillers and compressors
  • Factory and field erected units

Chiller Design Issues
  • Delta temperature
  • Supply and return temperatures
  • Refrigerant options
  • Other chiller issues
  • Capital costs
  • Operating costs
  • Magnetic drives
  • Adsorption chillers

Thermal Energy Storage
  • Chilled water
  • Density-depressed chilled water
  • Ice harvesting
  • Ice on coil
  • Encapsulated ice
  • Ice slurries

Class Problem
  • Select number and size of chillers
  • Chiller prime mover
  • Select pumping scheme
  • Cooling tower location

Class Problem Review

Plant Design Issues
  • Rate structures
  • Life-cycle cost analysis
    – capital cost evaluation
    – operating and maintenance costs
  • Supply temperature and DeltaT
  • Condenser water flow rates
  • Low flow comparison
  • Chiller prime mover comparison
  • Building construction, aesthetics, and noise
  • Modular chilled water plants
  • Large central plant design issues

Course Schedule

Registration and course will be held at
The Pyle Center
702 Langdon Street
Madison, WI

Day 1
7:30 a.m. to 8:00 a.m.  Registration
8:00 a.m. to 5:00 p.m.  Class

Day 2
8:00 a.m. to 5:00 p.m.  Class

Day 3
8:00 a.m. to 12:00 p.m.  Class

Midmorning and midafternoon refreshment breaks and noon lunch will be provided on days 1 and 2 of this course. Midmorning refreshments will be provided on day 3.

Please Note: We reserve the right to alter course schedule and substitute speakers when necessary.

To Enroll

Call toll free 800-462-0876.

Go online. 🌐

Chilled Water Plant Design

November 19–21, 2014 in Madison, Wisconsin
Course #P656
Fee: $1295
epd.engr.wisc.edu/webP656

Fee Discounts

Team Discount: $1165 each when three or more people enroll and attend together from the same employer
Lifelong Learner Discount: Have you completed two or more EPD courses since January 1, 2012? If yes, you qualify for a reduced fee of $1150 for this course. Please request this discount when enrolling by phone or online. EPD will verify your course attendance records.

General Information

Fee Covers Notebook, course materials, break refreshments, lunches on Day 1 and Day 2, and certificate.

Cancellation If you cannot attend please notify us seven days prior to the course start, and we will refund your fee. Cancellations received after that date and no-shows are subject to a $150 administrative fee per course. You may enroll a substitute at any time before the course starts.

Location The Pyle Center, 702 Langdon Street, Madison, WI. Phone messages: 608-262-1122.

Accommodations We have reserved a block of guest rooms (rates starting at $89, including continental breakfast) at Lowell Center, 610 Langdon Street, Madison, WI. Reserve a room online at epd.engr.wisc.edu/lodgingP656 or call 866-301-1753 or 608-256-2621 and indicate that you will be attending this course under group code P656EPD. Room requests after October 18 will be subject to availability. Other fees and restrictions may apply.

Need to Know More?

Call toll free 800-462-0876 and ask for
Program Director: Joy E. Altwies, PhD, PE
Program Associate: Mary Danielson
Or e-mail custserv@epd.engr.wisc.edu