

CENTER
simplifying Sustainability

Education Programs

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EDUCATION PROGRAMS

USGBC, AIA CEUs Available

1. LEED® Training

By Jason Kliwinski, AIA, LEED BD&C/O&M
LEED Fellow & Faculty, CSBA

1.1 LEED 101: Green Building Basics & LEED

The workshop provides an introduction to USGBC, green building principles and the basics of LEED. Learn about green building motivators, best practices, incentives, and intentions of LEED concepts and terms for each LEED credit category.

OBJECTIVES

- Describe green building and the role of USGBC and LEED
- Recognize the intents of each LEED Credit Category
- Explain key sustainability terms and concepts
- Identify green building best practices
- Examine cutting-edge examples of green building
- Explain cost considerations
- Recognize your role in green building

DURATION

This course for those new to green building and looking to learn the basics of green building and LEED Green Building Rating System. The course is intended to be a 4-hour course but can be condensed to 2 hours as a shorter summary review.

1.2 LEED 201: Core Concepts and Strategies

Gain essential knowledge of sustainable building concepts fundamental to all LEED rating systems. Learn LEED intents and concepts at the credit category level and basics of the LEED certification process. *This course provides a foundation for pursuing the LEED Green Associate exam.*

LEED TRAINING

LEED 101: Green Building Basics	1
LEED 201: Core Concepts & Strategies (LEED GA Prep)	1
LEED Green Associate Exam Prep	1
LEED 251: O&M or BD&C Understanding the Rating System (LEED AP Exam Prep)	2
LEED 301: O&M or BD&C Implementing the Rating System	3

OBJECTIVES

- Discuss the basic LEED Certification process.
- Describe the intents and associated concepts of each LEED credit category.
- Explain regulations, recognitions and incentives related to each credit category.
- Recognize successful LEED strategies and measurements for achieving credit category goals.

DURATION

The course is intended to be a full day, 8-hour course but can be broken in to 4 or 2-hour modules focused on specific categories of LEED (transportation, site, water, energy, materials, IEQ, Innovation) or related sustainable technologies.

1.3 LEED Green Associate Exam Prep

In addition to the material covered in the basic LEED 201 course, project case studies, exam prep questions, and specifics of registering for and taking the exam will be covered in detail. For those prepping for the exam, this provides additional guidance, practice, and resources to assist in your efforts above and beyond the basic 201 courses. This is an intensive exam prep course where much of the day will be spent taking and reviewing practice exams in addition to general review if important and relevant information.

DURATION

The course is intended to be a full day, 8-hour course but can be broken in to 4 or 2-hour modules.



LEED® Training (cont'd)

1.4 BD&C 251: Understanding the Building Design and Construction LEED Rating System

Gain essential knowledge of the LEED BD+C rating systems, including credit intents, requirements, and referenced standards & synergies among credits; and foundations of the LEED certification process. This course provides a foundation for pursuing the LEED AP BD+C exam. Course Prerequisites: General green building knowledge. It is also recommended that you have completed the LEED 201 course.

OBJECTIVES

Recognize the unique aspects of the BD+C rating system family, and differences between each rating system (NC, CS, and Schools) within this family

- Identify the minimum program requirements for the BD+C rating systems
- Describe the goal, intent, and requirements of BD+C prerequisites and key credits
- Identify synergies between BD+C credits
- Plan for key considerations and requirements for the LEED certification process

DURATION

The course is intended to be a full day, 8-hour course but can be broken in to 4 or 2-hour modules. focused on specific categories of LEED (transportation, site, water, energy, materials, IEQ, Innovation) or related sustainable technologies.



**EDUCATION
PROVIDER**

1.5 O&M 251: Understanding the Operations and Maintenance LEED Rating System

Gain essential knowledge of the LEED O+M rating system, including credit intents, requirements, and referenced standards; synergies among credits; and foundations of the LEED certification process. This course provides a foundation for pursuing the LEED AP O+M exam.

Course Prerequisites: General green building knowledge. It is also recommended that you have completed the LEED 201 course, either in-person or online.

OBJECTIVES

- Recognize the goal, intent, and unique aspects of credits and strategies to meet them
- Identify the minimum program requirements
- Understand the unique aspects of the EB: O+M rating system (including process differences)
- Understand the costs and benefits of EB: O+M certification
- Identify requirements and strategies to meet prerequisites and key credits
- Plan for key considerations and requirements for the LEED certification process

DURATION

The course is intended to be a full day, 8-hour course but can be broken in to 4 or 2-hour modules focused on specific categories of LEED (transportation, site, water, energy, materials, IEQ, Innovation) or related sustainable technologies.

“Jason made the material easy and fun to understand. He was very informative, patient, and had great case studies.” Avison Young

LEED® Training (cont'd)

1.6 BD+C 301: Implementing the LEED Building Design and Construction Rating System

This workshop is intended for professionals who are familiar with the basic concepts of the LEED for New Construction and Major Renovations Rating System, but new to implementing it on projects or looking to brush up on implementation best practices. It is appropriate for new LEED APs, as well as those pursuing GBCI's LEED AP Building Design + Construction credential. The workshop provides both LEED-specific credit, and AIA credits.

The workshop addresses LEED tools and unique aspects of the New Construction rating system. Workshop participants will discuss the roles and responsibilities of key stakeholders in the LEED process, as well as strategies for communicating with team members at various stages of that process. Our official USGBC LEED Faculty who is a LEED Fellow and facilitation expert will walk the class through the phases of a typical project, including key decisions that project teams must make and guidance on how to make them. Throughout the day, you will engage with other participants in interactive activities using case examples to enable you to work hands-on with LEED implementation strategies and Rating System tools, including project forms from LEED Online.

OBJECTIVES

- Explain unique aspects of the LEED v4 for New Construction and Major Renovations rating system
- Apply and facilitate the LEED process with stakeholders
- Apply LEED tools to a new construction or major renovation project
- Identify key green decisions throughout the process of earning LEED certification

DURATION

The course is intended to be a full day 8-hour course but can be broken into 1, 2, or 4-hour modules.



1.7 O&M 301: Implementing the LEED Operations and Maintenance Rating System

This workshop is intended for professionals who are familiar with the basic concepts of the LEED for Operations and Maintenance Rating System, but new to implementing it on projects or looking to brush up on implementation best practices. It is appropriate for new LEED APs, as well as those pursuing GBCI's LEED AP Operations & Maintenance credentials. The workshop provides both LEED-specific credit, and AIA credits.

The workshop addresses LEED tools and unique aspects of the Existing Building Operations & Maintenance rating system. Workshop participants will discuss the roles and responsibilities of key stakeholders in the LEED process, as well as strategies for communicating with team members at various stages of that process. Our official USGBC LEED Faculty who is a LEED Fellow and facilitation expert will walk the class through the phases of a typical project, including key decisions that project teams must make and guidance on how to make them. Throughout the day, you will engage with other participants in interactive activities using case examples to enable you to work hands-on with LEED implementation strategies and Rating System tools, including project forms from LEED Online.

OBJECTIVES

- Explain unique aspects of the LEED v4 EBOM rating system
- Apply and facilitate the LEED process with stakeholders
- Apply LEED tools to a new construction or major renovation project
- Identify key green decisions throughout the process of earning LEED certification

DURATION

The course is intended to be a full day 8-hour course but can be broken in to 1, 2, or 4-hour modules.

EDUCATION PROGRAMS



USGBC, AIA CEUs Available

2. Energy Efficient Design

By Jason Kliwinski, AIA, LEED BD&C/O&M
LEED Fellow & Faculty

Course Summary:

Acknowledging the ongoing connection between the production of primary power via fossil fuels and the consequences for air pollution, global warming and ozone protection, we know the built environment is responsible for using 65% of all electricity in the US and producing 40% of all greenhouse gas emissions. With the rising costs of energy, both monetarily and environmentally, the pursuit for energy conservation and renewable sources are essential.

This series is intended to be taught as a semester long course. As a semester course, this should be worth 3 college credits and provides 45 hours of interactive, experiential learning focused on understanding the principals of energy efficiency in the design of sustainable buildings and reduction in carbon emissions. While this is intended to be a complete curriculum private workshops are available and can be taken as individual courses or groups of courses that interest participants without any pre-requisites necessary. The individual courses are structured to stand on their own as well as build on the knowledge base of the other preceding courses. Individual credit for AIA and/or GBCI may be obtained by self-reporting.

2.1: Energy & Atmosphere Conservation Overview

This course will review the various aspects of energy efficient design as identified in the Energy and Atmosphere (EA) topic areas used for credits



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Integrated Design	2
Design for Daylighting	3
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in the Leadership for Energy and Environmental Design (LEED™) Green Building Design & Construction (GBDC) -Version 4 as developed by the US Green Building Council. Topic areas to be reviewed include the following:

Fundamental Commissioning
Energy Performance
Fundamental Refrigerant Management
Optimize Energy Performance
Integrating On-Site Renewable Energy & Green Power
Benefits of Enhanced Commissioning
Climate Impacts of Enhanced Refrigerant Management
Developing a Measurement & Verification Protocol

OBJECTIVES

- Understand the goals of the EA Category of LEED
- Review the credit requirements & strategies
- Identify synergies between credits and strategies
- Recognize energy efficiency best practices

DURATION

The course is intended to be a 3-hour course but can be condensed to 2 or 1.5 hours as a shorter review.

Energy Efficiency (cont'd)

2.2: Characteristics of Energy Efficient Building Design, Processes, and Technology

This course will examine building envelope design and its effect on HVAC and lighting energy use, the integrated design/build process, and various technologies for providing high performance HVAC, lighting, and controls. We will also discuss the triple bottom line of sustainable design and the relationship of energy efficiency, in particular the key formula for net zero energy design. This course is an overview of these concepts with more in-depth classes on each to follow.

OBJECTIVES

- Understand the synergy between building envelope design and other systems
- Review the integrated design process
- Identify high performance technologies & strategies
- Recognize the benefits of the triple bottom line

DURATION

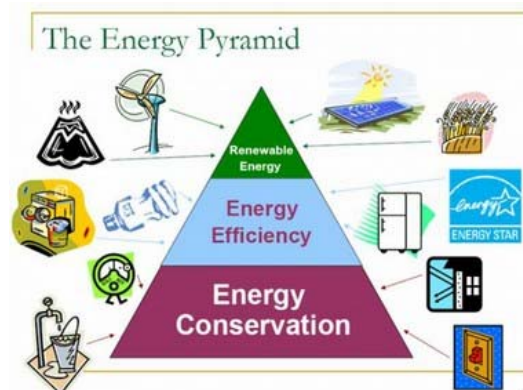
The course is intended to a 3 hours session but can be broken in to smaller modules.

READING

Energy Efficient Buildings: Architecture, Engineering, & Environment, W.W. Norton

COURSE WORK

Complete your personal carbon footprint at www.earthlab.com



2.3: Integrated Design - Building Envelope, Energy Efficiency & LEED

This course will look more in depth at high performance building envelop designs, including key principals such as orientation, massing, shading, and context in addition to specific construction types and methods. We will then review the effects of such design on overall energy demand and its place in the LEED and other third party rating systems.

OBJECTIVES

- Recognize different high-performance building envelope considerations and impacts
- Identify energy efficiency concepts specific to building envelope design
- Understand the synergies between building envelope and effective lighting design.
- Review key contributions of high performance building envelope design to obtaining various certifications.

DURATION

The course is intended to a 3 hours session but can be broken in to smaller modules.

READING

Integrated Design Guide, Seven Group

COURSE WORK

Prepare a comparative chart of the energy categories of LEED, Green Globes, and Living Building Challenge noting overlaps and differences in performance and requirements.

"I found this course to be incredibly well taught and useful in understanding energy efficiency and how to apply it to my projects." NJIT Graduate Student

Energy Efficiency (cont'd)

2.4: Design for Day lighting, Passive Solar & LEED

This course will look in depth at optimal design principles and methods for day lighting a building. Lighting accounts for nearly 20% of all energy use in buildings. Proper integration of day lighting, including controllability of artificial lights in conjunction, can dramatically reduce energy demands in buildings. Another key method to reduce demand on energy use is associated with heating and cooling. Heating represents the largest single amount of energy use in buildings in the US on average, closely followed by cooling. Remembering to incorporate passive heating methodologies when possible can have a tremendous impact on consumption. We will review the fundamentals of passive solar design. Finally, we will look at how these two approaches to demand reduction are reflected and rewarded in the LEED rating system.

OBJECTIVES

- Recognize optimal day lighting strategies
- Identify synergies in day lighting and passive solar design.
- Understand passive solar design approaches and rules of thumb.
- Review key contributions of day lighting and passive solar to obtaining LEED credits.

DURATION

The course is intended to be a 4 hours session but can be broken in to smaller modules.

READING

Whole Building Design Guide (WBDG) online
www.wbdg.org

COURSE WORK

Select a LEED Platinum Certified building and diagram the day lighting patterns and any passive solar systems.

2.5: EPA Energy Star Portfolio Manager Program & Renewable Energy Design and Implementation

This first half of this course will review the EPA Energy Star Program, specifically Portfolio Manager which is used by LEED for Existing Buildings as the benchmark standard in energy performance and is useful in the design of new buildings to understand energy consumption of similar building types. We will review the Portfolio Manager registration and setup process and the results you can expect from its use across multiple buildings. The second half will concentrate on renewable energy systems, their design, and implementation. Rules of thumb for optimal efficiency, sizing, design and operation will be covered in addition to the economics of renewable energy.

OBJECTIVES

- Understand how to use Portfolio Manager to quantify building energy consumption
- Identify best practices for renewable energy design.
- Understand different renewable energy systems and their applications.
- Review key contributions of energy benchmarking and renewable energy systems to obtaining LEED credits.

DURATION

The course is intended to be a 4 hours session but can be broken in to smaller modules.

READING

EPA Energy Star Program (online)
www.energystar.gov; WBDG

COURSE WORK

Select a building or open site and prepare a layout for a solar array, including calculations using PVWatts to predict the annual power output and energy savings.



Energy Efficiency (cont'd)

2.6: Building Commissioning & Energy Modeling as a Design Tool

This course will look in depth at two fundamental requirements of creating energy efficient buildings. We will review the commissioning process in detail, including timing of key elements and stakeholder roles and responsibilities. The second portion of the course will focus on the creation, interpretation and use of energy modeling for the average person. This is not meant to be a modeling training course but rather an in-depth review of information needed and from whom to create an accurate energy model. We will then discuss what to do with the information provided from modeling and how to use it as a design tool rather than as a check on performance after the fact. Finally, we will look at how these two requirements are reflected and rewarded in the LEED rating system.

OBJECTIVES

- Recognize commissioning requirements and stakeholder responsibilities.
- Identify key inputs needed to complete an energy model.
- Understand how and why to use modeling as a design tool.
- Review key contributions of commissioning and modeling to obtaining LEED credits.

DURATION

The course is intended to be a 4 hours session but can be broken in to smaller modules.

READING

Building Commissioning Association website.
www.bcxa.org. New Jersey Clean Energy Program Guide to Commissioning, Section 3.
www.njcleanenergy.com

COURSE WORK

Select a LEED Platinum Certified building and identify systems requiring commissioning, then prepare a commissioning plan.

2.7: Energy Incentives & Carbon Neutrality Planning and Implementation

This first half of this course will review the State and Federal incentive programs available for energy efficiency strategies. While State incentive specifics vary State to State, there are similarities in what is being incentivized. Following this we will discuss carbon neutrality and the creation of carbon neutral master plans, building designs, and their implementation. Energy efficiency using the triple prong approach of demand reduction, efficient system design, and renewable energy integration is a fundamental cornerstone of achieving carbon neutrality. Living Building Challenge and Architecture 2030 will be reviewed as part of this discussion.

OBJECTIVES

- Understand where to find incentives for a project and the kind of technologies and strategies that likely qualify.
- Identify key components of a carbon neutrality strategy.
- Understand the synergy between demand reduction, efficiency, and renewables in achieving carbon neutrality.
- Review key contributions of incentives and carbon neutrality to obtaining LEED credits.

DURATION

The course is intended to be a 4 hours session but can be broken in to smaller modules.

READING

Inconvenient Truth & Our Choice by Al Gore
World Changing, A User's Guide for the 21st Century
 Architecture 2030 website.
www.architecture2030.org

COURSE WORK

Identify a carbon neutral building or development and prepare a spreadsheet of strategies contributing to achieving it.



EDUCATION PROGRAMS



USGBC, AIA, PSE, NJSBA CEUs Available

Indoor Environmental Quality

By Jason Kliwinski, AIA, LEED Fellow/Faculty

3.1 Indoor Environmental Quality - Overview

People spend 90% of their time in buildings. The impact of the indoor environment on human health and well-being is significant. This course will explore the indoor environment in depth. The course will relate the various aspects of holistic sustainable design to their place in the Indoor Environmental Quality (IEQ) topic areas as identified in the LEED™ rating system.

We will also take a look at other guidelines and best practices in the creation of healthy indoor spaces including but not limited to the WELL Building Standard, Living Building Challenge, Feng Shui & Bau-biologie®, with the intent to focus on ways building design, construction and operations can optimize human health and well-being.

OBJECTIVES

- Recognize the components of good IEQ
- Explain key concepts to create good IEQ
- Understand different approaches to analyzing spaces for IEQ quality
- Define the impact of the indoor environment on human health

DURATION

The course is intended to be a full day, 8 hour course but can be broken in to 2 hour modules or reduced to a summary version program of 1.5 to 2 hours as needed.

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Optimizing Occupant Comfort	3
Benefits & Design for Daylighting	3
IAQ Management in Occupied Buildings	3
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3.2 Outdoor Air Delivery & Increased Ventilation

One of the fundamental cornerstones of healthy IEQ is adequate ventilation. This course will look at different ways to provide adequate fresh air in a building, ensure it is properly controlled, and options to increase ventilation beyond code minimum standards. Attention to how this relates to energy consumption and facility operations will be given as well.

OBJECTIVES

- Recognize areas of opportunity to optimize ventilation
- Explain key natural and mechanical ventilation methods
- Identify best practices to increase ventilation without increasing energy consumption
- Understand ASHRAE 62.1 ventilation requirements in different types of spaces.

DURATION

The course is intended to be a 2 hour module.



IEQ (cont'd)

3.3 Low Emitting Materials

One of the easiest ways to create a healthy indoor environment is not to put toxic materials in it in the first place. There are over 40,000 unregulated chemicals in building products that are potentially harmful to human health with effects ranging from nausea to cancer and everything in between. This course will help you define what makes a material healthy, identify options and specific materials, and understand the myriad of third party certifications for healthy products and how they apply. Additionally, we will look specifically at material selection requirements related to LEEDv4, Living Building Challenge, and WELL Building Standard criteria for compliance.

OBJECTIVES

- Recognize impact of materials and chemicals on human health
- Explain what makes a product a healthy choice over others
- Identify specific materials and products that comply with many green building standards
- Understand the different third party product certifications and what they mean.

DURATION

The course is intended to be a half day, 4 hour course but can be broken in to 2 modules or reduced to a summary version program of 1.5 to 2 hours as needed.

“Jason’s real life experiences make the material easier to understand and more engaging.”

Prudential Real Estate Investment Group

3.4 Managing Pollutant Sources in Buildings & During Construction for good Indoor Air Quality

In the daily operation of buildings, thousands of potential contaminant are introduced by the people entering and leaving the building, cleaning products used, activities taking place, and the building’s ventilation system potentially. Likewise, during construction buildings are particularly vulnerable to pollutants from poor site management practices, contamination of materials stored improperly, exposure to the elements, and improper installation or use of products that are not healthy. This course will explore the methods for ensuring pollutant source control during the operation of the building as well as best practices during construction that all projects should follow. Attendees should be able to conduct an existing building assessment after this course to identify concerns and opportunities for improvement. Attendees will also be able to develop protocols for proper Indoor Air Quality management during construction.

OBJECTIVES

- Recognize sources of pollution during construction and building operations
- Explain key IAQ concerns and protocols
- Identify IAQ best practices during construction and building operations
- Develop an IAQ plan for during construction

DURATION

The course is intended to be a half day, 4 hour course but can be broken in to 2 modules or reduced to a summary version program of 1.5 to 2 hours as needed.

IEQ (cont'd)

3.5 Optimizing Occupant Comfort Design & Verification

The trickiest part of creating a good indoor environmental is understanding and meeting individual comfort needs. This is so hard because almost everyone has a different definition of what makes them comfortable. This course will explore all the aspects that affect comfort including, but not limited to light, sound, temperature, acoustics, ergonomics, ventilation, aesthetics, controllability and materiality.

The course will also review the LEED related requirements and ASHRAE standards 62.1 & 55 related to this topic and explain how to conduct occupant comfort surveys and implement programs to improve and measure comfort in buildings.

OBJECTIVES

- Recognize elements of a successful plan
- Identify implementation best practices
- Understand opportunities and challenges
- Integrate stakeholders

DURATION

The course is intended to be a two hour module.

3.6 Benefits & Design for Daylighting

It has been shown in studies that buildings with increased and properly controlled daylighting have tremendous positive impacts on human health and performance. These include increased scores on math & language tests in schools, early discharge from hospitals, increased product sales, improved quality of work and significant increases of productivity. Increasing the productivity of a person in an office setting is equivalent to a \$2.50/sf payback on the building every year for the life of the buildings.

OBJECTIVES

- Recognize ways to increase daylighting in buildings
- Explain health benefits of daylighting
- Identify strategies to properly design for daylighting and daylighting control
- Understand the impacts of daylighting on human health and energy consumption

DURATION

The course is intended to be a half day, 4 hour course but can be broken in to 2 modules or reduced to a summary version program of 1.5 to 2 hours as needed.

3.7 Indoor Air Quality Management

This course will review the facets of Indoor Air Quality (IAQ) that are necessary to implement a successful Indoor Air Quality Management Program, in accordance with USEPA guidance and LEED EB: O&M. Topics discussed shall include Moisture and Mold, Hazardous Materials, Outdoor Contaminants and Sources and Indoor Contaminants and Sources. Maintenance of Heating, Ventilating and Air Conditioning (HV/AC) Systems will be discussed in the context of IAQ. Inspection and assessment methods for identification of IAQ issues will be reviewed. This course will assist Building Managers to prepare a proactive IAQ Management Plan for existing buildings.

OBJECTIVES

- Explain key Indoor Air Quality concepts
- Identify methods of inspection and assessment
- Understand best management practices
- Recognize key components of an IAQ Management Plan

DURATION

The course is intended to be a half day, 4 hour course but can be broken in to one or two hour modules or reduced to a half day summary course.



IEQ (cont'd)

3.8 WELL Building Standard Intro

This new standard looks at the design, construction and operation of buildings with human health as the primary focus. As an evolution of the LEED rating system, there are some overlaps but a significant focus on other less concrete elements such as nutrition, mind, and exercise.

The course will introduce you to the science behind it, areas of focus, and structure of the rating system. Full length rating system review and exam prep can be found elsewhere in our catalog.

OBJECTIVES

- Recognize biological foundations of WELL
- Identify areas of concern addressed
- Understand rating system structure
- Describe certification process and requirements

DURATION

The course is intended to be a two hour module.



EDUCATION PROGRAMS



USGBC, AIA, PSE, NJSBA CEUs Available

4. Corporate Sustainability

By Jason Kliwinski, AIA, LEED Fellow/Faculty

4.1 Sustainable Operations - Overview

This course will assist leadership in assessing their current operating practices and developing, implementing and measuring sustainable procedures to improve the triple bottom line of people, planet and prosperity within their organization, its processes and/or its building portfolio. A fundamental key to success is in developing a consistent policies and metrics across your portfolio. We will review key sustainability policies, the planning & implementation process, stakeholder engagement, and best practices. The class will provide tools, case studies, and in-class exercises to reduce environmental impact while improving occupant/staff comfort and your bottom line.

OBJECTIVES

- Recognize areas of opportunity to reduce impact
- Explain key sustainability concepts
- Identify best practices
- Assess and Plan for improved performance
- Understand cost/benefit analysis
- Identify & Engage stakeholders

DURATION

The course is intended to be a full day, 8-hour course but can be broken in to 2-hour modules or reduced to a summary version program of 1.5 to 2 hours as needed.

4.2 Sustainable Corporate Operations - Energy

This course will focus on energy consumption and reduction along with associated impacts on your carbon footprint. Buildings are responsible for approximately 71% of all energy use and 40% of



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all carbon emissions in the United States alone. Most carbon emissions are typically associated with energy consumption. By reducing demand, utilizing the most efficient systems and equipment possible, and looking for cost effective and smart ways to offset remaining usage with alternate sources, your organization can strive to achieve net zero energy results and greatly reduce its carbon footprint in the process. This course will help managers and staff identify energy conservation measures by using ASHRAE Level 1 inspection protocols and Energystar Benchmarking Platforms to perform their own visual inspections and identify opportunities to reduce demand, increase efficiency, and incorporate alternate energy. Building envelope, HVAC, lighting, controls, equipment, and processes will be discussed.

OBJECTIVES

- Recognize areas of opportunity to reduce energy demand
- Explain key energy conservation concepts
- Identify energy efficiency best practices
- Conduct an ASHRAE Level 1 visual inspection
- Understand cost considerations
- Integrate renewable energy solutions

DURATION

The course is intended to be a full day, 8-hour course but can be broken in to 2-hour modules or reduced to a summary version program of 1.5 to 2 hours as needed.

Corporate Sustainability (cont'd)

4.3 Sustainable Corporate Operations - Water

This course will focus on reducing potable water consumption. Only 3% of the Earth's water supply is potable. Of that, buildings consume 14% on average. Water conservation is critical to any corporate sustainability plan. We will identify areas of potable water usage, demand reduction strategies, water efficient options, and alternate non-potable sources such as grey water and rainwater catchment, that may be viable substitutes. Water benchmarking and reduction planning will be discussed along with specific technologies and strategies that will reduce potable water use and therefore operating costs while maintaining comfort.

OBJECTIVES

- Recognize areas of opportunity to reduce water demand
- Explain key water conservation concepts
- Identify water efficiency best practices
- Conduct a water audit
- Understand cost considerations
- Integrate alternate water solutions

DURATION

The course is intended to be a half day, 4-hour course but can be broken in to 2 modules or reduced to a summary version program of 1.5 to 2 hours as needed.

4.4 Sustainable Corporate Operations - Resource Conservation

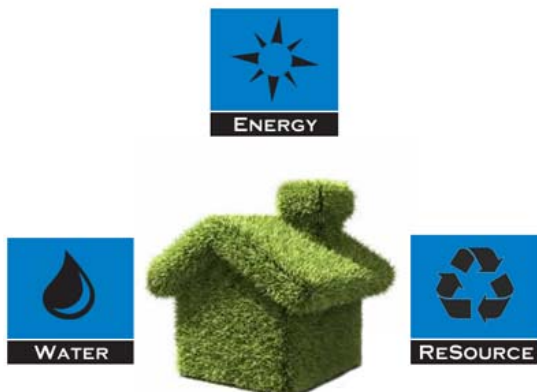
This course will focus on reducing consumption of natural resources. Buildings are responsible for consuming 40% of all raw materials globally and contribute over 36% of all landfill material from construction alone. Materials that contain recycled content, are sustainably harvested, locally produced, and from rapidly renewable materials can reduce demand on natural resources substantially. Development of a sustainable purchasing policy that includes sourcing and vendor participation is critical as well as a mechanism to track and report results. Conversely, what goes in, must come out. Creating a sustainable waste policy and implementation is also critical. Reducing waste at its source, recycling, and implementing a process to track and measure results will be reviewed.

OBJECTIVES

- Recognize areas of opportunity for sustainable purchasing and recycling
- Explain key sustainable material concepts
- Identify sustainable purchasing and recycling best practices
- Conduct a purchasing and waste audit
- Understand cost considerations

DURATION

The course is intended to be a half day, 4-hour course but can be broken in to 2 modules or reduced to a summary version program of 1.5 to 2 hours as needed.



"Jason made the material easy and fun to understand. He was very informative, patient, and had great case studies." Avison Young

Corporate Sustainability (cont'd)

4.5 Sustainable Operations: Policy Development

This course will focus on creating sustainable policies around the practices discussed within the energy, water, and resource conservation sessions. Specifically, the policies will include building and landscape management, water efficiency, energy efficiency, renewable energy, purchasing, disposal, indoor air quality and green cleaning. A sustainable policy provides direction, the clear defining of roles & responsibilities, metrics, and timelines to achieve the goals. This often requires identification of stakeholders outside the organization such as product vendors and service providers in order to successfully implement green supply chain choices.

OBJECTIVES

- Recognize elements of a successful policy
- Define typical sustainability goals & metrics
- Understand opportunities and challenges
- Identify stakeholders

DURATION

The course is intended to be a two-hour course.

4.6 Marketing Sustainability

Once you have made the effort to reduce environmental impacts, you need to 'get the word out'. Staff, the public, and your industry peers need to know what you've done and why. This will attract customers, engage staff, and obtain recognition in your industry. Messaging, branding, and consistency are important. This course will explore the types of messaging possible, including direct consumer outreach in your facility, the building as a teaching tool, social media and other forms. Engaging employees through sharing of success, reward for performance and identification for areas of improvement will be reviewed. Lastly, there are several ways to get the recognition you deserve. Industry awards, third party certifications, and target market acknowledgements will be discussed. Making the business case for sustainability is often necessary as well. As part of this course, we will review the triple bottom line of sustainability and how it can be leveraged to get buy-in, execute projects, and market successes.

OBJECTIVES

- Recognize ways to create sustainability messaging
- Explain methods of communicating successes
- Identify sustainable strategies to use the building as a marketing tool.
- Develop targeted messaging through social media
- Understand triple bottom line
- Identify recognition opportunities

DURATION

The course is intended to be a half day, 4-hour course but can be broken in to 2 modules or reduced to a summary version program of 1.5 to 2 hours as needed.



EDUCATION PROGRAMS



GBCI, AIA, PSE CEUs Available

5. Green Cleaning Training

By: Jason Kliwinski, AIA, LEED Fellow/Faculty
Chair, USGBC-NJ Education Committee

5.1 Defining Green & Green Cleaning

This is the first class in the Green Cleaning series. The class introduces the student to the concepts behind green, green cleaning, sustainability and the triple bottom line using the LEED™ v4 rating system with a focus on the Indoor Environmental Quality category. The course also explores the human health impacts of buildings.

OBJECTIVES

- Define sustainability and the triple bottom line
- Explain how these concepts apply to the LEEDv4 IEQ credit requirements
- Define green and green cleaning
- Understand impacts of indoor environment on human health and well being

DURATION

The course is intended to be a 4 hour program which can be broken in to smaller segments.

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Defining Green & Green Cleaning	1
Developing a Green Cleaning Policy	1
Conducting an IAQ Audit	2

5.2 Developing a Green Cleaning Policy

While many clients want to go green, they don't know where to start or what it really means. Often switching to green cleaning requires a change in practices and purchases that involves changing policy and processes from the norm. This course will walk you through the components of a green cleaning policy and provide templates and sample documents that have been reviewed and approved by USGBC for LEED certified projects.

OBJECTIVES

- Understand components of a green cleaning policy
- Develop green cleaning policies for clients
- Discuss the benefits of green cleaning programs and products

DURATION

The course is intended to be a 2 hour program.



**EDUCATION
PARTNER**

Green Cleaning Training (cont'd)

5.3 Conducting an Indoor Air Quality Audit

One of the fastest ways to create a green cleaning program is to understand your needs and opportunities. An indoor air quality audit will provide the pathway to implementing a robust green cleaning program as well as understanding aspects such as ventilation, contaminant control, occupant comfort in alignment with adopted policies.

OBJECTIVES

- Understand what to look for when conducting an audit
- Communicate concerns related to a variety of products
- Identify issues in terms of overall building cleanliness and cleaning procedures

DURATION

The course is intended to be a 2 hour program.



EDUCATION PROGRAMS



USGBC, AIA CEUs Available

6. Greening Your Existing Building

By Jason Kliwinski, AIA, LEED BD&C/O&M
LEED Fellow & Faculty

Course Summary:

75% of all buildings that will be here in 25 years already exist. If we are to truly tackle challenges such as Climate Change, optimize human health & wellness, and achieve the best return on your investment, it is imperative to look at our existing building stock and upgrade them to the highest sustainability standards possible.

Greening an existing building is far more challenging than building a new green building. This is largely because there is not construction budget and as a result, upgrades may need to be phased over long periods of time due to this as well as congoing occupancy. Long term success is therefore reliant on developing goals, short & long term implementation plans, and performance metrics.

While this is intended to be a complete 8 hour course, shorter workshops are available and can be taken as individual courses or groups of courses that interest participants without any prerequisites necessary. The individual courses are structured to stand on their own as well as build on the knowledge base of the other preceding courses. Individual credit for AIA and/or GBCI may be obtained by self-reporting.

Course 6.1: The Business Case for and Process of Greening Your Existing Building

This course will present the business case for renovating or upgrading your existing building



TABLE OF CONTENTS

Business Case & Process of greening buildings	1
Know Your Environmental Impact	2
Reduce Your Carbon Footprint	2
Make Responsible Choices	3

from a triple bottom line perspective. We will also define and review the process for greening any existing building. This includes a five point approach which we will discuss each element of as follows: Conducting a sustainability assessment, Establishing goals, Developing short/mid/long term plans, Implementing & tracking results, Ensuring ongoing performance.

OBJECTIVES

- Understand the components of a sustainability assessment
- Review the business case for greening your existing building
- Identify measurement & verification protocols
- Discuss use of the building as a teaching tool & feedback loops for lessons learned

DURATION

The course is intended to be a 2 course but can be condensed to a 1 hour session as a shorter review.

SUGGESTED READING

LEED for Existing Building rating system

Greening Your Existing Building (cont'd)

Course 6.2: Know Your Environmental Impact - Transportation, Site & Water

This session will discuss the benefits and best practices to reduce your building's impact in the areas of transportation, site management and water consumption. Next to energy use in buildings, transportation is the second biggest contributor to green house gas emissions in the United States. Buildings have an opportunity to mitigate this impact by providing infrastructure and amenities as well as encouraging different behavior. Sustainable management of the building site can reduce operating costs, save time, and reduce the building's impact on the environment by properly managing storm water, habitat protection, heat island control & site light pollution. Water efficiency indoor and outdoor can reduce operating costs while conserving precious drinking water and leading by example. With only 1-2% of our water being accessible drinking water, this environmental resource is quickly becoming a priority.

OBJECTIVES

- Understand the best practices & policies in sustainable transportation, site & water management.
- Review the benefits of reducing your building's environmental impact.
- Identify strategies and technologies to make your building's approach to transportation, site and water more sustainable.
- Discuss the challenges and opportunities in these areas of sustainability for your facilities.

DURATION

The course is intended to a 2 hours session.

COURSE WORK

Assess an existing facility for sustainable opportunities in transportation, site and water management.

Course 6.3: Reduce Your Carbon Footprint - Energy & Atmosphere Conservation

This course will look more in depth into ways to reduce operating costs by reducing your demand for energy, making your systems as efficient as possible, and integrating renewable energy where feasible. This simultaneously reduces your carbon footprint. Buildings are responsible for nearly 40% of all greenhouse gas emissions in the United States and consume over 70% of all electricity used. In addition to reduced operating costs and environmental impacts, a sustainable energy management approach can make your building more resilient, thereby increasing the safety of its occupants in times of severe events.

OBJECTIVES

- Discuss the challenges and opportunities in reducing your carbon footprint
- Identify best practices in reducing your carbon footprint.
- Understand the benefits of reducing your carbon footprint.
- Review various methods of tracking and reporting performance.

DURATION

The course is intended to a 2 hours session but can be broken in to smaller modules.

COURSE WORK

Assess an existing facility for carbon reduction measures and best practices.

Greening Your Existing Building (cont'd)

Course 6.4: Make Responsible Choices – Healthy Materials and Indoor Environmental Quality

The most expensive thing in a building are the people in it. Salaries, health benefits, etc are 10 to 100 times more expensive than building operating costs. Improvement in staff and occupant health and wellness can improve your bottom line while increasing satisfaction, retention and performance in building occupants. Selecting products in construction and daily operations that are both environmentally responsible and healthy can provide these benefits. Combined with a well daylight, properly ventilated, and correctly operating facility, good indoor environmental quality can be provided cost effectively and practically.

OBJECTIVES

- Recognize critical chemicals and hazards to avoid indoors in products and operations.
- Identify best practices and tools available to identify & make responsible choices.
- Understand potential challenges and opportunities to successfully implementing various options.
- Review the benefits of a good indoor environment

DURATION

The course is intended to be a 2 hours session but can be broken in to smaller modules.

COURSE WORK

Review case studies of completed buildings and identify sustainable IEQ measures.



EDUCATION PROGRAMS



USGBC, AIA CEUs Available

7. Climate Reality

By Jason Kliwinski, AIA, LEED BD&C/O&M
LEED Fellow & Faculty, Climate Reality Leader

Course Summary:

Sustainability was named a 'megatrend' by Harvard Business Review in 2010, comparing it as one of the top three cultural shifts of our time. The other two, the Industrial Revolution and the Technological Revolution. The core of the sustainability shift is understanding and dealing with Climate Change as an immediate and urgent need.

The science of Climate Change is undeniable, as are the consequences of inaction. While Climate Change is not new to this world, the rate, level and extent of change happening now is unprecedented which is the result of exponential growth in human activity over the last 250 years.

Will our children's children look back and say we were smart and brave enough to act or will they instead wonder why we knew and did nothing? Even with swift, strong action now, some level of affects will be felt through sea level rise, more extreme weather, and basic necessity impacts as a result of a warming planet. It is everyone's responsibility to take action in whatever ways and means they can.

Your building can be a living learning opportunity that simultaneously reduces your operating costs and carbon footprint while increasing your overall resiliency.

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Climate Change - Causes and Effects	1
Know Your Environmental Impact	2
Examples of Successful Projects to Reduce Your Impact	2
The Sustainable Trifecta - Net Zero Energy, Water & Waste	3
Carbon Neutrality Master Planning & Implementation	3

Course 7.1: Climate Change - Causes & Effects

This course will present the science behind climate change in an understandable and non-political way. Climate change does not know geographic, political or racial boundaries. Everyone will be affected. Understanding the interconnectedness of the affects of climate change is critical to finding sustainable solutions and developing resilient options. This portion of the course focuses on explaining the causes of accelerating climate change and the potential affects we will need to be prepared to deal with.

OBJECTIVES

- Understand the causes of climate change
- Review the potential effects of unchecked climate change
- Identify opportunities for mitigating climate change
- Discuss challenges of implementing changes

DURATION

The course is intended to be a 2 course but can be condensed to a 1 hour session as a shorter review.

SUGGESTED READING

Before the Flood, Leonardo DiCaprio (video)
Inconvenient Truth, Al Gore (book or documentary)
Our Choice, Al Gore (book or documentary)



Climate Reality (cont'd)

Course 7.2: Climate Change - Mitigating Risk

There are those who deny climate change is being caused by human activity and insist there is not consensus on the matter. However, every national academy of science in every country agrees that climate change is real and is being caused and accelerated by human activity. 7 billion people have the power to irreversibly alter the natural environment of this planet. Our fossil fuel based culture has a finite life and its antiquated methods are largely responsible for the climate change risks we face today. We have the technology and solutions available today to solve the climate crisis and mitigate our risk in doing so. This session will review the concerns briefly but focus on the solutions to mitigating risk through actions to reduce climate change.

OBJECTIVES

- Understand the best practices to reduce climate change
- Review the benefits of risk mitigation
- Identify technologies to reduce climate change impact
- Discuss the challenges and opportunities in implementing climate change impact reductions

DURATION

The course is intended to a 2 hours session.

COURSE WORK

Do your personal carbon footprint assessment.

Course 7.3: Examples of Successful Projects to reduce climate change impacts

This course will look more in depth into specific projects, highlighting the technologies and strategies implemented and measurable results achieved in both greenhouse gas and operating cost reduction. Market sectors that will be reviewed include Corporate, Higher Education, Pharma, K-12 Schools, and Residential.

OBJECTIVES

- Discuss strategies and technologies to reduce your climate change impacts.
- Identify commonalities & differences between market sectors.
- Understand the benefits of reducing your carbon footprint.
- Review tools, resources and delivery methods to facilitate success

DURATION

The course is intended to a 2 hours session but can be broken in to smaller modules.

COURSE WORK

Analyze an existing building case study

Climate Reality (cont'd)

Course 7.4: The Sustainable Trifecta – Net Zero Energy, Water and Waste

This session will examine how net zero energy, water and waste buildings can be achieved, including a look at specific technologies and strategies. Project examples will include educational, commercial/retail, corporate, and residential instances where one or more of these net zero goals were achieved.

Not only does this result in one of the highest performing projects possible, it also helps reduce your environmental impact drastically while earning a considerable number of credits within the LEED rating system and meeting several critical imperatives of the Living Building Challenge. This correlation to relevant credits will be discussed.

Our intent is to help teams more cost effectively achieve high performance designs with a goal of reaching the elusive triple net zero performance metric.

OBJECTIVES

- Define what net zero means in energy, water & waste.
- List best practices for achieving net zero energy, water and/or waste in projects
- Understand how and where net zero energy, water and waste earn credits in LEED, Living Building Challenge, TRUE and other third party systems
- Discuss methods of benchmarking performance to demonstrate net zero results

DURATION

The course is intended to be a 2 hours session but can be broken in to smaller modules.

Course 7.5: Climate Action Plan (CAP) & Implementation

Do you want your organization or facility to be carbon neutral? Understanding how to plan for and implement a carbon neutrality plan is an important first step to achieving that goal.

Whether an individual building, campus, portfolio of buildings spread across multiple locations, City, State, or Country, the components and elements of a successful climate action plan are similar. Developing and implementing such a plan is not only the first step to achieving carbon neutrality but can assist in obtaining various third party certifications and compliance such as ACUPCC President's Climate Commitment, Architecture 2030 Challenge, Eco Districts, LEED for Cities, and GRESB reporting.

This course will review the process of benchmarking your carbon footprint, components of a climate action plan (CAP), triple bottom line prioritization analysis practical carbon reduction measures, and short, mid and long term goal setting/management.

OBJECTIVES

- Define what carbon neutrality means to your organization
- List best practices for achieving carbon neutrality
- Understand the process and components of climate action plans
- Discuss short, mid and long term goal setting

DURATION

The course is intended to be a 2 hours session but can be broken in to smaller modules.



EDUCATION PROGRAMS



USGBC, AIA CEUs Available

8. Green Materials

By Jason Kliwinski, AIA, LEED BD&C/O&M
LEED Fellow & Faculty, Climate Reality Leader

Course Summary:

People are surrounded by 80,000 unregulated chemicals on average and spend 90% of their time indoors. Additionally, buildings are responsible for consuming 40% of all raw materials globally and producing 45% of all waste going to landfills today. Our pattern of consumption is unsustainable.

Selection and management of materials for your next building project or in your daily operations has a tremendous impact on our environment and the people in your buildings. The best way to create a healthy environment indoor and out is by not introducing toxic chemicals to the fullest extent possible. How do you know you are making the greenest choice though?

This course will review what makes a product green from an environmental and health standpoint using the LEED, Living Building Challenge and WELL rating systems as reference. The tools and metrics of green products will also be reviewed in addition to introducing the concept of life cycle assessment (LCA).

LCA is not new but still emerging way of assessing the sustainability of materials from a triple bottom line perspective that LEED has introduced in Version 4 of the rating system. The Health Product Declarations and Environmental Product Declarations of LEED incorporate LCA into their findings which we give you a truly complete picture of how green a product or system is.



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Sustainable Material & Resource Policy Development	2
Introduction to the TRUE (Total Resource Use Efficiency) rating system	2

Course 8.1: What Makes a Product Green?

This course will review the environmentally responsible and healthy qualities of green products. In addition, general background on and impacts of environmental and health concerns of unsustainable materials will be discussed.

Some of the metrics used to ascertain these sustainable qualities in LEED, Living Building Challenge and WELL will also be reviewed for interior & exterior finishes, furniture, and building systems.

OBJECTIVES

- Understand the health and environmental impacts of material selection and management
- Review the qualities of sustainable materials and their management.
- Identify opportunities for use more sustainable materials in your buildings
- Discuss challenges of implementing changes

DURATION

The course is intended to be a 2 course but can be condensed to a 1 hour session as a shorter review.

SUGGESTED READING

Cradle to Cradle, Bill McDonough & Michael Braungart

Green Materials (cont'd)

Course 8.2: Sustainable Policy Development - Cleaning, Purchasing, Site & Waste Management

As part of greening your new or existing building, it is important to establish policies and procedures to set sustainability goals and track success. This course will review the development and implementation of various sustainable material and resource management policies.

These are pre-requisites in order to achieve certification in the LEED for Existing Building rating system. They can also help achieve compliance with Living Building Challenge and WELL certifications requirements.

Examples of existing policies will be reviewed and an opportunity for attendees to develop and outline for their own sustainable policies afforded as part of in-class exercises.

OBJECTIVES

- Understand the components of a sustainable policy
- Review the goals for various types of sustainable material and resource management
- Identify stakeholders and challenges developing and adopting sustainable policies.
- Discuss the benefits of implementing sustainable material & resource management policies.

DURATION

The course is intended to a 2 hours session.

COURSE WORK

Develop a sustainable policy if your choosing

Course 8.3: Introduction to the TRUE rating system for sustainable waste management

The TRUE (Total Resource Use & Efficiency) rating system helps organizations and facilities to define, pursue and achieve their zero waste goals through project certification & professional credentialing.

Introduced in 2017 at the Greenbuild Expo by the Green Business Certification Institute, TRUE is poised to be an important part of any net zero waste approach.

This course will introduce you to the structure, requirements and metrics of this zero waste-focused rating system.

OBJECTIVES

- Discuss impacts of waste in the environment.
- Identify the best practices to achieve zero waste.
- Understand the structure and requirements of the TRUE rating system.
- Review tools, resources and delivery methods to facilitate success

DURATION

The course is intended to a 2 hours session be extended to 4 hours or a full day training for more in-depth credentialing and certification preparation.

COURSE WORK

Analyze an existing building case study

EDUCATION PROGRAMS



USGBC, AIA CEUs Available

9. WELL Building Standard

By Lia Nielsen, LEEDga, WELLap

Course Summary:

People spend 90% of their time indoors. People are also the most expensive thing in a company, by factor of 10 to 100 times compared to building operating costs. Where LEED takes a broad approach to sustainable buildings from an environmental, human and cost perspective, WELL focuses on sustainability from a human health and wellness perspective in buildings.

While there is some overlap between LEED and WELL, there are also significant differences. WELL is based on biological principles focused on facilitating the maximum human health and well being with the built environment.

Course 9.1: WELL Accreditation Training

Employees are the single largest expense for any company, far exceeding the cost of building and maintaining any facilities. We know that the built environment can both positively and adversely affect the health and productivity of occupants and employers are increasingly finding value in providing their employees with healthier and more conscious work environments. Whereas LEED is focused on the systems and structures of a building, WELL, a complementary rating system also administered by the Green Building Certification Institute, is concerned with the health and wellness of the occupants of the building.

Learn where LEED and WELL overlap, and how they are significantly different, as well as the



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structure and components of the WELL Building Standard.

OBJECTIVES

- Discuss the reasoning behind the WELL Building Standard
- An overview of the structure and components of WELL
- Review the Concepts of WELL and the individual Features it includes
- Compare and contrast LEED and WELL

DURATION

The course is intended to be a full day 8 hour course but can be broken into half day, 2 hour and 1 hour sessions as needed.

SUGGESTED READING

WELL Building Standard rating system

Green Materials (cont'd)

Course 9.2: WELL AP Exam Prep

Want to be on the forefront of the building market as a WELL Accredited Professional? Join us for an in depth exam preparation class that will help you pass the WELL exam on the first try. This Exam Prep class includes a review of the WELL Building Standard ideology, structure, and certification process. We will touch on key points of focus in the Standard and on the exam, the basis for the features covered by the Standard, and tips and tricks to aid you in study. The Prep class will include practice tests and review of the types of questions you can expect to find on the exam as well as interactive class exercises to review information.

OBJECTIVES

- Review the key requirements of the WELL rating system
- Identify areas of focus in human health and wellness.
- Understand the type and style of questions on the WELL AP exam
- Discuss challenges to taking and passing the exam.

DURATION

The course is intended to a 4 hours class but can be broken into 2 or 1 hour shorter sessions as needed.

COURSE WORK

Practice Exams, In-Class Exercises

SUGGESTED READING

We highly recommend participants have purchased and reviewed the WELL AP Exam Preparation Guide: <https://store.wellcertified.com/products/well-ap-exam-preparation-guide>

EDUCATION PROGRAMS



USGBC, AIA CEUs Available

10. The Sustainable Trifecta – Net Zero Energy, Water & Waste

By Jason Kliwinski, AIA, LEED Fellow; William Amann, PE, LEED Fellow; Michael Buono CWMS

Course Summary:

In order to reach the highest levels of performance and sustainability, a new bar has been set. Net zero energy, water and waste are the cutting edge of the sustainable market today. Rating systems like Living Building Challenge have been pushing these goals for some time as a requisite for certification. LEED rewards a substantial number of points towards certification for achieving these levels of performance.

Is net zero anything really possible? What does net zero mean in these three distinct areas of focus? This course seeks to define this high bar in all three areas, provide guidance on how projects may achieve one or more of these goals and present case studies where its been done already.

Whether your focus is reducing or mitigating the affects of climate change, reducing operating costs or managing your site responsibly, these three areas of focus provide something for everyone to aspire to.

Course 10.1: The Sustainable Trifecta Overview: Net Zero Energy, Water & Waste

Rating systems like the Living Building Challenge, LEED, and Passive House are pushing the industry on energy performance as building codes are getting significantly stricter on this as well. Using the LEED and Living Building Challenge as a guide, we will examine how net zero energy, water and waste buildings can be



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achieved, including a look at specific technologies and strategies. Project examples will include educational, commercial/retail, corporate, and residential instances where one or more of these net zero goals were achieved.

Not only does this result in one of the highest performing projects possible, it also helps earn a considerable number of credits within the LEED rating system and meet several critical imperatives of the Living Building Challenge. This correlation to relevant credits will be discussed.

Our intent is to help teams more cost effectively achieve high performance designs with a goal of reaching the elusive triple net zero performance metric.

OBJECTIVES

- Define what net zero energy, water & waste mean
- Review the challenges and opportunities to achieving net zero
- Identify best practices to achieving net zero performance
- Discuss LEED and LBC overlap with net zero goals

DURATION

The course is intended to be a 2 course.

Sustainable Trifecta (cont'd)

Course 10.2: Net Zero Energy

Building on the Sustainable Trifecta overview presentation, this course takes a deeper focused dive into achieving net zero energy. Energy consumption in buildings is the leading source of green house gas emissions in the United States. We will review the various definitions of net zero energy, tools available for benchmarking and measuring performance, and best practices.

This course looks at buildings and campuses holistically. We will discuss the building envelope, systems such as HVAC, lighting and controls, and renewable energy technologies available today to achieve net zero energy performance in detail.

Achieving Net Zero Energy will earn significant points in LEED, qualify you for certification under the energy petal of Living Building Challenge, and provide a level of independence and security necessary for a resilient building, campus, city or state.

OBJECTIVES

- Define what net zero energy means
- Review the tools available for benchmarking and tracking performance
- Identify strategies and technologies to achieve net zero energy
- Discuss the challenges and opportunities in achieving net zero energy

DURATION

The course is intended to a 2 hours session.

Course 10.3: Net Zero Water

Building on the Sustainable Trifecta overview presentation, this course takes a deeper focused dive into achieving net zero water. Only approximately 1-2% of our water on this planet is accessible, clean drinking water. With a population already over 7 billion and growing, access to this precious and often taken-for-granted resource is becoming increasingly concerning. Moves to privatize many public water utilities and control water rights on public land are being made now.

We cannot survive without water for more than three days. If there was ever a sustainable imperative that everyone could get behind, this is it. We will review the various definitions of net zero water in this session, tools available for benchmarking and measuring performance, and best practices.

This course looks at buildings and campuses holistically. We will discuss the sources of water, appropriate use of various types of water, and specific technologies and strategies to achieve net zero water.

OBJECTIVES

- Define what net zero water means
- Review the tools available for benchmarking and tracking performance
- Identify strategies and technologies to achieve net zero water
- Discuss the challenges and opportunities in achieving net zero water

DURATION

The course is intended to a 2 hours session.

Sustainable Trifecta (cont'd)

Course 10.4: Net Zero Waste

Building on the Sustainable Trifecta overview presentation, this course takes a deeper focused dive into achieving net zero waste. Buildings are currently responsible for 45% of all waste going to landfills and, as a society, we are only recycling about 35% of our waste. With a population already over 7 billion and growing, changing our patterns of consumption and the idea that we can simply throw unlimited amounts of toxic materials 'away' without consequences is essential.

We are running out of landfill space, polluting our oceans with vast amounts of garbage and plastics, and contaminating our atmosphere with emissions from incinerators. This does not have to be the way things are.

This course looks at LEED, WELL and the latest rating system, TRUE to define what net zero waste is, how to achieve it and best practices in detail.

OBJECTIVES

- Review what net zero means in waste.
- List best practices for achieving net zero waste in projects
- Understand where a net zero waste approach can earn credits in LEED, Living Building Challenge, and achieve a TRUE certification.
- Discuss methods of benchmarking performance to demonstrate net zero results

DURATION

The course is intended to be a 2 hours session.

