



**BOSTON
ARCHITECTURAL
COLLEGE**

Spring 2012: Session One

SUSTAINABLE DESIGN

www.the-bac.edu/green

ONLINE COURSES & CERTIFICATION

Four certificates available in
Sustainable Design

Study online at your convenience

Interact with expert faculty
in small, graduate-level classes

THE SUSTAINABLE DESIGN INSTITUTE AT THE BOSTON ARCHITECTURAL COLLEGE

www.the-bac.edu/green 320 Newbury Street Boston, MA 02115 USA ce@the-bac.edu PHONE: +1 617 585 0101

The Online Sustainable Design Program at the BAC

The Boston Architectural College (BAC) has offered the Sustainable Design Certificate Program since 2002. Our program is completely online, with graduate-level classes that are small, instructor-led, interactive and asynchronous. Our courses carry college credit, and may be taken individually or applied towards one of our four certificate programs. The program is administered by the Sustainable Design Institute (SDI) at the BAC. Four certificates are available in:

- Sustainable Design
- Sustainable Community Planning and Design
- Sustainable Building Design and Construction
- Sustainable Residential Design

To complete a certificate, students must successfully complete six courses. Details of the course requirements for each certificate are available on the program website at www.the-bac.edu/green. With over thirty courses the sustainable design curriculum represents the largest range and number of sustainable design courses available at any accredited college or university. The program offers a strong foundation in green building practices and principles in all aspects of the design, creation and operation of the built environment. Students have the opportunity to customize their studies and focus on particular areas of interest.

The strength of the sustainable design program is evidenced by the fact that many courses are accepted for AIA Sustainable Design/Health, Safety, Welfare Learning Units, all courses offer GBCI CE hours for LEED AP's, and all are accepted by the Royal Institute of British Architects for Continuing Professional Development. (See page 10 for further details)

The Sustainable Design program was developed in partnership with Building Green, a trusted source of unbiased information for building industry professionals concerned with environmental performance.

Our Faculty

Institute faculty is made up of experienced sustainable design practitioners and educators, who are experts in their fields. Faculty include architects, engineers, research professionals, landscape architects, interior designers, planners, green building consultants and authors.

Our Students

Most SDI students are either already a part of the building industry –in its broadest sense- or they wish to be. Students range from planners and developers to all kinds of designers, contractors, facility managers, consultants and advocates. There are also always some students who take our courses simply to learn about environmentally responsible building. In addition, students from the BAC's on-campus degree programs in architecture, landscape architecture, interior design and design studies are enrolled in the SDI online courses.

What to expect in an online Sustainable Design course

The online courses do not have specific meeting times, but they are highly interactive. For the duration of an online course, weekly correspondence via email and the discussion forums is required. Courses are eight weeks long and are all instructor-led. Materials and assignments are posted on an assigned day/time and are available to students throughout each week.

To participate in an online course, you will need to have access to a computer with the following **system requirements**:

Internet Connection

- Cable modem, DSL or better (dialup will not work)

Software

- Latest free version of Firefox (Int Explorer will not work)
- Latest free version of Adobe Reader and Adobe Flash Player
- A built-in or attached microphone (select courses)

On or before the first day of class, you will receive login information via the email address you provided at time of registration. If you do not receive an email by the first day of class, or within two days of a late registration, contact the Professional & Continuing Education department at (617) 585-0101.

Certificates

The Graduate Certificates in Sustainable Design are earned by completing six courses in a certificate program with a cumulative B- average. A bachelor's degree is required for enrollment in all of the sustainable design certificates. Students who do not have a bachelor's degree should contact the Continuing Education department at ce@the-bac.edu or (617) 585-0101 for details on how to apply for admission to the program.

SUSTAINABLE DESIGN

Sustainable Design as a Way of Thinking

The Urgent and Hopeful Future of Sustainable Design

Four courses from the full Sustainable Design curriculum, page 3

SUSTAINABLE BUILDING DESIGN & CONSTRUCTION

Sustainable Design as a Way of Thinking

Three of the following:

- The Urgent and Hopeful Future of Sustainable Design
- Green Practice: Energy and Air Quality Principles
- Environmental Systems
- Building Envelope
- Site Design, Landscaping and Site-Water Issues
- Daylighting and State-of-the-Art Electric Lighting
- Materials, Resources and Indoor Environmental Quality
- Getting the Green Building You Want: Managing the Construction Process
- Introduction to the International Green Construction Code

Two courses from the full Sustainable Design curriculum, page 3

SUSTAINABLE COMMUNITY PLANNING & DESIGN

Sustainable Design as a Way of Thinking

Sustainable Communities: Land Use, Transportation and Planning

Two of the following:

- Sustainable Transportation
- Greening the City
- Sustainable Neighborhoods
- Legal Issues in Sustainable Design: from Building to City Scale
- Multiple Urbanisms: Divergence or Synergy

Two courses from the full Sustainable Design curriculum, page 3

SUSTAINABLE RESIDENTIAL DESIGN

Sustainable Design as a Way of Thinking

Three of the following

- The Zero Energy Home: What, How and If
- Green Residential Remodeling and Renovations
- Residential Energy Modeling
- Site Design, Landscaping and Site-Water Issues

Two courses from the full Sustainable Design curriculum, page 3



Full Sustainable Design Curriculum

- TM7515 Building Envelope
- TM7472 Daylighting and State-of-the-Art Electric Lighting
- TM7379 Energy Modeling in Building Design
- TM7570 Environmental Systems
- TM7374 Getting the Green Building You Want: Construction Management
- TM7247 Global Perspectives on Sustainable Design
- TM7428 Green Practice: Energy and Air Quality Principles
- TM7318 Green Residential Remodeling and Renovation
- TM7319 Green Roofs / Green Walls
- TM7376 Greening Existing Buildings
- TM7377 Greening the City
- TM7710 High Performance Design and the LEED Rating System
- TM7158 Introduction to the International Green Construction Code
- TM7233 Learning from Sustainable Design Through History
- TM7349 Life Cycle Assessment of Building Materials
- TM7615 Marketing Sustainability
- TM7445 Materials, Resources and Indoor Environmental Quality Multiple Urbanisms, Divergence or Synergy
- TM7235 Multiple Urbanisms: Divergence or Synergy
- TM7373 Residential Energy Modeling
- TM7415 Site Design, Landscaping, and Site-Water Issues
- TM7314 Solar Energy: Design with the Sun
- TM7603 Sustainable Communities: Land Use, Transportation, and Planning
- TM7810 Sustainable Design and Building Information Modeling (BIM)
- TM7241 Sustainable Design and Preservation
- HT7520 Sustainable Design as a Way of Thinking
- TM7715 Sustainable Design in Practice
- TM7278 Sustainable Design of Healthcare Facilities
- TM7378 Sustainable Neighborhoods
- TM7601 Sustainable Transportation
- TM7154 The Economics of Green Building
- TM7242 The Urgent and Hopeful Future of Sustainable Design
- TM7317 The Zero Energy Home: What, How and If

This brochure is published periodically as a reference guide to Sustainable Design courses; the policies and schedule are subject to change. Visit www.the-bac.edu/green for up-to-date information.

Spring 2012: Session One

JANUARY 23 - MARCH 17

REGISTRATION OPENS DECEMBER 12

Daylighting and State-of-the-Art Electric Lighting
Environmental Systems [Prerequisites](#)
Green Practice: Energy and Air Quality Principles
Greening the City
High Performance Design and the LEED Rating System
Introduction to the International Green Construction Code
Life Cycle Assessment of Building Materials
Solar Energy: Design with the Sun
Sustainable Design and Preservation
Sustainable Design as a Way of Thinking
Sustainable Transportation
The Urgent and Hopeful Future of Sustainable Design

TUITION (PER COURSE)

Credit \$1,380

Audit \$950

* Students registering for a course from outside the United States should register by phone at +1 617-585-0101.

Spring 2012: Session Two

MARCH 26 - MAY 14

Building Envelope [Prerequisites](#)
Environmental Systems [Prerequisites](#)
Global Perspectives on Sustainable Design
Green Practice: Energy and Air Quality Principles
Green Residential Remodeling and Renovation
Green Roofs/Green Walls
Greening Existing Buildings
Materials, Resources and Indoor Environmental Quality
Multiple Urbanisms: Divergence or Synergy
Sustainable Communities:
Land Use, Transportation, and Planning
Sustainable Design as a Way of Thinking
Sustainable Neighborhoods
The Zero Energy Home: What, How and If

FINANCING

Graduate Discount

There is a 50% tuition discount for BAC graduates of degree and certificate programs. To take advantage of this discount, contact the Professional & Continuing Education department at 617-585-0101. This discount applies to continuing education classes only.

CE Student Loans

All BAC Professional & Continuing Education students are now eligible to use loans to help fund their studies. "Private" or "Alternative" loans change from lender to lender, so it is important to research a number of options to see which one works best for you. Check www.simpletuition.com for a list of banks that will help finance your CE courses at the BAC.



photo courtesy of Bonica Ayala

Whether it's at a coffee shop in San Francisco or in Austin, we are where you are.

DAYLIGHTING & STATE-OF-THE-ART ELECTRIC LIGHTING

1.5 Credits • RIBA CPD-approved

Will Lewis has designed both natural and artificial lighting environments for a wide range of project types including hospitality, residential, retail, corporate interiors, museums, civic, and streetscapes. His work has been recognized with multiple IIDA Awards of Merit.

This course will examine the techniques and benefits of daylighting in terms of occupants' well being and productivity, potential improvements in energy efficiency, and its effects on building form. For daylighting, the relative advantages and disadvantages of toplighting versus sidelighting and the best approaches to the design of both will be covered. The course will also examine the latest approaches to the design of efficient electric lighting both inside and outside of buildings. The plusses and minuses of different kinds of lamps and fixtures along with issues of efficiency, light quality, longevity and disposal will be considered.

ENVIRONMENTAL SYSTEMS

1.5 Credits • 24 AIA HSW/SD LUs • ERB Approved - 48 GBCI CE Hrs • RIBA CPD-approved • Prerequisite: Green Practice: Energy and Air Quality Principles.

Tom Kelly is a mechanical engineer and the Senior Project Manager for Training at Carrier Corporation. He has served on the Professional Development Committee for the USGBC and in on ASHRAE committees for sustainability, air-to-air heat recovery and gas phase filtration. Tom has done significant studies on indoor air quality for Syracuse University.

Designed as a follow-up course to Energy and Air Quality Principles, this course covers environmental systems fundamentals, HVAC system types, ventilation requirements, demand-controlled and energy recovery ventilation, underfloor-air systems, air distribution, fuel choices, understanding energy efficiency, zero-energy buildings, renewable energy systems, solar thermal systems, building-integrated photovoltaics, biofuels, energy modeling, and plumbing/water conservation.

GREEN PRACTICE: ENERGY & AIR QUALITY PRINCIPLES

1.5 Credits • 24 AIA HSW/SD LUs • ERB Approved - 48 GBCI CE Hrs • RIBA CPD-approved

Amelia Thrall, BA (Dartmouth College), M.Arch (University of Oregon) works toward closing the gap between architecture and building science as a designer, educator, and writer.

John H. Boehs Jr. LEED AP is a mechanical engineer with more than 10 years of professional experience in the design of energy conscious buildings. Most recently, John was employed as a senior mechanical engineer with the Boston office of Arup.

The concept of an environmentally conscious building should take into account energy consumption, the quality of indoor air, and most importantly human comfort. Indigenous strategies that adapt to the rigors of the local climate and contemporary bioclimatic architecture are part of this introductory course to sustainable design. Participants will be introduced to the human needs for comfort and shelter as well as psychrometrics and the physics of heat transfer and heat loss calculations. Building form, orientation, and indoor spaces will also be discussed as they relate to sun, wind, and site, as well as bioclimatic design, passive solar design, natural cooling, and daylighting.

GREENING THE CITY

1.5 Credits • RIBA CPD Approved

Margarita Iglesia, AICP, is a planner and urban designer with twenty years of experience in the development of livable, attractive and sustainable communities throughout New England.

That cities have the potential to be the most sustainable form of human development is coming to be widely recognized, as is the fact that most cities have a long way to go to realize that potential. Progress is being made, however, in terms of improvements in infrastructure and the building stock, innovative transportation and development policies and programs, revised codes, and other measures designed to encourage sustainability. This course will examine the most innovative approaches to greening cities around in the US and other countries and consider both their successes – and failures- and their applicability to different regions and cultures. Among other things, the important role of conflict resolution as major changes are being made in a city will be considered.

HIGH PERFORMANCE DESIGN AND THE LEED RATING SYSTEM

1.5 Credits • RIBA CPD-approved • 48 GBCI CE Hrs

Ashley Muse Ashley has a degree in architecture and works as a consultant creating high performance, sustainable buildings.

LEED was developed by the US Green Building Council as a tool to promote and propagate high performance building design. It has become the dominant green building rating system in the US and is being adapted for use world. This course presents integrated design and sustainability principles through the lens of the LEED for Building Design and Construction. Specific topics include in-depth look at the six major LEED categories: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, and Indoor Environmental Quality, plus the use of integrated design practices, financial costs and benefits of green buildings and more. Prerequisites: Green Practice: Energy and Air Quality Principles and Sustainable Design as a Way of Thinking.

INTRODUCTION TO INTERNATIONAL GREEN CONSTRUCTION CODE

1.5 Credits

Vernon Woodworth is a registered architect and a certified building official. He works as a code consultant with R.W. Sullivan, Inc in Boston and has been involved with the development of the International Green Construction Code.

2012 marks the publication of the new International green Construction Code (IgCC) as part of the International Code Council's "family of codes". The IgCC provides a comprehensive and flexible regulatory approach to sustainability in construction, site development, and renovations to existing buildings. This course will provide an introduction to the IgCC, in terms of both its structure and its content. Alternative compliance paths, jurisdictional requirements, and project electives will be covered along with the actual prescriptive contents of the code. Assignments will include determining compliance for hypothetical projects.

LIFE CYCLE ASSESSMENT OF BUILDING MATERIALS

1.5 Credits • RIBA CPD-approved

Anne Nicklin LEED AP, is the Executive Director of the Building Materials Reuse Association. She has worked as a sustainability consultant with Davis Langdon and was actively involved in the life cycle analysis team.

This course will provide students with a comprehensive understanding of the Life Cycle Assessment of building materials, from energy associated with the harvest and manufacture of building materials to how material pricing, historical supply, and socioeconomic factors contribute to the total value of an item. Building on the Materials, Resources and IEQ introductory course, students will learn different methods of accounting for the impact of extraction, manufacture, shipping, installation and disposal/recycling/reuse of a material. Students will create case studies emphasizing a triple bottom line approach in evaluating the environmental, economic, and ethical impact of different materials. The coursework will review existing tools and standards such as ISO 14040, Cradle to Cradle and SimaPro as well as input from industry experts on the rapidly evolving field of life cycle analysis.

SOLAR ENERGY: DESIGN WITH THE SUN

1.5 Credits • 48 GBCI CE Hrs • RIBA CPD-approved

M. Curt Sachs is a licensed architect in Maine, New York and New Jersey. He received his M.Arch at the University of New Mexico, where he studied passive solar design and built several houses. He teaches sustainable design at the University of Maine and Southern Maine Community College. He lives and works in Portland, Maine.

This course will examine the many possibilities provided by the sun to power, light and heat our buildings. These possibilities are affected by geographic location, climate, building site, and building form, orientation, fenestration and thermal mass—all of which will be considered. Passive and active solar thermal systems, solar domestic hot water systems and photovoltaics will be studied along with design strategies to prevent unwanted solar gain in climates and seasons when that is a problem. The relative cost and benefits of different solar strategies will also be addressed.

SUSTAINABLE DESIGN AND PRESERVATION

1.5 Credits • RIBA CPD-approved

Nancy E. Boone is the Federal Preservation Officer at the US Department of Housing and Urban Development. She has been practicing preservation for 30 years, including university teaching.

As the art and science of sensitively adapting historic buildings for continued and new uses, preservation is inherently a sustainable practice. Learn how old buildings were built with features that conserve energy and create a comfortable environment. Develop a framework for evaluating energy-saving options for historic buildings and the special considerations they require. Build your knowledge of current best practices in the field regarding windows, insulation, renewables and more. This course will help you design energy improvements that meet historic preservation guidelines whether you're trying to comply with regulatory requirements in a local design review process or federally funded project, or just want to promote the long term sustainability of historic buildings. Discussion topics will include environmental quality, materials selection, and energy rating systems like LEED.

SUSTAINABLE DESIGN AS A WAY OF THINKING

1.5 Credits • 24 AIA HSW/SD LUs • ERB Approved - 48 GBCI CE Hrs • RIBA CPD-approved

Dr. Elena Douvrou is an architect and has taught and published on the subjects of sustainable design, bioclimatic architecture, thermal comfort and post occupancy evaluation.

David Foley has worked in the fields of energy efficiency and environmental building since 1980, as a designer, builder, teacher and researcher.

This course traces the history of the sustainable design movement then introduces its primary tenets using the LEED Rating System as the organizing structure. Readings in the course are drawn largely from Environmental Building News. Online discussions are designed to acquaint the students with the language, philosophy, and principles of sustainable design. This course examines the underlying principles of sustainability and design. The class focuses on environmental sustainability and thought processes that can help professionals design a more sustainable world. Major aspects of environmental building that will be addressed include energy efficiency, building materials, indoor environmental quality and land use. Ways of evaluating the sustainability of the built environment are discussed including the LEED™ rating system.

SUSTAINABLE TRANSPORTATION

1.5 Credits • RIBA CPD Approved

John Hersey is a transportation planner specializing in bicycle and pedestrian mobility, ADA compliance, and public outreach. He earned a B.A. and an M.R.P. both from UMass-Amherst.

In the pursuit of a model that meets needs of the present without compromising the needs of the future, sustainable transportation is inextricably linked to sustainable development. Starting from a context of land-use planning, this course will examine current transportation models and their impact on our environment, consider alternatives to these models, and discuss methods to affect change beyond the academic setting. The course provides an overview of sustainability as envisioned by the Smart Growth paradigm and explores issues of transportation policy as they pertain to a variety of modes, uses and users. Students will learn to think about transportation in close relation to land use and gain familiarity with local, national and international models of sustainable transportation.

THE URGENT & HOPEFUL FUTURE OF SUSTAINABLE DESIGN

1.5 Credits • ERB Approved - 48 GBCI CE Hrs • RIBA CPD-approved

Richard Graves is an architect formerly with Perkins and Will in Minneapolis, where he focused on green building projects. He is Vice President for Community at the US Green Building Council.

A review of the “cutting edge” of sustainable design including the evolution of mindset, processes and tools required for a sustainable future. Active engagement with the processes and systems of the living world yields: an understanding of wise action, the development of an aesthetic of beauty born from a unity of mind and nature, and the expansion of the context of design beyond the individual building. Examples include: Systems Theory, Integrated Design, Triple Bottom Line, the Precautionary Principle (mindset and process), and LEED 2030 Challenge, Living Building Challenge, Permaculture, Biomimicry, Life-cycle analysis and Eco-Charrettes (tools).

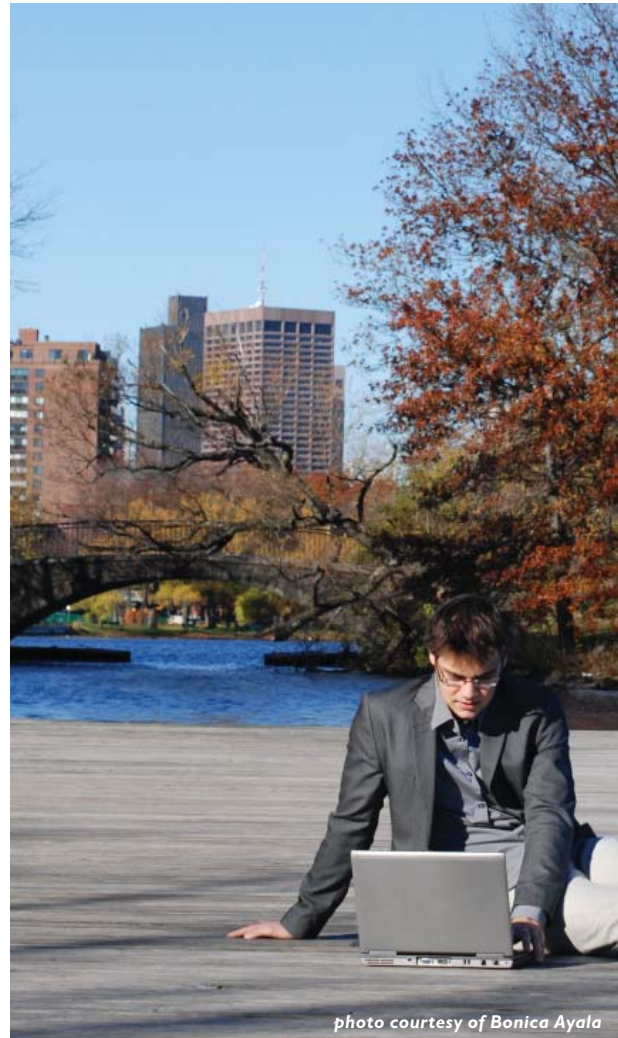


photo courtesy of Bonica Ayala

Learn from anywhere and get the education you want when you want it.



The Sustainable Design Institute at the BAC is located in Boston's Back Bay, a high-density, mixed-use, pedestrian-oriented community.

Continuing Education Credit

Courses must be taken for credit to qualify



The American Institute of Architects (AIA)

The AIA has approved some courses for Health, Safety, Welfare/Sustainable Design (HSW/SD) continuing education learning units (LUs) for architectural registration and AIA membership requirements. AIA members who are registering for an AIA-approved course online will need to call their AIA number in to the BAC at 617.585.0101 after they have completed their registration. The BAC Professional and Continuing Education Department will then report your attendance to the AIA once the course is completed. Students who are not AIA members can receive a letter of completion for their files by calling the BAC Professional and Continuing Education Department. See www.the-bac.edu/green for AIA approved courses.



Green Building Certification Institute (GBCI)

All SDI sustainable design courses qualify for GBCI CE Hours for LEED AP's. All courses contain "general category" GBCI CE hours. At least three courses, "High Performance Design and the LEED Rating System", "Sustainable Neighborhoods", and "Sustainable Design of Healthcare Facilities", contain LEED-specific hours, based on their content. Students should keep track of their own hours for their records. Based on past experience, students have spent an average of 48 hours in the courses. However, this number may vary among individuals. LEED AP's who have completed a course should request a transcript from the BAC Registrar's office and attach the course description from the website to the transcript. These documents should be used for self-reporting and kept in student files for GBCI audits. Select courses have also been approved by the ERB for 48 GBCI CE hours. See www.the-bac.edu/green for more details.



The Royal Institute of British Architects (RIBA) Continuing Professional Development (CPD) Program

The Royal Institute of British Architects (RIBA) Continuing Professional Development (CPD) Program has approved all courses for its members. RIBA members who have completed an approved course should request a transcript from the BAC Registrar's office and attach the course description from the website to the transcript. These documents should be used for self-reporting and kept in their files for CPD audits.

The Center for Health Design

The Center for Health Design has approved the SDI course Sustainable Design of Healthcare Facilities for 6 EDAC CEU's. Students who have completed this course should request a transcript from the BAC Registrar and attach to it a course description from the website for their files. They should then request a report form from the EDAC (edac@healthdesign.org).



LEED Green Associate

Completing any one of the SDI courses can provide eligibility for those wishing to take the LEED Green Associate test. Students who have completed a course should request a transcript from the BAC Registrar and attach it to a course description from the website for submission to the Green Building Certification Institute (GBCI). Consult the GBCI for further details.

For further information on Continuing Education credits, contact the Professional & Continuing Education Department at +1 617 585 0101.



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The courses have been developed in partnership with BuildingGreen, providers of authoritative information on sustainable design and construction since 1985.



www.the-bac.edu/green 320 Newbury Street Boston, MA 02115 USA

ce@the-bac.edu

USA PHONE +1 617 585-0101
UK PHONE +44 20 3372 4164