

Appendix

[S]ustainable design is not limited to simply trying to be more efficient. A new approach offers a clear alternative: an ecologically intelligent framework in which the safe, regenerative productivity of nature provides models for wholly positive human designs . . . we can begin to redesign the very foundations of architecture and industry, creating systems that purify air, land, and water; use current solar income and generate no toxic waste; and use only safe, healthful, regenerative materials. The benefits would enhance all life.

— William A. McDonough, FAIA, Architect, 2004

REFERENCE SOURCES AND OTHER RELEVANT WORKS

These lists include some of the many resources on which the authors of this report drew. Some were cited throughout the chapters, many more behind some of the ideas that inspired this project.

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CHAMPIONS OF ECOLOGICAL LITERACY IN ARCHITECTURE EDUCATION

In his book, *Ecological Literacy*, David Orr notes that the study of humankind and the study of nature are separated in most institutions of higher learning. “Ecology has been isolated within biology departments as though it had little or nothing to do with the social sciences, the humanities, or the professions. The result is a pervasive anthropocentrism that magnifies the role of humans and their ideas, art, institutions, and technology relative to soil, water, climate, wildlife, resources, geography, energy, disease, and ecosystem stability.”¹ He condemns the errors of econocentric thinking that might have been corrected “with a dose of ecological literacy, a nodding acquaintance with thermodynamics, a brief study of history, and a modicum of ethical sensitivity and common sense.” Many other disciplines could benefit, he writes, from “a cross-fertilization with ecology” and cites the work of scholars in 11 fields who have engaged in that effort. In architecture, Orr mentions Ian McHarg, Malcolm Wells, Bruce Anderson, and Gary Coates.²

Orr’s list made us curious to find out who today’s architects and educators would cite as their own “champions” of ecological literacy who influenced them in school and helped shaped their approach and the paths of their careers. We asked this question, via e-mail, of the more than 7,000 members of the AIA COTE, as well as the educators who submitted coursework to the project’s call for submissions and other sustainable design practitioners and educators we have contacted during the course of this study. This survey was random and intentionally unscientific, and the results reflect that. The list is temporally idiosyncratic, may contain some conflation, and most certainly should not be considered comprehensive; many important thinkers and teachers are not mentioned here. But even though the results are uneven and somewhat random, there are kernels of wisdom about the educators and practicing architects who inspired people around them.

We sought nominations for champions who were or are educators in schools of architecture and other schools. The first group fits this category, though many of them practiced, too. Some affected lives early on in design school while others remain a constant voice promoting the benefit of being literate in the simple notion of “being aware.” Their contributions show the significant potential that a single individual can have on the ability to effect change. Most of these educators are listed with the university at which the nominators encountered them. Nominators and their comments are listed below the champion names, which appear in alphabetical order.

Fernando Abruna, FAIA, University of Puerto Rico

- Luis G. Huertas: “Showed me the dedication and passion that one must have in order to be successful. Fernando had been practicing sustainable architecture for 25 years before I met him and now his ideas are coming of age.”

Arne Aho, North Carolina State University

- Jim Smith, AIA: “...teaching daylighting, passive solar design, efficient use of materials, etc., way before the current green building movement.”

¹ Orr, David. 1992. *Ecological Literacy*. Albany: State University of New York-Albany, p. 135.

² Ibid, p. 136.

Zane Anderson, AIA, Roger Williams University

- Robert Guarcello Mencarini, AIA: “He was a great professor and instilled in me a great foundation and understanding of how to design for human needs while minimizing the impact on the world.”

Roy Banwell, AIA, Dartmouth University

- Keith Moskow, AIA: “He explained the concepts of passive solar design, then challenged us as students to design a ski house that would be warm when you showed up mid-winter via passive solar means.”

Raj Barr-Kumar, Catholic University

- David Hammond, Assoc. AIA: “... able to ignite a passion for responsible design, and reinforce the idea that green architecture isn’t just another style of design, rather it is a foundation which all styles can and should be built upon.”

James Blackburn, Rice University

- Dru Meadows, AIA: “While studying architecture, I took an elective course on environmental law. The dean of the School of Architecture actually called me into his office to question my judgment in allocating precious academic time on such a topic. Despite the dean’s criticism (or perhaps because of, I was, after all a college student and defying authority may have simply reinforced my commitment), I continued in the course. There were no textbooks appropriate to the topic, just reprints of articles and case law, excellent lectures extrapolating trends ... and a memorable canoe trip down the Houston bayous which brought students face-to-face with an opaque, multicolored soup—the direct result of the way we design, construct, and operate buildings (and sites). This, as the professor knew, was a powerful and tangible image. It certainly stayed with me. I remain most grateful for his inspirational teaching ... and that I did not fall into that bayou. I cannot think of a person more deserving of recognition as a champion of ecological literacy in architecture education.”
- Jim Wasley: “Jim was my patron saint through graduate school, ‘hiring’ me to write white papers on environmental ethics and other topics that we shared a common interest in and keeping me solvent in the process.”

Mary Blade, Cooper Union

- Edward R. Acker, AIA: “Mary would begin to describe the travels of a rain drop—its effect on the plants, the ground, eventually winding its way into the Ringwood River, finding its way to the reservoir, and thence into the drinking taps of the downstream urban population. An hour later, by the time she was finished, the students would be listening in rapt attention.”

G. Z. Brown, University of Oregon

- Margot McDonald, AIA: “He has inspired several generations of architecture faculty who teach the same subject at universities throughout the world as well as practicing architects. He continues to contribute to the field and to mentor his former students, many of whom are full professors themselves. I am deeply indebted to him for providing me with career direction and shared their passion for design with environment.”
- Daniel Strening, Assoc. AIA: “Author of *Sun, Wind & Light* (a staple of environmental design) and he runs the Energy Studies in Buildings Lab the University of Oregon. I can’t begin to describe how much I learned while working in the ESBL. He has developed an energy analysis software program, for use in the preliminary design stages, Energy

Scheming. He is a tremendous and accessible resource for all students at the university. The lab does sustainability consulting work for a constant stream of projects from around the country.”

- Jan Fillinger, AIA: “He has created two important building research labs (one in Eugene and another in Portland) focused on providing architects and developers with the sustainable design information they need for their green buildings. He is involved in a large proportion of the sustainable projects of significance up and down the West Coast. He is on numerous boards and gives presentations about green design on a regular basis. He is having a great impact on both education of new professional and development of sustainable projects.”
- Jim Wasley: “A true pioneer in architectural education.”
- Rudy Berg, Assoc. AIA
- Karin Link, Assoc. AIA

Hans E. Butler, University of Oklahoma

- Eric Werner, Assoc. AIA: “Hans did, in refreshingly undogmatic fashion, encourage exploration of not only ecological design but also of the underlying moral framework and social implication of ecological ideas. He is a passionate and brilliant educator and most certainly deserving of recognition for his contributions to ecological design education.”

Raymond Cole, University of British Columbia

- D. William Saul, AIA: “He was a true guiding light to a new legion of eco-directed architects, many of whom have fashioned a career based upon sustainable building practices both in the United States and Canada. His lectures were tempests of impassioned and learned evaluations of the science of ecological strategies and the poetics of their possible expression. I was fortunate to catch him as a visiting lecturer in San Francisco last year and that passion hasn’t waned a bit.”

Jeff Cook, Arizona State University; Murray Miln, University of California-Los Angeles; Charles (Cris) Benton, University of California-Berkeley

- Jim Wasley: “All three of these ‘old guard’ members of the Society of Building Science Educators have at one time or another been especially kind, encouraging, and inspirational to me as I considered returning to graduate school in order to teach, later sought a teaching position, and finally struggled to learn how to teach.”

Buford Duke, AIA, University of Texas

- Doug Nissen, Assoc. AIA

Daria Fisk, University of Texas

- Tom Eisele, AIA: “Quite a broad thinker, appropriate technology proponent, social activist.”

James Marston Fitch, Hon. AIA, Columbia University

- Sheldon Licht, AIA
- Sandra Baptie, AIA

Rebecca Foss, University of Minnesota

- Theresa M. Olsen, AIA: “As a specifications writer, she understood the technical information and the details that make the difference in an environmentally friendly

building and a healthy environment. As a landscape architect, her love of the environment was displayed in her work.”

Harrison Fraker, FAIA, Princeton University

- Paul Macht, AIA

Carol Franklin and Leslie Sauer, University of Pennsylvania

- Jestena Boughton, Assoc. AIA: “They gave life and beauty to the finishing layer of landscape architecture: plants. Plants come alive as relating to each other and having habits that you can recognize like you can old friends from a distance.”

Michael Garrison, University of Texas

- Tom Eisele, AIA: “Stressed appropriate technology and design within context. We were doing ‘passive solar chicken coops’ and ‘Integral Urban House’ kinds of projects.”
- Doug Nissen, Assoc. AIA

Baruch Givoni, University of California-Los Angeles

- Helen J. Kessler, AIA

Dan Goldrich, University of Oregon

- Jim Wasley: “I’ve taken many courses outside of architecture that have fuelled my passion for the environment, but this course still stands out in my mind as providing a turning point in my UG education. I can no longer say why, but it gave structure to my more rebellious leanings.”

Herb Greene, University of Kentucky

- Robert J. Koester, AIA

Mary Guzowski, University of Minnesota

- Gregory J. Maxam, AIA: “I have worked with her through AIA Minnesota COTE since the early 1990s, joining professionals and students in working toward sustainability. Mary started the Daylighting Lab at the college, a resource for both professionals and students, and has tirelessly promoted ecological coursework, such as the current Architecture and Ecology class. She is currently organizing a master of science degree track in sustainable design.”

Bob Hanna, University of Pennsylvania

- Jestena Boughton, Assoc. AIA: “He taught the importance of team work and lots of design development from a strong concept.”

Julie Herdt, University of Colorado

- Virginia DuBrucq, AIA: “I have been made aware of her long history teaching sustainable design and of the creative projects in which she has involved her students.”

Patrick Horbrugh, FAIA, University of Notre Dame

- Donald E. Sporleder, FAIA: “...he directed the ecological forward looking graduate program in Environic Design....”

Narendra Juneda, University of Pennsylvania

- Jestena Boughton, Assoc. AIA: “He got us to understand the relationships of all the layers of mapping and their implications and possibilities.”

William Katavolos, FAIA, Pratt Institute

- Fernando Abruna, FAIA

Douglas Kelbaugh, FAIA, University of Michigan

- Paul Macht, AIA

Ralph Knowles, University of Southern California

- Stephen Dent, AIA: “Ralph Knowles was the studio instructor for my third year at the USC in 1965–1966. His approach to design was abstract but rigorous. For example, a major assignment was the design of a form that collected heat in winter and shaded itself in summer—no function or scale was given. It was later determined to be a city in scale, but the critical issue was developing a design process that fully responded to the movement of the sun over time. The intensity of the effort to solve an original problem without starting from preconceptions has had lasting and significant impact on all who had this experience. Ralph went on to win the first AIA Gold Medal for Research and an ACSA teaching award among many other honors. Thom Mayne, this years’ Pritzker Prize recipient, was also a student in the studio and has always given Ralph Knowles credit for this powerful and eye-opening educational experience. The development of architectural form in response to ecological forces was truly unique at that time in architectural education and proved to be extraordinarily prescient.”
- Charles F. Davis III, AIA: “He began a series of design studios that focused on architectural form as responses to environmental forces. Students’ designs were to meet programmatic requirements but focus on how a building form was shaped by an environmental force such as wind, sunlight, etc. Designs were tested in wind tunnels, heliodomes, etc. Each student focused on one force, and the clarity of responses became evident. It has led to a lifetime awareness of environmental forces on architectural design.”

Wally Kronner, Rensselaer Polytechnic Institute

- Bill Worthen: “The first professor at Rensselaer (back in 1989) to talk to us about thermal comfort. *Thermal Delight* was required reading for his class. At the time, we thought Wally was a bit wacky, talking about individual control of your environment and having personal air supply controls at every workstation in an office and the benefits clean air and daylight would have on worker productivity. Wally was out there in 1989 but here in 2005, as an architect and green building consultant, his ideas are no longer that strange—they are central to good practice. *Thermal Delight* [by Lisa Heschong] is a great read that still holds true. I never would have thought it at the time, but Wally was a champion and not afraid to teach us to think differently about the way we inhabit our designs and improve the quality of the built environment.”
- Jean Stark, AIA: “He has been a tireless champion of sustainable ideas his entire career. Active in architectural research and always looking for new ways to improve the built environment for the benefit of occupants, he was teaching sustainability before the word was ever used in relation to architecture. Many of his former students have told me that of all the professors that they had, he is the one who taught them the most about what was possible and worthwhile in the real world of architecture.”

Nate Krug, AIA, University of Nebraska -Lincoln

- Jenni Felton, Assoc. AIA: “He opened my eyes to the possibilities of achieving great designs by embracing environmental sensitivities/green design principles. He was an energetic guide not only in the possibilities of sustainable architectural strategies, but also how to carry these through into technical building details that are typically lacking in architectural education.”

Peter Land, Assoc. AIA, Illinois Institute of Technology

- Robert Vagnieres Jr., AIA: “He has done some wonderful work with his students, on sustainable housing, and more recently on sustainable high-rises.”

Richard Levine, AIA, University of Kentucky

- Robert J. Koester, AIA: “‘Ecological literacy’ did not function as an explicit theme in studio education, but its tenants were embedded in his mentoring.”

Vivian Loftness, FAIA, Carnegie Mellon University

- Rebecca Leet, AIA: “I attended Carnegie Mellon University's School of Architecture from 1993 to 1998. Loftness, the department head for much of that time, was an inspiration to us all in her efforts to educate not only us, the students, but also the administration of the university on the importance of green practices in building design.

Taisto Makela, Assoc. AIA, University of Colorado

- Merlin Maley, Assoc. AIA: “He teaches The Poetic Detail: Wood. His focus was not on sustainability per se, but on the disappearing art of craft and materiality. Details and materials make the difference in architecture. They make buildings, cities, and cultures. Details are becoming a lost art or at least an afterthought in architectural design.”

William McCoskey, Larry Patrick, Robert Kobet, AIA, Slippery Rock University

- William Paul McKinney, Assoc. AIA: “The design of the built environment is specific to worldly magnitude, growth, and development after centuries; and continues to grow exponentially in a relatively abbreviated (time) order with technology. The message is clear. Architecture as a profession must oblige practice with accountability; and embrace sustainable principles with the vigor and energy embodied in this fundamental academic concept. Survival.”

Ian McHarg, Hon. AIA, University of Pennsylvania

- Michael Holtz, FAIA: “His 1969 book, *Design with Nature*, was very important in the history of development of ecological literacy in design education.”
- G. Mackenzie Gordon, AIA: “One of my mentors in school, the first one I know to have connected ecology with architecture and landscape architecture. His book, *Design with Nature*, is still the classic in the field.”
- Jestena Boughton, Assoc. AIA
- Stuart Berger, AIA: “...distilled the essence of ecologically responsible design into easily followed principles.”

Hayden McKay, AIA, University of Maryland

- Stanley J. Sersen

Steven Meder, University of Hawaii

- Kelly Carlson: “Thanks to his involvement, my classmates and I have graduated with an appreciation for our own role in the environmental movement and a sense of responsibility to utilize the knowledge we’ve acquired.”
- Dean Johnston, AIA: “His support and indefatigable mentorship continue to inspire me.”
- Debra Kohn

Larry Medlin, University of Arizona

- Helen J. Kessler, AIA: “He helped set the course of my career, which has been in the areas of solar energy, energy efficiency, and sustainability. Larry has continued to be a leader in ecological design ever since.”

Armando Navarro, Bruce Hammond, Pete Gang, Sonoma State University

- Katherine Austin, AIA: “I had been very much tuned into the green building movement for several years before this program [Green Housing Certificate Program], which put it all in a good perspective with an overview of all the issues. This has given me tools and inspiration to be a bit of a ‘green missionary’ to preach to the wider audience of architects.”

Eliyahu Ne’eman, Bartlett School at University College London

- Helen J. Kessler, AIA

Victor Olgyay, Princeton

- Michael Holtz, FAIA

Laurie Olin, Hon. AIA, University of Pennsylvania

- Jestena Boughton, Assoc. AIA: “...wise and strong enough to influence the greatest architects of our time.”

Ed Orłowski, AIA, Lawrence Technological University

- Jason Schultz, AIA: “Professor Orłowski helped us research different ways of greening normal buildings. He introduced us to sustainability. From that, he has sparked a love in me. I have since studied extensively the greening of architecture, and am in the process of preparing for both my Architectural Registration Examination and the LEED registration. Once those are obtained, I plan to help create a new division within my firm, spreading green architecture where ever I can.”

David Orr, Oberlin College

- Kevin Burke, AIA
- Robert J. Koester, AIA

Victor Papanek, University of Kansas

- David Whitney, AIA: “Introduced to me through his books by Ray Lloyd at the College of the Sequoias (COS) and was an inspiration to me as a student in the 1980s and today. A founder to the notion of responsible design, which promotes responsibility deeper than a basic interest in green materials replacing standard products, Victor inspired me to become an architect—and to design with regard to social and ecological responsibilities beyond the basic scope of an architectural program. As a student activist, I was fortunate to bring Victor as a keynote speaker to COS for Earth Day in 1985. He died in 1998.”

Don Peting, University of Oregon

- Karin Link, Assoc. AIA: "...the studio I took with him showed a particular sensitivity to site and environment."

Brent Porter, AIA, Pratt Institute

- Michael McHugh, AIA: "I always laugh thinking about how he encouraged my goofy model of a 'solar temple' made out of an old air diffuser."

Corkey Poster, University of Arizona

- Marlene Siska, AIA: "He taught sustainability in second year of design. It wasn't a fad to him, it was his philosophy in good design. He was very influential, I'm sure, to hundreds of students."

Donald Prowler, FAIA, University of Pennsylvania, Princeton (and others)

- Keith Moskow, AIA: "His book, *Modest Mansions*, is great."

John Reynolds, FAIA, University of Oregon

- Jim Wasley: "...incredibly supportive mentor throughout my undergraduate education and have remained so ever since...is a true pioneer in architectural education..."
- Margot McDonald, AIA: "...has inspired several generations of architecture faculty who teach the same subject at universities throughout the world as well as practicing architects. He continues to contribute to the field and to mentor his former students, many of whom are full professors themselves. I am deeply indebted to him for providing me with career direction and shared their passion for design with environment."
- Rudy Berg, Assoc. AIA
- Karin Link, Assoc. AIA

Gene Ruskin, Columbia University

- Sheldon Licht

Harris Sobin, AIA, University of Arizona

- Helen J. Kessler, AIA: "He always brought a contextual sensitivity to his classes, based in part on the work of Le Corbusier."

Bernard Spring, FAIA, Cooper Union

- Edward R. Acker, AIA: "Bernie impressed upon us an awareness of the broader context of the buildings we were designing, and their effects on the environment as to consumption, distribution, and disposal issues related to air, water, sewage, and power."

Lance Tatum, AIA, University of Texas

- Doug Nissen, Assoc. AIA

Michael Utsinger, University of Wisconsin-Milwaukee

- Michael Doll, AIA: "His focus in teaching is sustainability and I believe his focus in life is improving the quality of life for all human beings. In essence, helping people understand the long-term benefits of working in concert with terrestrial cycles as a matter of survival for the human race."

Andy Vanags, University of Washington-Seattle

- Kathleen Flynn, AIA: "...the one and only... materials and methods professor—he was ahead of his time."

Sim van der Ryn, University of California-Berkeley

- David Arkin, AIA: "Sim's unlimited ability to see and stay focused on the big picture has been the hallmark of his career ... Many colleagues practicing what is now known as 'green' building in the Bay Area studied under Sim while at UC Berkeley. Perhaps his greatest contribution to us all was simply letting us do what we knew to be the 'right' way to design in the first place: in tune with nature and mindful of its systems."
- Jonathan Reich, AIA: "His work was enormously influential for the expanded understanding of design that it offered and for the activist role that it proposed for architects."
- Tom Eisele, AIA: "Appropriate technology guru and prophet from California. Got me excited about passive solar, composting toilets, and low tech for high design in architecture and planning."
- Doug Nissen, Assoc. AIA

Donald Watson, FAIA, Rensselaer Polytechnic Institute and Yale University

- Phillippe Campus: "I learned from Don's teaching by examples and from his firm commitment in (the early days of) the solar movement."

Troy West, New Jersey Institute of Technology

- John Beyer Fitzgerald, Assoc. AIA: "Took us to see a 'Living Machine' in Providence, R.I., which is a complex system of plants etc. that consume raw sewage and clean stormwater runoff. It's one of many things he did or said that changed my thought process."

Hofu Wu, FAIA, California Polytechnic State University-Pomona

- Jaime Olmos: "He teaches all the concepts of environmental design, including passive and active methods and solar geometry. He brings a contagious passion to the material and teaches it in a way that has instilled the concepts in my mind and ingrained them into my design philosophy."

John Yellot, Arizona State

- Michael Holtz, FAIA: "A leading researcher on solar energy and climate adaptive design. Excellent teacher and researcher."
- Helen J. Kessler, AIA

Other Champions

Inspiration and support happens not only in school. Many of those who submitted nominations named authors, clients, architects, and other professionals as important influences on their careers and commitment to sustainable design. Some of these people have also taught from time to time.

Bruce Anderson, author of *Solar Energy and Shelter Design*

- Wm. Terry Osborn

Bob Berkebile, FAIA, BNIM

- Robert J. Koester, AIA

James Carter and Walter Mondale, president and vice president, respectively

- Stuart Berger, AIA: “The long-term energy policies set forth at the end of their administration demonstrated leadership and foresight. Their policies would have, if followed by the next president, provided by now, the benefits of several alternative energy sources, including large-scale wind and solar energy power and weaned us off of the Mideast oil.”

Richard Crowther, FAIA, author

- Michael Holtz, FAIA: “A leading practitioner and prolific author on climate adaptive design, sustainable, healthy design. Still alive and active.”

Randy Croxton, FAIA, Croxton Collaborative

- Robert J. Koester, AIA

Roger Ferri

- Tom Eisele, AIA: “He had some very interesting and forward thinking ideas, particularly about integrating the skyscraper with nature and creating pedestrian cities.”

Pliny Fisk and Gail Vittori, codirectors, Center for Maximum Potential Building Systems

- Herman Thun, AIA: “They have been committed to the philosophy of sustainable architecture for 30-plus years. I am associated with the center in a number of ventures and count my time spent in his presence a continuing enormous learning experience. I am forever indebted to him and her for his contagious environmental fervor and his ability to share his extensive knowledge with others.”
- Wm. Terry Osborn: “I encountered Pliny in 1971 at Ball State University; he had just come from Penn and Ian McHarg’s graduate studio... he taught how to actually integrate ecological reality into our planning and design.”

Buckminster Fuller, architect and thinker

- Tom Eisele, AIA
- Fernando Abruna, FAIA
- Wm. Terry Osborn: “I encountered him as a visiting teacher at Ball State University in 1970. His concepts of ‘design science’ and ‘The World Game’ still inspire my work.”

Bill Godfrey, AIA, architect, president, Environic Foundation International

- Donald E. Sporleder, FAIA

Harry Gordon, FAIA, architect, Burt Hill Kosar Rittelmann Associates

- Jean Stark, AIA: “Harry’s devotion to sustainability and his gift for inspiring young architects to stretch beyond their self-perceived limits have greatly affected my professional life.”

Rich Haag, ASLA, landscape architect

- Jestena Boughton, Assoc. AIA: “Rich believed and lived the know-your-site and natural-elements-can-heal-it mantras.”

E. Fay Jones, FAIA, architect

- W. Frank Little Jr., AIA

Grant Jones, FASLA, landscape architect, and Johnpaul Jones, FAIA, architect, both of Jones & Jones

- Jestena Boughton, Assoc. AIA

Amory Lovins, Rocky Mountain Institute CEO, physicist, energy thinker

- Tom Eisele, AIA: “Anyone who can out-argue the petroleum industry before Congress using their own data and presentation materials is impressive in my book.”

John Lyle, landscape architect, author of *Regenerative Design for Sustainable Development*

- Marilyn Farmer, AIA

Ed Mazria, architect

- Wm. Terry Osborn
- Bob Bourguignon, AIA

William McDonough, FAIA, architect, William McDonough + Partners, McDonough Braungart Design Chemistry

- Robert J. Koester, AIA

Glen Murcutt, Hon. FAIA

- Paul C. Palmer, AIA: “Living architecture is interactive, responsive, dynamic, and synergetic to the wind, the sun, and the land. He showed that most architecture of our modern lives has not embraced these elements into the very fabric of a buildings design, and thereby leads us down a path to architecture that is ‘dead’ and unconnected from the environment it is located in.”

Peter Pfeiffer, FAIA

- Doug Nissen, Assoc. AIA

Paolo Soleri, architect, Arcosanti

- Doug Nissen, Assoc. AIA

Richard G. Stein, FAIA, author

- G. Mackenzie Gordon, AIA: “A former employer of mine and the author of *Architecture and Energy* back in the 1970s when such ideas were novel. His buildings all displayed great economy of means and conscience, no fat and nothing just for looks.”

John Todd, biologist, inventor of Living Machines

- Michael McHugh, AIA: “...changed the way I thought about the integration of the natural and built environment.”

Jorn Utzon, Hon. FAIA

- G. Mackenzie Gordon, AIA: “In my opinion he is the world's outstanding living architect. His buildings, all quite different from each other, always embrace ecological ideas but from a poetic rather than the ‘get-LEED-brownie-points’ point of view. While best known for the Sydney Opera House, his more mundane buildings such as his housing projects in Denmark show a remarkable concern for the environment.”

- John Weidt, AIA, The Weidt Group
- Craig Norsted, AIA: “I often wish I still worked with such a single-minded and dedicated group of people (if it just weren’t so cold there). John is truly one of the best and deserves our recognition.”

Malcolm Wells, architect, activist, author

- G. Mackenzie Gordon: “The foremost proponent of earth sheltered architecture. It is sad that American architects and especially the architectural press have largely ignored this outstanding architect and his approach to design in favor of fashionable, cosmetic heroes.”
- Douglas Steele: “The statement, ‘if you want to change the world, change your life,’ certainly applies to him.”
- Tim McCorry, AIA: “His books, lectures, critiques, and correspondence encourage me to keep fighting for environmentally responsible design.”
- Mark Spitzer, AIA: “He has contributed articles to a variety of publications on earth sheltering, water conservation, sensible development strategies and living lightly on the earth. He’s published a book of examples of ways in which earth sheltering could be applied to a wide variety of building and infrastructure situations. He’s one of the true believers on whose shoulders we now stand....”
- Doug Nissen, Assoc. AIA

LaVerne A. Williams, AIA, architect

- Dan Barnum, AIA: “Before any of us here ever even really thought about being “green” [LaVerne] set out on his path, and he has stuck with it, gently teaching, researching and explaining for all who would listen.”

Paul Winslow, FAIA, Orcutt/Winslow Partnership

- Luis G. Huertas, AIA: “Showed me the actual practice of sustainable design in the everyday as an intern.”

Thomas Wyche, environmentalist, builder, lawyer, photographer, writer

- Earle Hungerford, AIA: “For 35 years, he has devoted a significant portion of his personal and professional time to the conservation of approximately 100,000 acres of wilderness forests in the Blue Ridge Mountains of North and South Carolina. Without the leadership of his conservation efforts, much of this land would today doubtless be gated communities, golf courses and shopping centers. Instead, these lands are home to pristine rivers, lakes and waterfalls, undisturbed hiking trails, and campsites in a lush environment that supports an ecosystem of great richness and diversity.”

READING FOR LEARNING: SAMPLE READING LISTS FROM SUBMITTED COURSEWORK

Providing reading lists with course descriptions was not a requirement of the Ecological Literacy in Architecture Education call for coursework submittals (though perhaps it should have been), but many educators provided them as part of their supporting material. We cross-referenced the 21 reading lists from a mix of class types. The lists included books, articles, and Web sites. AIA COTE volunteer Elizabeth Vandermark, AIA, collated the lists in a matrix (which shows which books were required or suggested and which courses were required or elective); this appears in the Appendix.

Two books showed up in eight lists each: *Sun, Wind and Light* and *Cradle to Cradle*. Three David Orr books made appearances in the lists: *Ecological Literacy* (SUNY Press, 1992) showed up in three lists, *The Nature of Design* (Oxford University Press, 2002) turned up in three, and *Earth in Mind* (Island Press, 1994/2004) made one list. Outlined here are the books that appeared on several lists accompanied by quotes from published reviews or book jackets.

Sun, Wind and Light

G. Z. Brown and Mark DeKay: John Wiley & Sons, 2000, 2nd edition

- Centre for Education in the Built Environment: “This book concentrates on one important design skill, which is the ability to make buildings respond to the sun, wind, and light. Its premise is that the more designers exercise this skill, the less energy their buildings will use, so the less carbon dioxide they will emit, and the greater will be their contribution to a sustainable future. . . . The authors are interested in the close relationship between architectural form and the flow of energy in buildings, and have provided designers with a working tool for exploiting that relationship. It is not just about saving energy. The authors hope that revealing this relationship to a building's occupants will be beneficial to their health and well-being. They make an eloquent argument for passive living. . . . [T]his is quite probably the best practical companion to bioclimatic design available. No architect should neglect to follow the advice that it gives.”

Cradle to Cradle: Remaking the Way We Make Things

William McDonough and Michael Braungart: Rebound by Sagebrush, 2002

- Publishers Weekly: “[A] clear, accessible manifesto . . . the authors’ original concepts are an inspiring reminder that humans are capable to much more elegant environmental solutions than the ones we’ve settled for in the last half-century.”
- Kirkus Reviews: “A readable, provocative treatise that ‘gets outside the box’ in a huge way. Timely and inspiring.”
- Hazel Henderson, author of *Building a Win-Win World* and *Beyond Globalization: Shaping a Sustainable Global Economy*: “Achieving the great economic transition to more equitable, ecologically sustainable societies requires nothing less than a design revolution—beyond today’s fossilized industrialism. This enlightened and enlightening book shows us how—and indeed, that ‘God is in the details.’ A must for every library and every concerned citizen.”

Mechanical and Electrical Equipment for Buildings

Benjamin Stein and John S. Reynolds: John Wiley & Son, 1999, 9th edition (2005, 10th edition)

Intelligent Glass Facades

Andrea Compagno: Birkhauser, 1999

The Technology of Ecological Building

Klaus Daniels: Birkhauser, 1997

A Green Vitruvius: Principles and Practice of Sustainable Architectural Design

The European Commission: Earthscan Publications, 1999

Daylighting for Sustainable Design

Mary Guzowski: McGraw-Hill, 2000

Energy Efficient Buildings: Architecture, Engineering, and Environment

Dean Hawkes and Wayne Forster: W.W. Norton, 2002

Thermal Delight in Architecture

Lisa Heschong: MIT Press, 1979

The LEED Rating System and Reference Manual

U.S. Green Building Council, www.usgbc.org

Design with Nature

Ian McHarg: John Wiley & Sons, 1967

The Philosophy of Sustainable Design

Jason McLennan: Ecotone,³ 2004

The HOK Guidebook to Sustainable Design

Sandra Mendler and William Odell: John Wiley & Sons, 2000 (2005, 2nd edition)

Ecological Literacy

David Orr: SUNY Press, 1992

The Nature of Design

David Orr: Oxford University Press, 2002

Eco-Tech: Sustainable Architecture and High Technology

Catherine Slessor: Thames and Hudson Ltd., 1997

Photovoltaics and Architecture

Randall Thomas and Max Fordam: Spon Press/Routledge, 2001

Sustainable Landscape Construction: A Guide to Green Building Outdoors

J. William Thompson and Kim Sorvig: Island Press, 2000

Ecological Design

Sim Van der Ryn and Stuart Cowan: Island Press, 1996

³ Ecotone, founded by Jason McLennan in 2004, has started the Green Architecture Curriculum project, a three-year program to develop and introduce textbooks, coursework, and study guides. It is seeking volunteer collaborators; participating educators are asked to use *The Philosophy of Sustainable Design* and an associated study guide for their coursework.

The Ecology of Architecture: A Complete Guide to Creating the Environmentally Conscious Building

Laura C. Zeiher: Whitney Library of Design, 1996

Online Resource: *Environmental Building News* in Architecture Schools

Environmental Building News (EBN) has long been among the most respected publications on sustainable design and building. BuildingGreen, the publisher of *EBN* and the *GreenSpec Directory*, has found a receptive audience for its integrated, online resource, the BuildingGreen Suite. The subscription-based tool provides online access to the current issue of *EBN*, an archives of *EBN* back to the newsletter's launch in 1992, and the online GreenSpec products database.

James Wasley, associate professor of architecture at the University of Wisconsin-Milwaukee, has been using BuildingGreen resources as required reading in his courses for years. Wasley used to make photocopies of *EBN* articles and distribute them in his green building seminar. Copying and distributing these articles, though, became difficult to manage, and when BuildingGreen migrated its resources to the Internet in late 2003, using these articles in his seminar became much easier. Now he simply assigns the BuildingGreen Suite as required reading. "It's the text for my green building seminar. I swear by it," he says.

Although many architecture schools use the BuildingGreen Suite in this fashion—requiring students to subscribe individually (taking advantage of a special student discount that BuildingGreen offers)—more schools are subscribing to this resource campus-wide, which eliminates the need for students or faculty to log in individually when they are accessing the BuildingGreen Suite from within the university network or using a university IP address.

About a dozen architecture schools currently have campus-wide subscriptions to the BuildingGreen Suite, according to Jim Newman of BuildingGreen. Mary Guzowski in the Department of Architecture of the University of Minnesota (a school with campus-wide access) includes the BuildingGreen Suite as a resource for her students and points them to particular articles. She says she can trust the content the students will find, which is especially important as students look more and more to the Internet for their research. "It's accurate, comprehensive information that is well-researched," she says. "And not only do the students get a sense of the history of relevant topics, since BuildingGreen editors have been researching and writing on these issues since 1992, but I can count on them reading about cutting-edge issues before they appear in mainstream publications." The current campus-wide subscription cost is just under \$1,000 per year.

Coursework Reading List

Sort by Author

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Addington, Michelle and Schodek, Daniel	<i>Materials and Technologies in Architecture</i>	Architectural Press-Elsevier, Burlington, MA 2004	U Minnesota		Weeks	ARCH 8565 Materials Performance	E
Addleson, Lyell	<i>Building Failures: a guide to diagnosis, remedy and prevention, 2nd ed</i>	Butterworth, London 1989	U Minnesota		Weeks	ARCH 8565 Materials Performance	E
Alexander, Christopher	<i>A Pattern Language</i>		U Tenn		DeKay/Shelton	Arch 572	R
Allard, Francis.	<i>Natural Ventilation in Buildings</i>	James and James, London, 1997.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Allen, Edward and Iano, Joseph	<i>The Architect's Studio Companion: Rules of Thumb for Preliminary Design 3rd Ed.</i>	John Wiley & Sons Inc. New York, 2002	Hampton U	S	Ilozor	ARC 307 Environmental Systems	R
American Institute of Architects	<i>Environmental Resource Guide</i>	1735 New York Ave., NW, Washington DC 20006, 1996.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	
American Institute of Architects	<i>Environmental Resource Guide</i>	Wiley, NY 2004	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	E
Ander, Greg D. AIA	<i>Daylighting Performance and Design</i>	Van Nostrand Reinhold, New York, 1995.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Anderson, Larz T.	<i>Planning the Built Environment</i>	Planners Press, American Planning Association, Chicago 2000	Texas A & M		Abrams	ARCH 310 Site Planning and Design	E
Anink, David; Boonstra, Chiel; Mak, John.	<i>Handbook of Sustainable Building: An Environmental Preference Method for Selection of Materials for Use in Construction and Refurbishment</i>	James and James (Science Publishers) Ltd, 1996.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	E
Anthony, Diana	<i>Creative Sustainable Gardening</i>	CAT Publications, London, 2000	U Virginia		Quale	ecoMOD: Low Income House Design/Build	E
Appadurai, Arjun.	<i>"Part 1: Global Flows,"</i>	Modernity at Large: Cultural Dimensions of Globalization, 1996.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Appenzeller and Dimick	<i>Global Warming: Bulletins from a Warmer World</i>	National Geographic, September 2004	Savannah CAD		Moore		
ArchLeague	<i>"Ten Shades of Green: An Exhibition on design Excellence and Environmental Responsibility"</i>	http://www.archleague.org/tenshadesofgreen/10shades.html	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Arieff, Alison and Burkhart, Bryan	<i>Prefab</i>	Gibbs Smith, Layton, Utah, 2002	U Virginia		Quale	ecoMOD: Low Income House Design/Build	E

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Bahamon, Alejandro	<i><u>Prefab: Adaptable, Modular, Dismountable, Light, Mobile Architecture</u></i>	HBI, New York, London, 2002	U Virginia		Quale	ecoMOD: Low Income House Design/Build	E
Baker, Nick and Steemers, Koen	<i><u>Daylight Design of Buildings.</u></i>	James & James, London, 2002.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Baker, Nick and Steemers, Koen	<i><u>Energy and Environment in Architecture</u></i>	E & FN Spon, London, 2000.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Baker, Nick and Steemers, Koen	<i><u>Daylight Design of Buildings</u></i>	James & James, London, 2002.	U Tenn		DeKay/Shelton	Arch 509	R
Balcomb, Douglas (Ed.)	<i><u>Passive Solar Buildings</u></i>	MIT Press, Cambridge, MA, 1992.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Banham, Reyner	<i><u>"Bricolages à la lanterne,"</u></i>	New Society 37, no.717 (1 July 1976), 25-26.	Portland State U		Sukhwant	Design and Society	E
Banham, Reyner	<i><u>"The Great Gizmo,"</u></i>	Industrial Design 12 (September 1965): 48-59.	Portland State U		Sukhwant	Design and Society	E
Banham, Reyner	<i><u>The Architecture of the Well-Tempered Environment</u></i>		U Tenn		DeKay/Shelton	Arch 509	R
Bates, Robin and Mark, Robert.	<i><u>The Mystery of the Master Builders</u></i>	Coronet Film & Video (WGBH, Boston), Northbrook IL 1988.	Portland State U		Sukhwant	Design and Society	E
Battle-McCarthy	<i><u>Wind Towers</u></i>	Academy Editions, London, 1999.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Baxandall, Michael	<i><u>Painting and Experience in Fifteenth Century Italy</u></i>	Oxford UP, New York/Oxford 1988 (1972).	Portland State U		Sukhwant	Design and Society	E
Beck, Ulrich	<i><u>"The Cosmopolitan State: Towards a Realistic Utopia,"</u></i>	Eurozine, 2001.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Behling, Sophia and Stefan	<i><u>Solar Power: the Evolution of Sustainable Architecture</u></i>	Prestel-Verlag, Munich and New York, 1996	U Virginia		Quale	ecoMOD: Low Income House Design/Build	E
Behling, Sophia and Stefan.	<i><u>Glass: Structure and Technology in Architecture</u></i>	Prestel, Lakewood, NJ, 2000.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Behling, Sophia and Stefan.	<i><u>Solar Power: the Evolution of Sustainable Architecture</u></i>	Prestel, Lakewood, NJ, 1999.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Bell, Bryan	<i><u>Good Deeds, Good Design: Community Service Through Architecture</u></i>	Princeton Architectural Press, New York, 2004	U Virginia		Quale	ecoMOD: Low Income House Design/Build	E
Benyus, Janine M.	<i><u>Biomimicry: Inovation Inspired by Nature</u></i>	William Marrow & Co. Inc. New York, 1997	Savannah CAD		Montgomery	Architectural Design Studio II	R
Benyus, Janine M.	<i><u>Biomimicry: Inovation Inspired by Nature</u></i>	William Marrow & Co. Inc. New York, 1997	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	E
Berge, Bjorn	<i><u>Ecology of Building Materials</u></i>	Architectural Press-Elsevier, Burlington, MA 2000	U Minnesota		Weeks	ARCH 8565 Materials Performance	E
Berge, Bjorn	<i><u>Ecology of Building Materials</u></i>	Architectural Press-Elsevier, Burlington, MA 2000	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	E

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Blanc, Alan and McEvoy, Michael (Ed.).	<i>Architecture and Construction in Steel.</i>	Spon Press & Routledge, New York, 1993.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Bolton, Richard.	<i>"Architecture and Cognac."</i>	Design After Modernism, 1988.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Bower, John	<i>Healthy House Building for the New Millennium</i>	The Healthy House Institute, Bloomington, IN, 2000	U Virginia		Quale	ecoMOD: Low Income House Design/Build	E
Bower, John	<i>Understanding Ventilation: How to Design, Select, and Install Residential Ventilation Systems</i>	The Healthy House Institute, Bloomington, IN, 1995	U Virginia		Quale	ecoMOD: Low Income House Design/Build	E
Bower, John	<i>Understanding Ventilation: How to Design, Select, and Install Residential Ventilation Systems</i>	The Healthy House Institute, Bloomington, IN, 1995.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Bradshaw, Vaughn.	<i>Building Control Systems, 2nd ed.</i>	John Wiley and Sons, New York, NY 1993.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Bradshaw, Vaughn.	<i>Building Control Systems, 2nd ed.</i>	John Wiley and Sons, New York, NY 1985.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Brand, Steward.	<i>"Built for Change," How Buildings Learn: What Happens After They're Built."</i>	1994	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Brand, Stewart	<i>How Buildings Learn: What happens after they're built</i>	Viking, NY 1994	U Minnesota		Weeks	ARCH 8565 Materials Performance	E
Brand, Stewart	<i>How Buildings Learn: What happens after they're built</i>	Viking, NY 1994	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	E
Brookes, Alan.	<i>Cladding of Buildings.</i>	James and James, London, 1998.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Brown, David E. (Ed)	<i>Sustainable Architecture White Papers</i>	Earth Pledge Foundation	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Brown, G.Z. and Dekay, Mark.	<i>Sun, Wind & Light: Architectural Design Strategies</i>	Wiley & Sons, New York, 2001.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	E
Brown, G.Z. and Dekay, Mark.	<i>Sun, Wind & Light: Architectural Design Strategies</i>	Wiley & Sons, New York, 2001.	Kansas State U	R	Coates	Arch 413 Environmental Systems	
Brown, G.Z. and Dekay, Mark.	<i>Sun, Wind & Light: Architectural Design Strategies</i>	Wiley & Sons, New York, 2001.	Kansas State U	S	Coates		
Brown, G.Z. and Dekay, Mark.	<i>Sun, Wind & Light: Architectural Design Strategies</i>	Wiley & Sons, New York, 2001.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Brown, G.Z. and Dekay, Mark.	<i>Sun, Wind & Light: Architectural Design Strategies</i>	Wiley & Sons, New York, 2001.	Savannah CAD		Montgomery	Architectural Design Studio II	R
Brown, G.Z. and Dekay, Mark.	<i>Sun, Wind & Light: Architectural Design Strategies</i>	Wiley & Sons, New York, 2001.	U Virginia	S	Quale	ecoMOD: Low Income House Design/Build	R
Brown, G.Z. and Dekay, Mark.	<i>Sun, Wind & Light: Architectural Design Strategies</i>	Wiley & Sons, New York, 2001.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Brown, G.Z. and Dekay, Mark.	<i>Sun, Wind & Light: Architectural Design Strategies</i>	Wiley & Sons, New York, 2001.	U Tenn		DeKay/Shelton	Arch 572 (Studio), Arch 509	

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Brown, Lester R.	<i>Eco-Economy: Building an Economy for the Earth</i>	W. W. Norton & Company, New York 2001.	Kansas State U	R	Coates		
Brown, Lester R. (Ed)	<i>State of the World</i>	W.W. Norton & Company, 2005	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Brown, Lester R. Hal Kane and Ed Ayres (Eds)	<i>Vital Signs 2004</i>	W.W. Norton & Company, 2005	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Calthorpe, Peter	<i>The Next American Metropolis</i>	Princeton Architectural Press, Princeton 1993	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Caplan, Ralph	<i>By Design: Why There Are No Locks on the Bathroom Doors in the Hotel Louis XIV and Other Object Lessons [1982]</i>	Fairchild, New York 2005.	Portland State U		Sukhwant	Design and Society	
Capra, Fritjof	<i>"Ch. 3: Systems Theory; Ch. 4: The Logic of the Mind."</i>	The Web of Life, 1990s.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Cardwell, Diane.	<i>"Queens Concrete Supplier Is Charged in Pollution of Creek..."</i>	New York Times, 2005.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Carmody, J.S. Selkowitz, E.S. Lee, D. Arasteh and T. Willmert	<i>Window Systems for High Performance Buildings</i>	W.W. Norton & Co., New York, 2004	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
Carmody, John	<i>Residential Windows: A Guide to New Technology and Energy Performance</i>	Norton, New York, 1996	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Catton, William R. Jr.	<i>Overshoot: The Ecological Basis of Revolutionary Change</i>	University of Illinois Press, Urbana 1982	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Cerver, Francisco Asensio.	<i>The Architecture of Glass: Shaping Light</i>	Hearts Books International: New York, 1997.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	
Chandler, T.J.	<i>The Air Around Us</i>	The Natural History Press/Doubleday and Co., Garden City, NY., 1969.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	
Chappell, Steve (Ed.)	<i>Alternative Building Sourcebook: Traditional, Natural and Sustainable Building Products and Services</i>	Fox Maple Press, Brownfield ME 1998	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Ching,	<i>Design Drawing</i>		Ball State U		Woodfin	CAP 101 (First Design Course)	
Chiras, D.	<i>The Natural House</i>	Chelsea Green, Vermont, 2000	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Chiras, Daniel D	<i>The New Ecological Home: The Complete Guide To Green Building Options</i>	Chelsea Green Publishing Co., White River Junction, VT	U Virginia	S	Quale	ecoMOD: Low Income House Design/Build	R
Clark, W.G.	<i>"Replacement"</i>		U Tenn		DeKay/Shelton	Arch 509	
Clarke, Paul Walter.	<i>"The Economic Currency of Architectural Aesthetics,"</i>	Threshold, 1998.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Cline, Ann.	<i>"The Hut in the Backyard" from A Hut of One's Own: Life Outside the Circle of Architecture.</i>	MIT: USA, 1997. p.27-37.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Cofaigh, Eoin O.,Olley, John A., Lewis, J. Owen	<i>Climatic Dwelling: An introduction to climatic-responsive architecture</i>	James & James, London 1996	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Commission of the European Communities.	<i>Daylighting in Architecture: A European Reference Book</i>	James and James (Science Publishers) Ltd, 1993.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Compagno, Andrea.	<i>Intelligent Glass Facades: Material Practice Design</i>	Birkhauser, Boston, 1999.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Compagno, Andrea.	<i>Intelligent Glass Facades: Material Practice Design</i>	Birkhauser, Boston, 1999.	U Penn		Veikos	Design Studio III Arch 601-206	
Compagno, Andrea.	<i>Intelligent Glass Facades: Material Practice Design</i>	Birkhauser, Boston, 1999.	U Tenn		DeKay/Shelton	Arch 509	
Compagno, Andrea.	<i>Intelligent Glass Facades: Material Practice Design</i>	Birkhauser, Boston, 1999.	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
Corner, James (ed.)	<i>Recovering Landscapes: Essays in Contemporary Landscape Architecture</i>	Princeton Architectural Press, New York 1999.	U Minnesota		Carmody	ARCH 8567 Intergrated Site and Building Design	
Correa, Charles.	<i>"Chandigarh is 50 and Young!."</i>	The Tribune, 2003.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Correa, Charles.	<i>The New Landscape: Urbanization in the Third World.</i>	1990's	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Cottom-Winslow, Margaret	<i>Environmental Design: Architectural and Technology</i>	PBC International, Glen Cove, NY 1995	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Crowther, Rich	<i>Ecological Architecture</i>	1992	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Curwell, S.R. and March, C.G. (eds)	<i>Hazardous Building Materials: a guide to the selection of alternatives</i>	E & FN Spon, London 1986	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Daay, Christopher	<i>Places of the Soul</i>	Glasgow, 1990	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Daniels, Klaus	<i>"Rainfall and Surface Water"</i>		U Tenn		DeKay/Shelton	Arch 509	
Daniels, Klaus	<i>Advanced Building Systems: A Technical Guide For Architects And Engineers</i>	Birkhauser, Basel, Boston, 2003	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Daniels, Klaus	<i>Low Tech Light Tech Building in the Information Age</i>	Birkhauser, 1998.	U Penn		Veikos	Design Studio III Arch 601-206	
Daniels, Klaus	<i>The Technology of Ecological Building: Basic Principles, Examples and Ideas</i>	Birkhauser, Berlin, 1997	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Daniels, Klaus	<i>The Technology of Ecological Building: Basic Principles, Examples and Ideas</i>	Birkhauser, Boston, 1997.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Daniels, Klaus	<i>The Technology of Ecological Building: Basic Principles, Examples and Ideas</i>	Birkhauser, Boston, 1997.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Daniels, Klaus	<i>The Technology of Ecological Building: Basic Principles, Examples and Ideas</i>	Birkhauser, Boston, 1997.	U Penn		Veikos	Design Studio III Arch 601-206	
Davies, Mike	<i>"A Wall for All Seasons"</i>		U Tenn		DeKay/Shelton	Arch 509	
De Chiara, Joseph and Callender, John.	<i>Time Saver Standards for Building Types.</i>		Kansas State U	S	Coates, Gabbard, Ornelas Sachs, Watts & Wolf	Architectural Design Studio III	R
Dean, A.	<i>Green by Design</i>	Gibbs Smith, Salt Lake City, UT, 2003.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Denkin, Joseph (ed with AIA)	<i>Environmental Resource Guide</i>	Wiley, NY 1996	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Diamond, Jared.	<i>"The World as a Polder: What Does It All Mean to Us Today."</i>	Collapse: How societies Choose to Fail or Succeed, 2005.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Domin, Christopher and King, Joseph.	<i>Paul Rudolph: The Florida Houses.</i>		Kansas State U	S	Coates, Gabbard, Ornelas Sachs, Watts & Wolf	Architectural Design Studio III	R
Duggal, S.K.	<i>Building Materials</i>	Bakkems, Netherlands, 1998	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Dunnett, Nigel	<i>Planting Green Roofs And Living Walls</i>	Timber Press, Portland, OR, 2004	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Dürer, Albrecht	<i>The Painter's Manual [1525]</i>	ed. Walter Strauss, New York, 1977.	Portland State U		Sukhwant	Design and Society	
Eason, David	<i>The Rammed Earth House. White River Junction</i>	Chelsea Green Publishing Co., VT 1996	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Edward Mazria, Edward.	<i>The Passive Solar Energy Book</i>	Rodale Press, Emmaus, Pa, 1979.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Edwards, Brian	<i>Green Buildings Pay</i>	E & FN Spon, London, 1998	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Edwards, Brian	<i>Towards a Sustainable Architecture</i>	Butterworth, London 1996	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Edwards, Brian and Hyett, Paul	<i>Rough Guide to Sustainability</i>		Savannah CAD		Montgomery	Architectural Design Studio II	R
Elgin, Duane	<i>Voluntary Simplicity: Toward a way of life that is outwardly simple, inwardly rich</i>	William Marrow & Co. Inc. New York, 1993	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Elizabeth, Lynne and Cassandra Adams (eds)	<i>Alternative Construction: Contemporary Natural Building Materials</i>	Wiley, NY 1999	U Minnesota		Weeks	ARCH 8565 Materials Performance	

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Elizabeth, Lynne and Cassandra Adams (eds)	<i>Alternative Construction: Contemporary Natural Building Methods</i>	John Wiley & Sons, NY 2000	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Engel, Heino	<i>The Japanese House: A Tradition for Contemporary Architecture</i>	Tuttle Publishing, Rutland, VT, 1964	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
European Commission	<i>A Green Vitruvius: Principles and Practice of Sustainable Architectural Design</i>	James and James (Science Publishers) Ltd., 1999.	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
European Commission	<i>A Green Vitruvius: Principles and Practice of Sustainable Architectural Design</i>	James and James (Science Publishers) Ltd., 1999.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
European Commission	<i>A Green Vitruvius: Principles and Practice of Sustainable Architectural Design</i>	James and James (Science Publishers) Ltd., 1999.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
European Commission	<i>The Climatic Dwelling: An introduction to climate-responsive residential architecture</i>	1996	Savannah CAD		Montgomery	Architectural Design Studio II	R
Evans, Benjamin H. AIA	<i>Daylight In Architecture</i>	McGraw Hill, New York, 1981.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Farmer, John	<i>Green Shift: towards a green sensibility in architecture</i>	Butterworth, London 1996	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Felcher, Marla	<i>"Children's Products and Risks,"</i>	Atlantic Monthly	Portland State U		Sukhwant	Design and Society	
Fetters, Thomas T.	<i>Lustron Homes: The History of a Postwar Prefabricated Housing Experiment</i>	McFarland & Co., Jefferson, North Carolina, 2001	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Filler, Martin.	<i>"Baron Haussmann, Urban Designer Par Excellence,"</i>	1991	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Fitch, James Marston	<i>American Building: the Environmental Forces that Shape It</i>		U Tenn		DeKay/Shelton	Arch 509	
Flagge, Ingeborg	<i>Thomas Herzog: Architecture + Technology</i>	Prestel, Munich, 2001	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Fletcher, Alan	<i>The Art of Looking Sideways</i>	Phaidon, London, 2001	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Florida, Richard	<i>"Cities and the Creative Class,"</i>	City and Community 2.1 (2003): 3-19.	Portland State U		Sukhwant	Design and Society	
Florida, Richard	<i>The Rise of the Creative Class and How Its Transforming Work, Leisure, Community, and Everyday Life</i>	Basic Books, New York 2002.	Portland State U		Sukhwant	Design and Society	
Fontoynt, Marc	<i>Daylight Performance of Buildings</i>	James & James, London, 1999	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Forman, R.T.T. and M. Godron	<i>Landscape Ecology</i>	John Wiley and Sons, New York, 1986	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	

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Fox, Avril and Murrell, Robin	<i>Green Design: guide to the environmental impact of building materials</i>	Arch Des and Tech Press, London 1989	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Frampton, Kenneth	<i>Studies in Tectonic Culture</i>		U Tenn		DeKay/Shelton	Arch 509	
Freire, Paolo	<i>"The Banking Concept of Education,"</i>	Pedagogy of the Oppressed, 1976.	Portland State U		Sukhwant	Design and Society	
Friedman, Donald	<i>Historic Building Construction: Design, Materials and Technology</i>	Norton, NY 1995	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Fuller, S.K. and Peterson, S.R.	<i>Life-Cycle Costing Manual for the Federal Energy Management Program (FEMP)</i>	US Department of Energy, NIST Handbook 135; Washington, DC, 1996.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Gandy, Matthew.	<i>"Introduction,"</i>	Waterworks (by Stanley Greenberg).	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Gardner, Jean.	<i>"Fuel Cells Instead of Terrorists Cells: What the World Trade Center Bombing Indicates about The Role of Architecture and Urban Design in Globalization".</i>	Metropolis, 2002 "http://www.metropolismag.com/html/wtc/wtc_gardner_03072002.html"	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Gauzin-Muller, Dominique	<i>Sustainable Architecture and Urbanism</i>	Birkhauser, Basel, Switzerland, 2002	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Gaventa, Sarah.	<i>Concrete Design</i>	Mitchell Beazley, 2001.	Kansas State U	S	Coates		
Geiger, R.	<i>The Climate Near the Ground</i>	Harvard University Press, Cambridge, 1965.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Gimpel, Jean	<i>The Medieval Machine. The Industrial Revolution of the Middle Ages [1976].</i>	Penguin, 1977.	Portland State U		Sukhwant	Design and Society	
Gissen, D. (Ed.)	<i>Big & Green, towards sustainable architecture in the 21st century.</i>	Princeton Architectural Press, New York, NY, 2002.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Givoni, Baruch	<i>Climate Considerations in Building and Urban Design</i>	Van Nostrand Reinhold, New York, 1998	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Glancey, Johnathan	<i>"What can we do?" Rebuilding has begun on the south Asian shores. The world's architects are desperate to help."</i>	Guardian: Monday January 10, 2005	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Gordon, Harry.	<i>"Sustainable Design Goes Mainstream." In Sustainable Architecture White Papers.</i>	Earth Pledge: NYC, 2000. p. 34-38.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Graham, Peter	<i>Building Ecology: First Principles for a Sustainable Built Environment</i>	Blackwell Science, Oxford, 2003	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Gratz and Minz	<i>Cities Back from the Edge: New Life for Downtown</i>	John Wiley and Sons, New York 1998	Savannah CAD		Moore		
Guzowski, Mary	<i>Daylighting for Sustainable Design</i>	McGraw Hill, New York 2000	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	

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Guzowski, Mary	<i>Daylighting for Sustainable Design</i>	McGraw Hill, New York, 2000	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Guzowski, Mary	<i>Daylighting for Sustainable Design</i>	McGraw Hill, New York, 2000	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Habermas, Jurgen.	<i>"The Structural Transformation of the Public Sphere"</i>	1962	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Hagan, Susannah	<i>Taking Shape: A New Contract between Architecture and Nature</i>	Architectural Press, Oxford, 2001	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Hakim, Besim S.	<i>"Arabic-Islamic Cities: Building and Planning Principles"</i>		Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Hanson, Chris Scott and Kelly	<i>The CoHousing Handbook: Building a Place for Community</i>		MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Hart, Ivor B.	<i>"Leonardo the Engineer and Master of Gadgetry," The World of Leonardo da Vinci, Man of Science, Engineer, and Dreamer of Flight</i>	Viking, New York 1961, 204-53.	Portland State U		Sukhwant	Design and Society	
Hawken, Paul.	<i>Natural Capitalism: Creating the Next Industrial Revolution</i>	Little Brown and Company, Boston, 1999.	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Hawken, Paul.	<i>Natural Capitalism: Creating The Next Industrial Revolution.</i>	Little Brown and Company, Boston, 1999.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Hawken, Paul.	<i>The Ecology of Commerce: A Declaration of Sustainability.</i>	Harper Collins Publishers, New York, 1993.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Hawken, Paul.	<i>The Ecology of Commerce: A Declaration of Sustainability.</i>	Harper Collins Publishers, New York, 1993.	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Hawkes, Dean and Forster, Wayne	<i>Energy Efficient Buildings: Architecture, Engineering, And Environment</i>	W.W. Norton & Co., New York, 2002	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Hawkes, Dean and Forster, Wayne	<i>Energy Efficient Buildings: Architecture, Engineering, And Environment</i>	W.W. Norton & Co., New York, 2002	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
Hawkes, Dean; McDonald, Jane and Steemers, Koen	<i>The Selective Environment</i>	Spon Press, London, 2002	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Heinberg, Richard.	<i>The Party's Over: Oil, War and the Fate of Industrial Societies</i>	New Society Publishers, 2003.	Kansas State U	R	Coates	Arch 413 Environmental Systems	
Heinberg, Richard.	<i>The Party's Over: Oil, War and the Fate of Industrial Societies</i>	New Society Publishers, 2003.	Kansas State U	R	Coates		
Herbers, Jill	<i>Prefab Modern</i>	Harper Design International, New York, 2004	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Herzog, Peter	<i>Energy-Efficient Operation of Commercial Buildings</i>	McGraw-Hill, 1996	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
Herzog, Thomas	<i>Solar Energy In Architecture And Urban Planning</i>	Prestel, Munich, New York, 1996	U Virginia		Quale	ecoMOD: Low Income House Design/Build	

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Herzog, Thomas	<i>Solar Energy In Architecture And Urban Planning</i>	Prestel, Munich, New York, 1996	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
Herzog, Thomas (Ed.)	<i>Solar Energy In Architecture And Urban Planning</i>	Prestel, Lakewood, NJ, 2000.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Heschong, Lisa	<i>Thermal Delight in Architecture</i>	The MIT Press, Cambridge, Massachusetts, 1979	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Heschong, Lisa	<i>Thermal Delight in Architecture</i>	The MIT Press, Cambridge, Massachusetts, 1979	U Idaho		Wymelenberg	(3 grad courses), Int Design Lab/Outreach Ctr	
Heschong, Lisa	<i>Thermal Delight in Architecture</i>		U Tenn		DeKay/Shelton	Arch 509	
Holdren, John	<i>"Energy in Transition" : Scientific American</i>	September 1990	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
Holleman, T.R.	<i>Air Flow through Conventional Window Openings, Research Report No.33-Texas Engineering Experiment Station</i>	Texas A&M, College Station, 1951.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Hough, Michael	<i>Cities and Natural Process</i>	Routledge, London 1995	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
http://aia.org/aiaarchitect/thisweek02/tw0419/0419tw1cote.htm	<i>AIA Top Ten Sustainable Projects</i>		MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
http://bioenergy.ornl.gov	-		MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
http://geothermal.marin.org/pw/rheat.html	-		MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
http://www.csbr.umn.edu/B3	<i>Minnesota Sustainable Building Guidelines</i>	2004	U Minnesota		Carmody	ARCH 8567 Intergrated Site and Building Design	
http://www.csbr.umn.edu/B3	<i>Minnesota Sustainable Building Guidelines</i>	2004	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
http://www.dirtstudio.com/	<i>Dirt Studio</i>		Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
http://www.eren.doe.gov	-		MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
http://www.iclei.org/efacts/hydroele.htm	-		MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
http://www.undp.org/energy/docs/WEAOU_full.pdf	<i>World Energy Assessment: Energy and the Challenge of Sustainability</i>	United Nations Dev. Programme 2004	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	

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http://www.undp.org/seed/eap/activities/wea/	<i>World Energy Assessment: Energy and the Challenge of Sustainability</i>	United Nations Dev. Programme 2000	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
http://www.usgbc.org	<i>LEED Rating System and Reference Manual</i>	US Green Building Council	U Minnesota		Carmody	ARCH 8567 Intergrated Site and Building Design	
http://www.usgbc.org	<i>LEED Rating System and Reference Manual</i>	US Green Building Council	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
http://www.usgbc.org	<i>LEED Rating System and Reference Manual</i>	US Green Building Council	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
http://www.wpm.co.nz	-		MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Hyde, Richard	<i>Climate Responsive Design: A Study Of Buildings In Moderate And Hot Humid Climates</i>	E&FN Spon, London, New York, 2000	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Hyde, Richard.	<i>Climate Responsive Design: A Study Of Buildings In Moderate And Hot Humid Climates</i>	E&FN Spon, London, New York, 2000	Mississippi State U	S	Berk	ARC 2713 Passive Building Systems	
International Code Council	<i>International Residential Code : for One- and Two-Family Dwellings</i>	2000	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Jackson, J.B.	<i>"American Public Space," In Classic Readings in Architecture edited by Kent F. Spreckelmeyer and Jay M. Stein</i>	WCB, Boston McGraw Hill, 1999.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Jackson, Wes	<i>Becoming Native to this Place</i>	University Press of Kentucky, Lexington 1994	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Jackson. John Brinckerhoff	<i>A Sense of Place, a sense of time</i>	Yale University Press, New Haven 1994	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Janis, Richard R. and Tao, William K. Y.	<i>Mechanical and Electrical Systems in Buildings 3rd Ed.</i>	Pearson Prentice Hall, New Jersey, 2005.	Hampton U	S	Ilozor	ARC 307 Environmental Systems	R
Johnson, Bart R. and Hill, Kristina (Eds.)	<i>Ecology and Design: Frameworks for Learning</i>	Island Press, Washington, DC, 2002	U Minnesota		Carmody	ARCH 8567 Intergrated Site and Building Design	
Jones, David Lloyd	<i>Architecture and the Environment: Bioclimatic Building Design</i>	Overlook Press, Woodstock and New York, 1998	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Jones, David Lloyd	<i>Architecture and the Environment: Bioclimatic Building Design</i>	Overlook Press, Woodstock and New York, 1998	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Jones, Tom	<i>Good Neighbors: Affordable Family Housing</i>	Images Publishing Group, Melbourne, Australia, 1997	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Kaltenbac, Frank	<i>Translucent Materials : Glass, Plastics, Metals</i>	Birkhauser, Basel, Boston, 2004	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Kant, Immanuel.	<i>"What is the Enlightenment?"</i>	1724	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E

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Kataji, S., Schuurmans, A., Edwards, A.	<i>Life Cycle Assessment in Building and Construction, A State of the Art Report</i>	SETAC, NC, 2003	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Kelbaugh, Douglas S.	<i>Repairing the American Metropolis: Common Place Revisited</i>	University of Washington Press, Seattle WA, 2002.	Kansas State U	R	Coates		
Kelley, Tom with Littman, Jonathan	<i>The Art of Innovation. Lessons in Design from IDEO, America's Leading design Firm</i>	Currency Books, New York 2001.	Portland State U		Sukhwant	Design and Society	
Kennedy, Joseph F. (ed)	<i>The Art of Natural Building: Design, Construction and Technology</i>	New Society Publishers, CT 2001	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Khler, N., and Llewellyn, J. Edwards	<i>Assess Building Materials and Components</i>		U Minnesota		Weeks	ARCH 8565 Materials Performance	
Kieran, Stephen and Timberlake, James	<i>Refabricating Architecture: How Manufacturing Methodologies Are Poised to Transform Building Construction</i>	McGraw-Hill, New York, 2003	U Tenn		DeKay/Shelton	Arch 509	
Kieran, Stephen and Timberlake, James	<i>Refabricating Architecture: How Manufacturing Methodologies Are Poised to Transform Building Construction</i>	McGraw-Hill, New York, 2003	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
King, Bruce	<i>Buildings of Earth and Straw: Structural Design for Rammed Earth and Straw Bale Architecture</i>	Ecological Design Press, CA 1996	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
King, Ross	<i>Brunelleschi's Dome. How a Renaissance Genius Reinvented Architecture</i>	Random House, New York 2000.	Portland State U		Sukhwant	Design and Society	
Kirk, Stephen and Dell'Isola, Alphonse.	<i>Life cycle Costing for Design Professionals</i>	McGraw Hill, New York, 1995.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Kirk, Stephen and Dell'Isola, Alphonse.	<i>Life cycle Costing for Design Professionals</i>	McGraw Hill, New York, 1995.	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Knowles, Ralph L.	<i>Sun Rhythm Form</i>	MIT Press, Cambridge, Massachusetts, 1981.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Krampen, Martin and Schempp, Dieter.	<i>Glass Architects: Concepts, Buildings, Perspectives</i>	Birhauser, Boston, 1999.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Krapmeier, Helmut	<i>Cepheus: Living Comfort Without Heating</i>	Springer, Wien, New York, 2001	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Krewinkel, Heinz W.	<i>Glass building: Material Structure and Detail</i>	Birkhauser, Boston, 1998.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Lam, William M.C.	<i>Perception & Lighting As Formgivers For Architecture</i>	Van Nostrand Reinhold, New York, 1992.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Lam, William M.C.	<i>Sunlight as a Form-Giver for Architecture</i>	Van Nostrand Reinhold, New York, NY, 1986.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Lam, William M.C.	<i>Sunlight as a Form-Giver for Architecture</i>	Van Nostrand Reinhold, New York, 1986.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	

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Lang, Fritz dir.	<i>Metropolis [1927].</i>	Kino International, 2003	Portland State U		Sukhwant	Design and Society	
Lasnier, F., GanAng, T., and Hilger, A.	<i>Photovoltaic Engineering Handbook</i>	IOP Publishing, Philadelphia, PA, 1990.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
LaVine, Lance	<i>Mechanics and Meaning in Architecture</i>		U Tenn		DeKay/Shelton	Arch 509	
Le Corbusier	<i>Towards a New Architecture [1925]</i>	trans. F. Etchells, Dover, New York 1986.	Portland State U		Sukhwant	Design and Society	
Leatherbarrow, David and Mostafavi, Mohsen.	<i>Surface Architecture</i>	MIT Press, 2002.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Leatherbarrow, David and Mostafavi, Mohsen.	<i>Surface Architecture</i>	MIT Press, 2002.	U Penn		Veikos	Design Studio III Arch 601-206	
Lechner, Norbert.	<i>Heating, Cooling, Lighting: Design Methods for Architects, 2nd Ed.</i>	Wiley & Sons, New York, 2001	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Lechner, Norbert.	<i>Heating, Cooling, Lighting: Design Methods for Architects, 2nd Ed.</i>	Wiley & Sons, New York, 2001	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Levy, Matthys and Salvadori, Mario	<i>Why Buildings Fall Down: How Structures Fail</i>	Norton, New York 1992.	Portland State U		Sukhwant	Design and Society	
Lippard, Lucy R.	<i>The Lure of the Local: Senses of Place in a multicultural society.</i>	The New York Press, NY 1997	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Lippard, Lucy R.	<i>The Lure of the Local: Senses of Place in a multicultural society.</i>	The New York Press, NY 1997	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Lloyd Jones, David.	<i>Architecture and the Environment: Bioclimatic Building Design.</i>	The Overlook Press, 1998.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Loriers, Marie Christine	<i>"Critical Ecology"</i>		U Tenn		DeKay/Shelton	Arch 509	
Lovelock, James	<i>Gaia: A New Look at Life on Earth</i>	Oxford University Press, Oxford 1979	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Lstiburek, Joseph W.	<i>Builder's Guide</i>	Building Science Corporation, MA 2000	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Lstiburek, Joseph W.	<i>Builder's Guide to Cold Climates</i>	Taunton Press, CT 2000	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Lstiburek, Joseph W.	<i>Builder's Guide To Mixed Climates: Details For Design And Construction</i>	Taunton Press, Newtown, CT, 2000	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Lstiburek, Joseph W.	<i>Moisture Control Handbook: Principles And Practices For Residential And Small Commercial Buildings</i>	John Wiley & Sons, New York, 1994	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Lupton, Ellen (Ed.)	<i>Skin: Surface, Substance + Design</i>	Princeton Architectural Press, 2002.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Lupton, Ellen (Ed.)	<i>Skin: Surface, Substance + Design</i>	Princeton Architectural Press, 2002.	U Penn		Veikos	Design Studio III Arch 601-206	

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Lyle, John Tillman	<i>Regenerative Design for Sustainable Development</i>	John Wiley & Sons, NY 1994	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Lyle, John Tillman	<i>Regenerative Design for Sustainable Development</i>		U Tenn		DeKay/Shelton	Arch 509	
Lyle, John Tillman	<i>Regenerative Design for Sustainable Development</i>	John Wiley & Sons, NY 1994	U Minnesota		Carmody	ARCH 8567 Intergrated Site and Building Design	
Lynch, Kevin	<i>Site Planning</i>	MIT Press, Cambridge MA 1984	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Lynch, Kevin.	<i>"Waste of Place." In Classic Readings in Architecture edited by Kent F. Spreckelmeyer and Jay M. Stein</i>	WCB, McGraw Hill, Boston 1999.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
MacKenzie, Dorothy	<i>Green Design: Design for the Environment</i>	Laurence King, London, 1997	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Mahfouz, Afaf and Serageldin, Ismail.	<i>"Women and Space in Muslim Societies,"</i>	Robert Powell, ed. Expression of Islam in Buildings. Singapore: Concept Media/The Aga Khan Award for Architecture, 1990.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Margalit, Avishai and Buruma, Ian	<i>"Occidentalism,"</i>	The New York Review of Books January 17, 2002 < HYPERLINK "http://www.nybooks.com/articles/15100" http://www.nybooks.com/articles/15100>	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Markus, Thomas.	<i>Buildings & Knowledge: Libraries, museums, panorama, exhibitions, lecture halls</i>	Buildings and Power: Freedom and Control in the Origin of Modern Building Types,1993.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Markus, Thomas.	<i>Buildings & People: schools, hospitals, prisons, workhouses, coffee houses, hotels</i>	Buildings and Power: Freedom and Control in the Origin of Modern Building Types,1993.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Markus, Thomas.	<i>Buildings & Things: Company Towns, Factories, Exchanges</i>	Buildings and Power: Freedom and Control in the Origin of Modern Building Types,1993.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Marsh, W.M.	<i>Landscape Planning: Environmental Applications, 3rd ed.</i>	Addition-Wesley Publishing Company, 1997	U Minnesota		Carmody	ARCH 8567 Intergrated Site and Building Design	
Mauren, Zara.	<i>Dream of the Sea Ranch.Film.</i>	Master Design Series, 1994.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Mazria, E.	<i>The Passive Solar Energy Book.</i>	Rodale Press, Emmaus, PA, 1979.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Mazria, Edward.	<i>"It's the Architecture, Stupid! Who really holds the key to the global thermostat? The answer might surprise you."</i>	May/June 2003.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
McCamant and Durrett	<i>CoHousing: A Contemporary Approach to Housing Ourselves</i>	Habitat Press, Berkeley 1988	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
McDonough, William	<i>Hanover Principles</i>	Internet	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
McDonough, William and Braungart, Michael.	<i>"Putting Eco-Effectiveness into Practice,"</i>	Cradle to Cradle, 2002 "http://www.ci.nyc.ny.us/html/dcp/html/fkl/ada/competition/2_2.html"	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
McDonough, William and Braungart, Michael.	<i>Cradle to Cradle: Remaking the Way We Make Things.</i>	North Point Press, 2002.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
McDonough, William and Braungart, Michael.	<i>Cradle to Cradle: Remaking the Way We Make Things.</i>	North Point Press, 2002.	Mississippi State U	R	Berk	ARC 2713 Passive Building Systems	
McDonough, William and Braungart, Michael.	<i>Cradle to Cradle: Remaking the Way We Make Things.</i>	North Point Press, 2002.	Savannah CAD		Montgomery	Architectural Design Studio II	R
McDonough, William and Braungart, Michael.	<i>Cradle to Cradle: Remaking the Way We Make Things.</i>	North Point Press, 2002.	Portland State U		Sukhwant	Design and Society	
McDonough, William and Braungart, Michael.	<i>Cradle to Cradle: Remaking the Way We Make Things.</i>	North Point Press, 2002.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
McDonough, William and Braungart, Michael.	<i>Cradle to Cradle: Remaking the Way We Make Things.</i>	North Point Press, 2002.	U Tenn		DeKay/Shelton	Arch 509	
McDonough, William and Braungart, Michael.	<i>Cradle to Cradle: Remaking the Way We Make Things.</i>	North Point Press, 2002.	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
McDonough, William and Braungart, Michael.	<i>Cradle to Cradle: Remaking the Way We Make Things.</i>	North Point Press, 2002.	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
McHarg, Ian L.	<i>"On Values," In Classic Readings in Architecture edited by Kent F. Spreckelmeyer and Jay M. Stein.</i>	Boston: WCB, McGraw Hill, 1999.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
McHarg, Ian L.	<i>Design with Nature</i>	John Wiley & Sons, New York, 1967	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
McHarg, Ian L.	<i>Design with Nature</i>	John Wiley & Sons, New York, 1967	U Minnesota		Carmody	ARCH 8567 Intergrated Site and Building Design	
McHarg, Ian L.	<i>Design with Nature</i>	John Wiley & Sons, New York, 1967	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
McLennan, Jason F.	<i>The Philosophy of Sustainable Design</i>	Ecotone Press, Kansas City, MO, 2004	Kansas State U	R	Coates		
McLennan, Jason F.	<i>The Philosophy of Sustainable Design</i>	Ecotone Press, Kansas City, MO, 2004	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
McLennan, Jason F.	<i>The Philosophy of Sustainable Design</i>	Ecotone Press, Kansas City, MO, 2004	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	

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McLuhan, Marshall	<i>"Introduction: Understanding Media"</i>	Extensions of Man, 1964.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
McLuhan, T.C.	<i>The Way of the Earth</i>	Simon & Scuster, NY 1994	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
McPhee, John	<i>Basin and Range</i>		MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Meadows, Donella H. et.al.	<i>Beyond the Limits: Confronting Global Collapse. Envisioning a Sustainable Future</i>	Chelsea Green Publishing, 1993.	Portland State U		Sukhwant	Design and Society	
Means, R.S.	<i>Green Building: Project Planning and Cost Estimating</i>		U Minnesota		Weeks	ARCH 8565 Materials Performance	
Meinig, D.W.. (Ed.)	<i>The Interpretation of Ordinary Landscapes: Geographical Essays</i>	Oxford University Press, 1979.	U Minnesota		Carmody	ARCH 8567 Intergrated Site and Building Design	
Mendler, Sandra F; Odell, William.	<i>The HOK Guidebook to Sustainable Design</i>	John Wiley & Sons, New York, 2000	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Mendler, Sandra F; Odell, William.	<i>The HOK Guidebook to Sustainable Design</i>	John Wiley and Sons, 2000.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Mendler, Sandra F; Odell, William.	<i>The HOK Guidebook to Sustainable Design</i>	John Wiley & Sons, New York, 2000	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Merleau-Ponty, Maurice	<i>"Cezanne's Doubt," The Merleau-Ponty Aesthetics Reader: Philosophy and Painting</i>	Galen A. Johnson ed., Northwestern U.P., Evanston 1993, 59-75.	Portland State U		Sukhwant	Design and Society	
Milgrom, Melissa.	<i>"Julie Bargmann,"</i>	Metropolis, May, 2003.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Millet, Marietta S.	<i>Light Revealing Architecture</i>	Van Nostrand Reinhold, New York, 1996.	U Tenn		DeKay/Shelton	Arch 509	
Millet, Marietta S.	<i>Light Revealing Architecture</i>	Van Nostrand Reinhold, New York, 1996.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	
Mollison, Bill	<i>Introduction to Permaculture</i>	Permaculture Services Intl Inc. Cedar Crest, NM 1992	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Monti, Michael J.	<i>"The Power of Competitions."</i>	ASCSNews. Dec. 2004. Vol. 34, No. 4.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Moore McGregor, Suzi and Burba Trulsson, Nora	<i>Living Homes: Sustainable Architecture and Design</i>	Chronicle Books, 2001.	Kansas State U	S	Coates		
Moore, Charles; Allen, Gerald and Lyndon, Donlyn.	<i>The Place of Houses.</i>		Kansas State U	S	Coates, Gabbard, Ornelas Sachs, Watts & Wolf	Architectural Design Studio III	R
Moore, Fuller	<i>Concepts and Practice of Architectural Daylighting</i>	Van Nostrand Reinhold, New York, 1991.	U Texas		Garrison	Arc 696/560 SolarDecathalon Design/Build	
Moore, Fuller	<i>Concepts and Practice of Architectural Davlighting</i>	Van Nostrand Reinhold, New York, NY, 1985.	Okiahoma State U		Mansy	Sustainability Issue in Architecture	E

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Moore, Fuller	<i>Environmental Control Systems, Heating, Cooling, Lighting</i>	McGraw Hill, New York, NY, 1993.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Moore, Fuller	<i>Environmental Control Systems, Heating, Cooling, Lighting</i>	McGraw Hill, New York, NY, 1993.	Mississippi State U	R	Berk	ARC 2713 Passive Building Systems	
Morris, Errol dir.	<i>Fast, Cheap and Out of Control [1997]</i>	Columbia/Tri-Star, 2002.	Portland State U		Sukhwant	Design and Society	
Mostafavi, Mchsen and Corner, James.	<i>"Landscapes of Urbanism," and "Landscape Urbanism,"</i>	Landscape Urbanism: A Manual for the Machinic Landscape, 2003.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Muneer, T. (Tariq)	<i>Solar Radiation And Daylight Models</i>	Oxford, Burlington, MA, 2004	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Naess, Arne trans. David Rothenberg	<i>Ecology, Community and Lifestyle</i>	Cambridge University Press, MA 1989	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
National Institute of Building Sciences	<i>Life-Cycle costing (Whole building Design Guide)</i>	Washington, DC, 2000.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Nissen, Henrik	<i>Industrialized Building and Modular Design, Henrik Nissen, Shenva Press, London, 1972 TH860.N56</i>	Shenva Press, London, 1972	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Nochlin, Linda.	<i>"The Imaginary Orient,"</i>	The Politics of Vision: Essays on Nineteenth-Century Art and Society, pp. 33-59. 1989.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Noonan, Patty and Jon Vogel.	<i>"High Performance Building and Affordable Housing," In Sustainable Architecture White Papers.</i>	Earth Pledge: NYC, 2000. p. 129-135.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Norton, Richard J.	<i>"FERAL CITIES,"</i>	Navy War College Review, 2004.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
O'Brien, James.	<i>"Las Vegas Today -- Rome in a Day: Corporate Development Practices and the Role of Professional Designers,"</i>	Journal of Architectural Education, 2000.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Odum, Eugene Pleasants	<i>Ecology and our endangered life support systems</i>	Sinauer Associates, Sunderland MA 1989	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Oesterle, Eberhard; Lieb, Rolf-Dieter; Lutz, Martin and Heusler, Winfried.	<i>Double-Skin Facades: Integrated Planning</i>	Prestel, Lakewood, NJ, 2000.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Olgyay, V. and Olgyay, A.	<i>Solar Control and Shading Devices</i>	Princeton Press, Princeton, NJ, 1979.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Olgyay, Victor	<i>Design With Climate: Bioclimatic Approach To Architectural Regionalism</i>	Princeton University Press, Princeton, 1963	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Olgyay, Victor	<i>Design With Climate: Bioclimatic Approach To Architectural Regionalism</i>	Princeton University Press, Princeton, 1963	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Oppenheimer, Andrea and Timothy Hursley.	<i>Rural Studio: Samuel Mockbee and an Architecture of Decency.</i>	Princeton Architectural Press: China, 2002.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Orr, David W.	<i>Earth In Mind: Environment, and the Human Prospect</i>	Island Press, Washington, D.C., 1994.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Orr, David W.	<i>Ecological Literacy: Education and the Transition to a Post Modern World..</i>	State University of New York Press, Albany, 1992.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Orr, David W.	<i>Ecological Literacy: Education and the Transition to a Post Modern World..</i>	State University of New York Press, Albany, 1992.	Savannah CAD		Montgomery	Architectural Design Studio II	R
Orr, David W.	<i>Ecological Literacy: Education and the Transition to a Post Modern World..</i>	State University of New York Press, Albany, 1992.	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Orr, David W.	<i>The Nature of Design: Ecology, Culture, and Human Intention</i>	Oxford University Press, New York.	Kansas State U	R	Coates		
Orr, David W.	<i>The Nature of Design: Ecology, Culture, and Human Intention</i>	Oxford University Press, New York.	Portland State U		Sukhwant	Design and Society	
Orr, David W.	<i>The Nature of Design: Ecology, Culture, and Human Intention</i>	Oxford University Press, New York.	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Osmundson, Theodore.	<i>Roof Gardens: History, Design and Construction</i>	W.W. Norton and Company, Inc., 1999.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Palasama	<i>The Eyes of the Skin</i>		U Idaho		Wymelenberg	(3 grad courses), Int Design Lab/Outreach Ctr	
Papanek, Victor	<i>The Green Imperative: Natural Design for the Real World</i>	Thames and Hudson, NY 1995	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Pasquale, Salvatore Di	<i>"Leonardo, Brunelleschi, and the Machinery of the Construction Site," Leonardo da Vinci, Engineer and Architect</i>	Paolo Galuzzi, ed., Museum of Fine Arts, Montreal 1987, 163-81.	Portland State U		Sukhwant	Design and Society	
Pawley, Martin	<i>Building for Tomorrow: Putting Waste to Work</i>	Serra, 1982	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Peirce, Charles	<i>"Charles Peirce on Pragmatism, Phenomenology and Semiotics"</i>	Introducing Semiotics, 3-7, 21- 35, 2001.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Phillips, D.	<i>Daylighting</i>	Architectural Press, London, 2004.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Phillips, Derek	<i>Daylighting: Natural Light In Architecture</i>	Architectural, Oxford, 2004	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Pilatowicz, Grazyna	<i>Eco-Interior: A Guide to Environmentally Concious Interior Design</i>	Wiley, NY 1994	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Pollio, Marcus Vitruvius	<i>"The Education of the Architect"</i>	Ten Books on Architecture, 1BC/1AD.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Postman, Neil	<i>"The Ideology of Machines" Technopoly: the Surrender of Culture to Technology</i>	Vintage, New York 1993.	Portland State U		Sukhwant	Design and Society	
Prager, Frank D. and Scaglia, Gustina	<i>Brunelleschi. Studies of His Technology and Inventions</i>	Harvard U.P., Cambridge MA 1970.	Portland State U		Sukhwant	Design and Society	
Prodanovic, Milan.	<i>"Urbicide and Chances for The Reconstruction of Balkan Cities."</i>	Out of Ground Zero: Case Studies in Urban Reinvention, 2003.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Randall Eaton, Randall	<i>Modular Home Buyers Guide: Learn How to Save Thousands Before You Buy</i>	J & R Enterprises, Moses Lake, WA, 2004	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Rapoport, Amos.	<i>"the nature and definition of the field (ch. 1)."</i>	house form and culture, Foundations of Cultural Geography Series, 1969.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Rasmussen, Eiler Steen.	<i>Experiencing Architecture.</i>	The MIT Press: Cambridge, 1959.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Renfro, O.S.	<i>Building Materials from Solid Waste</i>		U Minnesota		Weeks	ARCH 8565 Materials Performance	
Rice, Peter and Dutton, Hugh	<i>Structural Glass</i>	Routledge/Taylor & Francis, Florence, KY., 1998.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Rice, Peter and Dutton, Hugh.	<i>Structural Glass</i>	Spon Press & Routledge, New York, 1995	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Richardson, Barry A.	<i>Defects and Deterioration in Buildings</i>	E & FN Spon, London 1991	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Riley, Terence.	<i>The Un-Private House.</i>		Kansas State U	S	Coates, Gabbard, Ornelas Sachs, Watts & Wolf	Architectural Design Studio III	R
Roaf, Sue	<i>Ecohouse 2: A Design Guide</i>	Architectural Press, London, 2003	U Virginia	S	Quale	ecoMOD: Low Income House Design/Build	R
Roaf, Sue; Fuentes, Manuel; Thomas, Stephanie.	<i>Ecohouse: A Design Guide.</i>	Architectural Press, 2001.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Rogers, Richard	<i>Cities for a Small Planet</i>		U Tenn		DeKay/Shelton	Arch 509	
Rosenblum, Robert.	<i>"Aspects of Neoclassic Architecture."</i>	Transformations in Late 18th Century Art, pp.107-145, 1967.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Roszbach, Sarah	<i>The Chinese Art of Placement</i>	E.P. Dutton, 1983	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Rowe, Colin; Slutzky, Robert; Hoesli, Bernhard.	<i>Transparency</i>	Birkhauser, Boston, 1997.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Russell, James S.	<i>"Where are We Now? Architecture's Place in an Era of Evolving values."</i>	Architectural Record, 3.03.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Salvadori, Mario	<i>Why Buildings Stand Up</i>	Norton, New York 1990.	Portland State U		Sukhwant	Design and Society	
Sanda National Laboratories	<i>Design Handbook for Photovoltaic Power Systems</i>	Science Applications, Inc., McLean, VA, 1981.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Schaer, Roland.	<i>"Utopia: Space, Time History," and Lyman Tower Sargent. "Utopian Traditions: Themes and Variations,"</i>	Utopia: The Search for the Ideal Society in the Western World, 2001.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Schiler, M.	<i>Simulating Daylight with Architectural Models</i>	DNNA, Los Angeles, 1980.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Schittich, Christian	<i>Building Skins: Concepts, Layers, Materials</i>	Birkhauser Edition Detail, 2001.	U Penn		Veikos	Design Studio III Arch 601-206	
Schittich, Christian (Ed.).	<i>in Detail: Building Skins, Concepts Layers Materials</i>	Birkhauser, Boston, 2001.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Schittich, Staib, Balkow.	<i>Glass Construction Manual.</i>	Birkhauser, 1999.	U Penn		Veikos	Design Studio III Arch 601-206	
Schmitz-Gunther, Thomas ed.	<i>Living Spaces: Sustainable Building and Design</i>	Konemann, Cologne, 1999	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Schor, Juliet and Taylor, Betsy eds.	<i>Sustainable Planet: Solutions for the Twenty-First Century</i>	Beacon Press, 2003.	Portland State U		Sukhwant	Design and Society	
Schumacher, EF	<i>Small is Beautiful</i>	Harper & Row, NY 1973	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Scott, Andrew (ed)	<i>Dimensions of Sustainability</i>	E & FN Spon, London 1998	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Scully, Vincent	<i>Architecture: The Natural and the Manmade</i>	St. Martin's Press, NY 1991	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Scully, Vincent.	<i>"Architecture: The Natural and the Manmade,"</i>	Denatured Visions: Landscape and Culture in the 20th century, 1988.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Sick, Frederick and Erge, Thomas.	<i>Photovoltaics in Buildings</i>	James and James, London, 1998.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Slessor, Catherine.	<i>Eco-Tech: Sustainable Architecture and High Technology</i>	Thames and Hudson, Ltd., 1997.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Slessor, Catherine.	<i>Eco-Tech: Sustainable Architecture and High Technology</i>	Thames and Hudson, Ltd., 1997.	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Slessor, Catherine.	<i>Eco-Tech: Sustainable Architecture and High Technology</i>	Thames and Hudson, Ltd., 1997.	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Smil, Vaclav	<i>Energy at the Crossroads: Global Perspectives and Uncertainties</i>	MIT Press, 2003	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
Smith, Peter F.	<i>Eco-Refurbishing: A Guide to saving and producing Energy in the Home</i>	Architectural Press-Elsevier, Burlington, MA 2004	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Smith, Peter F.	<i>Sustainability at the Cutting Edge</i>	Architectural Press, Oxford, 2003	U Virginia		Quale	ecoMOD: Low Income House Design/Build	

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Smith, Peter F.	<i>Sustainability at the Cutting Edge</i>		Mississippi State U	R	Berk	ARC 2713 Passive Building Systems	
Sorkin, Michael.	<i>"Chandigarh after Corbusier."</i>	Architectural Record, 1998.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Speigel, Ross	<i>Green Building Materials: A Guide to Product Selection</i>	Wiley, New York, 1999	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Spiegel, Ross and Meadows, Dru.	<i>Green Building Materials.</i>	Wiley & Sons, New York, 1999.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Spirn, Anne Whiston	<i>The Language of Landscape</i>		MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Stattmann, Nicola	<i>Ultra Light-Super Strong : A New Generation Of Design Materials</i>	Birkhauser, Basel, Boston, 2003	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Steele, James.	<i>Sustainable Architecture: Principles, Paradigms, and Case Studies</i>	McGraw-Hill Incorporated, 1997.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Steele, James.	<i>Sustainable Architecture: Principles, Paradigms, and Case Studies</i>	McGraw-Hill Incorporated, 1997.	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Steen, A.S.; Steen, Bill, et. al.	<i>The Straw Bale House Book</i>	Chelsea Green, 1994.	Kansas State U	S	Coates		
Stein, Benjamin and Reynolds, John.	<i>Mechanical And Electrical Equipment for Buildings 9th Ed.</i>	Wiley & Sons, New York, 1998.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Stein, Benjamin and Reynolds, John.	<i>Mechanical And Electrical Equipment for Buildings 9th Ed.</i>	Wiley & Sons, New York, 1998.	Kansas State U	S	Coates		
Stein, Benjamin and Reynolds, John.	<i>Mechanical And Electrical Equipment for Buildings 9th Ed.</i>	Wiley & Sons, New York, 1998.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Stein, Benjamin and Reynolds, John.	<i>Mechanical And Electrical Equipment for Buildings 9th Ed.</i>	John Wiley & Sons, New York, 2000.	Hampton U	S	Ilozor	ARC 307 Environmental Systems	R
Stitt, Fred A. ed.	<i>Ecological Design Handbook</i>	McGraw-Hill, New York, 1999	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Stitt, Fred A. ed.	<i>Ecological Design Handbook</i>	McGraw-Hill, New York, 1999	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Strong, Steven	<i>The Solar Electric House</i>	Sustainability Press	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Suzuki, David	<i>The Sacred Balance: Rediscovering our place in nature</i>	Greystone Books, Vancouver 1999	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Szokolay, Steven V.	<i>Introduction to Architectural Science: The Basis of Sustainable Design</i>	Architectural Press, London, 2004	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Szokolay, Steven V.	<i>Introduction to Architectural Science: The Basis of Sustainable Design</i>	Architectural Press, London, 2004	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Talarico, Wendy.	<i>"Taking the Elective out of Architectural Education" in Sustainable Architecture White Papers.</i>	Earth Pledge: NYC, 2000. p 201-206.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Tanizaki	<i>In Praise of Shadows</i>		U Idaho		Wymelenberg	(3 grad courses), Int Design Lab/Outreach Ctr	
Tanizaki	<i>In Praise of Shadows</i>		U Tenn		DeKay/Shelton	Arch 509	
Thayer, Robert	<i>Gray world, green heart: technology, nature, and the sustainable landscape</i>	John Wiley & Sons, NY 1994	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Thomas, Randall (Ed.), Fordham, Max and Partners UK.	<i>Photovoltaics and Architecture</i>	Spon Press & Routledge, New York, 2001.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Thomas, Randall (Ed.), Fordham, Max and Partners UK.	<i>Photovoltaics and Architecture</i>	Spon Press & Routledge, New York, 2001.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Thomas, Randall (Ed.), Fordham, Max and Partners UK.	<i>Photovoltaics and Architecture</i>	Spon Press & Routledge, New York, 2001.	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Thompson, J. William and Kim Sorvig	<i>Sustainable Landscape Construction: A Guide to Green Building Outdoors</i>	Island Press, Washington, DC, 2000	U Minnesota		Carmody	ARCH 8567 Intergrated Site and Building Design	
Thompson, J. William and Sorvig, Kim	<i>Sustainable Landscape Construction: A Guide to Green Building Outdoors</i>	Island Press, Washington DC, 2000	U Virginia	S	Quale	ecoMOD: Low Income House Design/Build	R
Thompson, J. William and Sorvig, Kim.	<i>Sustainable Landscape Construction: A Guide to Green Building Outdoors</i>	Island Press, Washington DC, 2000	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Thoreau, Henry David	<i>The Selected Works of Thoreau (Revised by Walter Harding)</i>	Houghton Mifflin, Boston 1975	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Thoreau, Henry David	<i>Walden or, Life in the Woods (1854)</i>	Signet Classics, NY 1961	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Thrush, Glenn.	<i>"Oil, Water, & Politics,"</i>	Brooklyn Bridge, 1996.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Todd, Nancy Jack and John	<i>Bioshelters, Ocean Arks, City Farming: Ecology as a basis of design</i>	Sierra Club Books, San Francisco 1984	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Todd, Nancy Jack and John	<i>Tomorrow is our Permanent Address - The Search for an Ecological Science of Design as Embodies in the Bioshelter</i>	Harper & Row, New York 1980	MA College of Art	R	Seitz	Sustainable Design Issues in Architecture	
Todd, Nancy Jack and John	<i>Tomorrow is our Permanent Address - The Search for an Ecological Science of Design as Embodies in the Bioshelter</i>	Harper & Row, New York 1980	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Tomasky, Michael.	<i>"The World Trade Center: Before, During, & After,"</i>	The New York Review of Books, 2002.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Toy, Maggie (ed)	<i>The Architecture of Ecology</i>	Architectural Design Magazine Press, London 1997	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Trost, Frederick J. and Choudhury, Ifte	<i>Design of Mechanical and Eelctrical Systems in Buildings</i>	Merrill Prentice Hall, New Jersey, 2004	Hampton U	R	Ilozor	ARC 307 Environmental Systems	R

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Trulove, James Grayson	<i>25 Houses Under 2,500 Square Feet</i>	Harper Design International, 2003	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Tuan, Yi-Fu	<i>Passing Strange and Wonderful: Aesthetics, Nature and Culture</i>	Island Press, Washington DC 1996	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Tuan, Yi-Fu	<i>Topophilia</i>	Columbia University Press, NY 1974	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Tuluca, Adrian	<i>Energy Efficient Design and Construction of Commercial Buildings</i>	McGraw-Hill, 1997	U Minnesota		Carmody	ARCH 8563 Energy and Indoor Environmental Quality Issues in Sustainable Design	
UC Berkeley	<i>"Vital Signs: Teaching Environmental Technology through Student Field Work"</i>	http://arch.ced.berkeley.edu/vitalsigns/	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Unwin, Simon.	<i>Analyzing Architecture.</i>	Routledge: New York, 2003.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Vale, Brenda and Robert	<i>Green Architecture: Design for an energy concious future</i>	Little, Brown and Co., Boston 1991	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Vale, Brenda and Robert	<i>Green Architecture: Design for and energy concious future</i>	Bullfinch Press-Little Brown, London 1991	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Vale, Robert and Brenda	<i>"Ground Rules for a Green City"</i>		U Tenn		DeKay/Shelton	Arch 509	
Van Alen Institute	<i>"Berlin,"</i>	Information Exchange: How Cities Renew, Rebuild, and Remember, 2003.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Van Alen Institute	<i>"Kolbe,"</i>	Information Exchange: How Cities Renew, Rebuild, and Remember, 2003.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Van der Ryn, Sim and Cowan, Stuart.	<i>Ecological Design</i>	Island Press, Washington D.C., 1996.	Kansas State U	R	Coates		
Van der Ryn, Sim and Cowan, Stuart.	<i>Ecological Design</i>	Island Press, Washington D.C., 1996.	Portland State U		Sukhwant	Design and Society	
Van der Ryn, Sim and Cowan, Stuart.	<i>Ecological Design</i>	Island Press, Washington D.C., 1996.	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Van der Ryn, Sim and Cowan, Stuart.	<i>Sustainable Communities: A New Design Synthesis For Cities, Suburbs, and Towns</i>	Sierra Club Books, San Francisco 1986	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Venolia, Carol	<i>Healing Environments</i>	Celestial Arts, Berkeley CA 1988	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Wackernagel, Mathis and Rees, William	<i>Our Ecological Footprint. Reducing Human Impact on Earth</i>	New Society Publishers, Gabriola Island BC 1996.	Portland State U		Sukhwant	Design and Society	
Wackernagel, Mathis and Rees, William	<i>Our Ecological Footprint. Reducing Human Impact on Earth</i>	New Society Publishers, Gabriola Island BC 1996.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Webb, Michael.	<i>Modernism Reborn: Mid Century American Houses</i>		Kansas State U	S	Coates, Gabbard, Ornelas Sachs, Watts & Wolf	Architectural Design Studio III	R
Wheeler, Stephen M. and Beatley, Timothy (Eds.)	<i>The Sustainable Urban Development Reader</i>	Routledge Press, 2004	Texas A & M		Abrams	ARCH 310 Site Planning and Design	
White, Dana.	<i>"Frederick Law Olmsted,"</i>	Two Centuries American Planning (ed. by Daniel Schaffer), 1998.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Whiteley, Nigel	<i>Design for Society</i>	Reaktion Books, London 1993.	Portland State U		Sukhwant	Design and Society	
Whyte, William H.	<i>Social Life of Small Urban Spaces. Film.</i>	The Municipal Art Society of New York, 1988.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Wigginton, Michael	<i>Glass in Architecture</i>	Phaldon Press Limited: London, 1996.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
Wigginton, Michael	<i>Intelligent Skins</i>	Architectural Press, Oxford, 2002.	Oklahoma State U		Mansy	Sustainability Issue in Architecture	E
Wigley, Mark.	<i>"Insecurity by Design,"</i>	After the World Trade Center: Rethinking New York City, 2002.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Wilhide, Elizabeth.	<i>Eco: An essential Sourcebook for Environmentally</i>		Kansas State U	R	Coates	Arch 413 Environmental Systems	
Williams, Elizabeth and William	<i>Building with Salvaged Lumber</i>	TAB, PA, 1983	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Wines, James	<i>Green Architecture</i>	Taschen, Koln, 2000	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Winston, Morton and Edelbach, Ralph eds.	<i>Society, Ethics, and Technology</i>	Wadsworth, Belmont CA 2000.	Portland State U		Sukhwant	Design and Society	
Wood, H. Paul.	<i>Site Design.</i>	Kaplan Architecture: Chicago, 2004.	Hampton U	R	Chance	Architectural Ecology & Basic Arch and Env Design	R
Woolley, Tom	<i>Green Building Handbook, volumes 1 & 2</i>	E & FN Spon, London, 1997	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
World Commission on Environment and Dev	<i>Our Common Future</i>	Oxford University Press, NY 1987	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Wright, Frank Lloyd	<i>Frank Lloyd Wright Collected Writings (Ed Bruce Brooks Pfeiffer)</i>	Rizzoli, New York 1992	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Wright, Frank Lloyd	<i>The Natural House</i>	Horizon Press, New York 1954	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Wright, Frank Lloyd	<i>"In the Cause of Architecture," In the Cause of Architecture. Essays by Frank Lloyd Wright for Architectural Record, 1908-1952</i>	Frederick Gutheim, ed., McGraw-Hill, New York 1975 [1908].	Portland State U		Sukhwant	Design and Society	

author	title	publisher, location, date	institution	required/ suggested reading	instructor	course name	required/ elective course
Wright, Gwendolyn	<i>Building The Dream: A Social History of Housing in America</i>	The MIT Press, Cambridge, Massachusetts, 1981	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Yannas, Simos	<i>Solar Energy and Housing Design</i>	Architectural Association, London, 1994	U Virginia		Quale	ecoMOD: Low Income House Design/Build	
Yeang, Ken.	<i>"What is Ecological Design."</i>	The Green Skyscraper, 1999.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Yeang, Ken.	<i>Designing with Nature: The Ecological Basis for Architectural Design.</i>	McGraw-Hill Incorporated, 1995.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Yeang, Ken.	<i>Designing with Nature: The Ecological Basis for Architectural Design.</i>	McGraw-Hill Incorporated, 1995.	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
Yegenoglu, Hüsnü.	<i>"The torn metropolis: Explorations in Beirut."</i>	Archis, 2000.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
Zeiher, Laura C.	<i>The Ecology of Architecture: A Complete Guide to Creating the Environmentally Conscious Building.</i>	Whitney Library of Design, 1996.	Ball State U	R	Koester	Arch 501 Graduate Design Studio/Greening Campus	
Zeiher, Laura C.	<i>The Ecology of Architecture: A Complete Guide to Creating the Environmentally Conscious Building.</i>	Whitney Library of Design, 1996.	U Minnesota		Weeks	ARCH 8565 Materials Performance	
Zeiher, Laura C.	<i>The Ecology of Architecture: A Complete Guide to Creating the Environmentally Conscious Building.</i>	Whitney Library of Design, 1996.	U Minnesota	R	Guzowski	ARCH 8561 Sustainable Design Theory/Practice	
	<i>"LEED: A Look at the Rating System That's Changing the Way America Builds."</i>	Environmental Building News, June, 2002.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
	<i>"Environmental Group Initiates Lawsuits Against ExxonMobil."</i>	2004	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
	<i>"Sustainable Architecture of the Past."</i>	The Climate Dwelling: An Introduction to Climate-Responsive Residential Architecture, 1996.	Parsons/New School	R	Gardner	Issues and Practices in Architecture and Urbanism	E
	<i>OM Solar Handbooks, (three volumes in Japanese)</i>		U Virginia		Quale	ecoMOD: Low Income House Design/Build	
	<i>Renewable Energy, Sources for Fuels and Electricity</i>	Island Press, Washington, DC, 1993.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	
	<i>Solar Engineering of Thermal Process, 2nd Ed.</i>	Wiley & Sons, New York, 1991.	U Texas		Garrison	Arc 696/560 SolarDecathlon Design/Build	

SUBMITTED COURSEWORK

Introduction to the Matrix

The Coursework Matrix that follows charts the 44 submissions and indicates the level (undergraduate or graduate) and some aspects of the courses such as format (studio or lecture) and whether the courses include field work (postoccupancy evaluation), laboratory work, a small project, a design-build project, or community outreach. There are also columns indicating whether the course or courses have a connection to a green campus effort, and whether that university has signed the Talloires Declaration (a commitment to working toward a sustainable campus that is maintained by the University Leaders for a Sustainable Future). Two columns deal with interdisciplinary links; one for students and one for teachers (a G instead of X indicates there were interdisciplinary guest lecturers). Another column is labeled Professional Practice and is checked when the course or courses include a link to professional practice in some way, such as having a real client and presentations, or having practicing architects as part of the instructional team or guest lectures or critiques. Another column, Collaboration, is checked if students are required to work in teams for any part of the course. The last pair of columns identifies whether courses are required or elective (submittals marked with both included more than one course). Where programs are minors or their own degrees, courses are marked as required, though those programs are “elective” add-ons to the basic architecture degree. The variety of documentation submitted should be taken into consideration. Some courses may include one or another element that was not mentioned in the submittal descriptions. Given that variety, this categorization should not be considered absolute.

Profiles of the Additional Coursework Submitted

In addition to the three grant recipients and eight programs selected for special recognition, there were 33 other submitters to the Coursework Grant portion of this project.

University of Arizona, School of Architecture

ARC 301: Design Studio III: Land Ethic (undergraduate)

Submitted by Alvaro Malo

This third-year architecture course involves the study of earth sciences (geology, hydrology, meteorology) through empirical observation and analysis. Experimental site analysis is used to encourage students to formulate an ethical response for a site design.

Ball State University, College of Architecture and Planning

CAP 101 Studio (undergraduate)

Submitted by C. Daniel Woodfin and Shaun R. Krenzke

This is a first design studio shaped to teach about environmental design and sustainability principles. The course is team taught by architecture, landscape architecture, and planning professors. Students are asked to produce a model to study daylight, shading, natural ventilation, and climate and site issues.

California Polytechnic State University-San Luis Obispo, College of Architecture and Environmental Design

Solar Cal Poly: Solar Decathlon Competition (graduate and undergraduate)

Submitted by Sandy Stannard

Interdisciplinary hands-on design-build project for the second Solar Decathlon that will result in a 626-square-foot solar-powered home. Design focuses on energy conservation

due to the small size of the home and accompanying solar array. Energy conservation is a critical issue in California, and this project helps raise awareness.

City College of New York at CUNY, School of Architecture, Urban Design and Landscape Architecture

ARCH 51372 New Directions in Green Planning and Design (undergraduate)

Submitted by Anthony Walmsley

Elective architecture course introduces sustainable design through specific designers, writers, or works. Students undertake research assignments that allow them to explore an area of interest such as the work of William McDonough, AIA, the use of green roofs, or the writings of Aldo Leopold. A broad range of topics covers introduction to ecology, vernacular design, energy efficiency, new urbanism, water management, social issues, and economics.

Clemson University, School of Architecture

Graduate Studies in Architecture and Health (graduate)

Submitted by Dina Battisto

Graduate program culminates in design of a green health clinic in Clemson, S.C, over five courses involving different aspects. The interdisciplinary public service project involves faculty from architecture, landscape architecture, nursing, and public health. The project raises awareness within the university and the Clemson community about sustainable design issues.

Florida A & M University, School of Architecture

Green Team and Coursework (undergraduate)

Submitted by Beth Dobson

Several faculty members are integrating sustainability into existing design and technology courses. Technology of Architecture course requires students to develop a connection with nature through observation. Field trips to LEED-certified buildings give students opportunities to learn successful design strategies for surrounding communities.

Hampton University, Department of Architecture

Beginning with Site in Architectural Education and Envisioning Portsmouth: Service Learning (undergraduate)

Submitted by Shannon Chance

Architectural ecology course focuses on technical understanding of site issues to facilitate later design studio courses. Theoretical writings are used to introduce ecological issues and develop interest among students. Projects involving research and analysis such as sun angle studies, site analysis, or sustainable techniques/ materials further students' technical understanding. Envisioning Portsmouth is a three-semester, five-course service project involving sustainability with urban renewal. Interdisciplinary in nature, the project introduces students to community design, landscape, housing, and historic preservation.

Hampton University, Department of Architecture

Environmental Systems/Mechanical Equipment I and II and Systems and Advanced Architectural Design Studio (undergraduate)

Submitted by Benedict Ilozor

Introductory mechanical course for third-year students teaches basic principles of HVAC design with emphasis on ecologically sustainable mechanical design. Environmental Systems course is integrated with Architectural Ecology course and Advanced Design course. Third-year mechanical course focuses on lighting, electrical, and building

acoustics. Daylighting principles introduced as part of building lighting design. Fourth-year architectural design course involves the complete design process for a moderately sized project within an urban setting. Concentration on contextual issues of site, orientation, and environmental relationships creates basis for environmentally sensitive designs.

University of Idaho, Department of Architecture

Daylight in Building, Modeling for Integrated Design, and Building Case Studies and Integrated Design Lab and Outreach Center (graduate and undergraduate)

Submitted by Bruce Haglund and Kevin Van Den Wymbelenberg

Two-semester capstone for graduate students that results in design of projects with sustainable emphasis. Students choose projects based on their own interests. The first semester is spent researching, programming, and developing schematic design. The second semester completes architectural design work. This completes curriculum with basis in sustainability, including Introduction to Ecological Design, Materials and Methods, Architectural Site Design, and Environmental Control Systems courses.

University of Kansas, School of Architecture and Urban Design

Proposed Course: Building with Intelligence and Introduction to Architecture (undergraduate)

Submitted by Shannon Criss

Introduction to Architecture integrates the relationship of ecology and the built environment into an established introductory course. Building with Intelligence is an interdisciplinary course focusing on sustainability in a larger context than architecture by emphasizing interconnecting systems. Case studies are used to expose students to sustainable design, specifically the areas emphasized by the U.S. Green Building Council's LEED program.

University of Kansas, School of Architecture and Urban Design

Studio 804 (graduate)

Submitted by Dan Rockhill and David Kelman

Final design studio course in three-year graduate program allows students to design and build projects for local community organizations. Students learn about materials and methods in a hands-on environment. The course also raises awareness of environmental issues within the communities where projects are completed.

Massachusetts College of Art, Department of Environmental Design

Architecture Program (undergraduate)

Submitted by Patricia Seitz

Preprofessional architecture major program emphasizes natural systems and environmental issues. Several courses concentrate on these issues specifically. Students are taken on field trips to learn about sustainable design of human environments and building systems. An urban design course emphasizes sustainable communities. Design Works course provides students with a multidisciplinary experience and real-world opportunity with a community partner.

Miami University, Department of Architecture and Interior Design, Center for Building Science Research

Interdisciplinary Energy and Sustainable Design Studio (undergraduate)

Submitted by Scott Johnston

The interdisciplinary studio attracts students from various fields related to the environment. Advanced computer and physical modeling is used to understand thermal performance of buildings designed by student teams. Natural ventilation and daylighting are also studied, using both physical and computer models.

University of Nebraska-Lincoln, College of Architecture

Principles of Sustainable Design (graduate)

Submitted by William Borner

Fifth- and sixth-year elective course focuses on the use of case study to evaluate a design project with emphasis on LEED criteria. Case studies are conducted in cooperation with local architecture firms.

University of New Mexico, School of Architecture & Planning

Six courses and Design and Planning Assistance Center (graduate and undergraduate)

Submitted by Stephen Dent

Several courses are offered that address environmental issues as they relate to architecture. Site and environmental controls classes that emphasize minimizing impact on the environment have been offered for more than 20 years. Recently courses covering sustainable design as well as studios that encourage “green” design have been integrated into the curriculum.

New York Institute of Technology, School of Architecture and Design

NYIT Solar Decathlon 2005: Green Machine/Blue Space (graduate and undergraduate)

Submitted by Michele Bertomen

Multidisciplinary design-build project for second Solar Decathlon competition in Washington, D.C., gives students hands-on experience in sustainable design. The design separates the living quarters (Blue Space) from the mechanical components (Green Machine) in order to conserve energy and maintain comfort. A transparent link connects the two components. The design of the Green Machine component is universal so that it can be used with varying Blue Spaces.

North Dakota State University, Department of Architecture and Landscape Architecture

Architectural Design IV: Earth System Science and Policy (undergraduate)

Submitted by Mohamed Elnahas

Third-year design studio involves complete design process with real-world client. Students work with a local architect to meet the client’s goal of a sustainable design that minimizes environmental impact. Student teams produce schematic designs for the client. The architect actualizes the winning design.

Oklahoma State University, College of Engineering, Architecture, and Technology

Sustainability Issues in Architecture (undergraduate)

Submitted by Khaled Mansy

Elective course introduces sustainability as a set of principles relating to ecology and the environment rather than as an architectural style. Students learn how to design passive environmental control systems using engineering principles to quantify the effectiveness of the system.

University of Oregon, Department of Architecture

HOPES Conference 24-Hour Design Charrette (graduate and undergraduate)

Submitted by Christine Theodoropoulos

Run by the Ecological Design Center, a student organization, the charrette is an event that launches the annual three-day conference on ecological design. Interdisciplinary teams address a real-world problem. The program is in its 11th year.

University of Pennsylvania, Department of Architecture, School of Design

Design Studio III ARCH 601-206 (graduate)

Submitted by Cathrine A. Veikos

This second-year graduate studio investigates passive systems for ventilation and heating. Students are charged to develop a choreography of spatial qualities of lightness, darkness, reflectivity, and other characteristics over various times of day and at various times of the year. Students use 3D Studio Max and Lightscape programs to capture information. The aim is have students make interpretive translations of digital drawings and use simulations to test the results.

Philadelphia University, Architecture Program, Engineering and Design Institute

Design V for Architecture: Survive: The Ultimate Game of Architecture (undergraduate)

Submitted by Rob Fleming

This course was created after frustrating attempts at cross-disciplinary teaching and learning. Modeled loosely on the *Survivor* television show, teams of students face six challenges: one that regards awareness of surroundings, one that involves anthropological research and biodiversity, one that asks them to create a permaculture community, one that involves architecture history (in a game show format) that reinforces 6,000 years of architecture (rather than 100 of modernism), one that involves a debate about environmental literacy (based on the reading of *Ishmael: An Adventure of Mind and Spirit*), and the final one that requires each team to make and play a musical instrument.

Philadelphia University, School of Architecture and Design

A810 Design X Capstone Studio: Ecological Design and Technology (undergraduate)

Submitted by Susan Frosten

The studio focuses on exploration of environmentally sustainable technology in environmental and technical terms and also as the expression of culture relative to “an understanding of our place as human beings within the ecological framework.” After extensive site analysis is followed, the conventional design process is inverted. Students are asked to employ research in four constructs that deal with earth, air, sun, and water.

Portland State University, University Studies Program

Design and Society (undergraduate)

Submitted by Sukhwant Jhaj

Interdisciplinary course focuses on the designer’s impact on social and physical systems with attention to societal responsibilities (sustainable development, social justice).

University of Puerto Rico, School of Architecture

Puerto Rico Institute for Sustainable Architecture/House Restoration for Institute (undergraduate)

Submitted by Fernando Abruna

This is an introduction to sustainable architecture through a restoration project for third- and fourth-year undergraduates. The tropical house will become the headquarters of the Puerto Rico Institute for Sustainable Architecture. Students will be asked to develop a

program of yearly activities for the education of the professional and general public about the importance of sustainable buildings.

Ryerson University, Department of Architectural Science

ASF 905: Community Outreach Program (undergraduate)

Submitted by Margery Winkler

A community interaction course with the Toronto District School Board involved a charrette with the architecture students and middle school students to develop a multipurpose learning space designed with sustainable concepts and lifecycle analysis in mind. Eight models and master plans were produced with elevations and land management reports. The project is being executed.

Savannah College of Art and Design (SCAD), Department of Architecture

Architecture Design Studio II: A Discovery Center for Children to Learn about Ecology (undergraduate)

Submitted by LaRaine Montgomery

Third-year architecture students interface with local school children on a green design project. The design team studies the ecology of the salt marsh and maritime forest habitats and conceptualizes a green building design that respects the fragile environment of the site. The center operates more than 40 programs for the county's school children, ranging from barnyard classes to tidal creek ecology sessions to astronomy classes.

Savannah College of Art and Design (SCAD), Department of Architecture

Arch 507/707: Urban Design Studio (undergraduate)

Submitted by Mike Moore

In Arch 507/707, fifth-year design studios, students respond to a hypothetical design competition sponsored by the city of Newport, Ore., or another challenge in the city of Ashland, Ore. Students are expected to develop an ability to create a meaningful solution to a very complex and large-scale architecture problem in an urban setting. Given problems might involve the design or redesign of a major urban area. Lectures and discussions center on theories regarding the development of cities.

SBSE Retreat 2005: Greener Foundations: Environmental Technology and the Beginning Design Student

Submitted by Christopher Theis, Louisiana State University; Leonard Bachman, University of Houston; Terri Meyer Boake, University of Waterloo

Request for grant funding to enable three beginning design instructors to attend the 2005 Annual Retreat of the Society of Building Science Educators (SBSE), held at the Savannah College of Art and Design in Savannah, Ga., June 9–12, 2005, and focused on the question: Should environmental technology be a component of beginning design courses and, if so, how?

University of Southern California, School of Architecture, Landscape Architecture Program

The Brown Lab (graduate)

Submitted by David Fletcher

Students from the landscape architecture, architecture, urban planning, and public art programs at the University of Southern California take this studio, which is designed to affect change in the community through charrettes and alternatives to conventional development practices. One part of the challenge to students is to create an elaborate field guide to the site that involves hydrology, infrastructure, site history, demographics, and phenomenology.

University of Texas, School of Architecture

Arc 696/560: Advanced Design/SolarDecathlon Design-Build Studio (graduate and undergraduate)

Submitted by Michael Garrison

Students investigate the application of building systems that may be used to design and construct environmentally responsive architecture as part of the project to design and build the 2005 Texas SolarD House. The course links the theory and practice of sustainable design and planning to familiarize the student with the salient issues of green architecture. The goal is to reestablish the continuity and interrelationship between the process of conceiving, making, and using the building and landscape and to empower designers to refine environmentally responsive architecture.

University of Texas, School of Architecture, Center for Sustainable Development

ARC 384K: Environmental Control II (graduate)

Submitted by Steven A. Moore

The required course is a quantitative and qualitative survey of heating, cooling, ventilating, electrical, plumbing, solar, vertical transportation, and fire safety technologies. The seminar/studio blend is intended to provide students with a chance to critically study systems (via case studies) within the assumption that architecture practice “requires knowledge that is scientifically, ecologically, and culturally responsible.”

University of Texas, School of Architecture, Center for Sustainable Development

Design/Build Mexico (graduate and undergraduate)

Submitted by Sergio Palleroni

This summer studio was conducted in collaboration with a consortium of public and private groups and was aimed at designing and building two prototype houses for single women and their children. In-depth climate and site research preceded design, and students returned to Sonora the following year to build the houses (to near completion). A follow-up visit by three students and one faculty assessed the completion process and results.

Texas A&M University, Department of Architecture

ARCH 310 Site Planning and Design (graduate and undergraduate)

Submitted by Robin Fran Abrams

This is a one-semester interdisciplinary seminar team taught by a licensed architect, landscape architect, and urban planner (students of all three departments enroll). The course is taught with a “biophysical” perspective (beginning with Robert Thayer’s bioregional quiz in *Grey World Green Heart*). In 2005, the course had three parts: poetry of site, gaining an ecological understanding, and issues in sustainable site development. Discussions are framed in terms of sustainability in three frames: environmental, economic, and equity.

Coursework Matrix																			
course name	submitted by	institution	graduate	undergraduate	studio	lecture / seminar	project	design-build	field work / measurements	lab work / testing	community outreach green campus connection	Talloires Declaration	interdisciplinary teaching	interdisciplinary students	professional practice link	collaboration	required	elective	
grant winners									SOME KEY CHARACTERISTICS										
Sustainable Environment & Implementing Sustainable Principles	Jonathan Reich	University-San Luis Obispo, College of Architecture & Environmental Design	X		X	X				X		X	X	X		X	X		
Comprehensive Green Design Seminar in Architectural Technology & Technological Traditions	Jim Wasley Mark DeKay and Ted Shelton	University of Wisconsin-Milwaukee School of Architecture and Urban Planning University of Tennessee College of Architecture and Design	X X	 X	X X	 X	 	 	 	 	X 	 	G 	X 	X 	X 	 X	X 	
special recognition																			
Animated Architecture	Keith Evan Green	Clemson University School of Architecture	X		X							X						X	
MS Sustainable Design Track (4 Core Courses)	Mary Guzowski	University of Minnesota Department of Architecture	X		X	X			X				X	X	X	X	X		
ecoMOD	John Quale	University of Virginia School of Architecture	X		X	X			X		X		X	X	X	X		X	
Graduate Design Studio & Green Campus	Robert Koester	Ball State University College of Architecture and Planning	X		X	X			X		X	X	G		X			X	
Issues and Practices in Modern Architecture and Urbanism	Jean Gardner	Parsons School of Design (at The New School University)), Department of Architecture, Interior Design and Lighting	X			X			X								X		
Portable Classroom Project (Environmental Design and Mechanical Systems + Env Sys Lab)	Stephen Meder	University of Hawaii School of Architecture		X		X			X	X	X				X	X		X	
Architecture and Other Courses	Gary Coates	Kansas State University Department of Architecture		X		X	X										X		
Passive Building Systems / Ecological Design	Michael Berk	Mississippi State University College of Architecture		X		X	X							X		X	X		
other submissions																			
Design Studio III: Land Ethic	Alvaro Malo	University of Arizona School of Architecture		X	X					X			X					X	
CAP 101 (First Studio)	Dan Woofin and Shaun Krenzke	Ball State University College of Architecture and Planning		X	X								X					X	
Solar CalPoly: Solar Decathlon Competition	Sandy Stannard	University-San Luis Obispo, College of Architecture & Environmental Design	X	X	X	X		X	X		X		X	X	X	X		X	

course name	submitted by	institution	graduate	undergraduate	studio	lecture / seminar	project	design-build	field work / measurements	lab work / testing	community outreach	green campus connection	Talloires Declaration	interdisciplinary teaching	interdisciplinary students	professional practice link	collaboration	required	elective	
New Directions in Green Planning and Design	Anthony Walmsley (LA)	City College of New York (CUNY) School of Architecture, Urban Design & Landscape Architecture		X		X													X	
Graduate Studies in Architecture and Health (6 Courses)	Dina Battisto	Clemson University School of Architecture	X	X	X	X								G	X	X			X	
Green Team + Coursework	Beth Dobson	Florida A&M University School of Architecture		X	X	X			X			X				X			X	
Beginning with Site in Architecture & Envisioning Portsmouth Service Learning	Shannon Chance	Hampton University Department of Architecture		X	X	X					X						X		X	
Foundations/Mechanical Equipment/Systems Courses and Advanced Design Studio	Benedict Ilozor	Hampton University Department of Architecture		X	X	X										X		X	X	
Integrated Design Lab and Outreach Center	Kevin Van Den Wymbelenberg	University of Idaho Department of Architecture	X	X		X				X			X			X	X		X	
Building with Intelligence	Shannon Criss	University of Kansas School of Architecture and Urban Design		X		X													X	
Studio 804	David Kelman and Dan Rockhill	University of Kansas School of Architecture and Urban Design	X		X			X			X					X	X		X	
Design Seminar, Design Works	Patricia Seitz	Department of Environmental Design & Architecture		X		X					X						X		X	
Interdisciplinary Energy & Sustainable Design Studio	Scott Johnston	Miami University, Department of Architecture and Interior Design & Center for Building Science Research		X	X		X			X				X	X		X		X	
Principles in Sustainable Design (and Other Courses)	William Borner	University of Nebraska-Lincoln College of Architecture	X			X										X			X	
Design and Planning Assistance Center	Stephen Dent	University of New Mexico School of Architecture & Planning	X	X	X	X		X	X		X			X		X	X		X	
Green Machine/Blue Space: Solar Decathlon 2005	Michele Bertomen	New York Institute of Technology School of Architecture and Design	X	X	X	X		X	X		X			X	X	X	X		X	
Architectural Design IV: Earth Systems Science & Policy	Mohamed Elnahas	North Dakota State University Department of Architecture & Landscape Architecture		X	X						X			X		X	X		X	
Sustainability Issues in Architecture	Khaled Mansy	Oklahoma State University College of Architecture, Engineering and Technology	X	X		X	X												X	
HOPES Conference 24-hour Charrette and the Ecological Design Center	Christine Theodoropoulos	University of Oregon Department of Architecture	X	X			X				X			X	X	X	X		X	

course name	submitted by	institution	graduate	undergraduate	studio	lecture / seminar	project	design-build	field work / measurements	lab work / testing	community outreach	green campus connection	Talloires Declaration	interdisciplinary teaching	interdisciplinary students	professional practice link	collaboration	required	elective
Design Studio III	Cathrine Veikos	University of Pennsylvania School of Design, Department of Architecture	X		X														X
Design V for Architecture (Survive: The Ultimate Game of Architecture)	Rob Fleming	Philadelphia University Architecture Program, Engineering Design Institute		X		X	X			X		X		X			X		X
Design X Capstone Studio: Ecological Design and Technology	Susan Frosten	Philadelphia University Architecture Program, Engineering Design Institute		X	X							X							X
Design and Society	Sukhwant Jhaj	Portland State University, University Studies Program		X		X	X							X	X				X
Puerto Rico Institute for Sustainable Architecture & House Restoration	Fernando Abruna	University of Puerto Rico School of Architecture		X		X	X									X	X		X
Community Outreach Program	Margery Winkler	Ryerson Polytechnic University Department of Architectural Science	X	X	X					X		X				X	X		X
Urban Design Studio	Mike Moore	Savannah College of Art and Design Department of Architecture		X	X														X
Architecture Design Studio II: Discovery Center	LaRaine Montgomery	Savannah College of Art and Design Department of Architecture		X	X									X					X
Student Support / SBSE Retreat 2005	Christopher Theis	Society for Building Science Educators	X																
Brown LAB	David Fletcher (LA)	University of Southern California Architecture Department	X	X	X					X				X	X		X		X
Decathlon Design/Build Studio	Michael Garrison	Architecture Center for Sustainable Development	X	X	X	X		X	X	X				X	X	X	X		X
Environmental Control II	Steven Moore	Architecture Center for Sustainable Development	X		X	X											X		
Design/Build Mexico	Sergio Palleroni	Architecture Center for Sustainable Development	X	X	X			X		X					X	X	X		X
Site Planning & Design	Robin Fran Abrams	Texas A&M University Department of Architecture	X	X		X								X	X				X

DEFINING SUSTAINABLE DESIGN

The AIA Committee on the Environment's

MEASURES OF SUSTAINABLE DESIGN AND PERFORMANCE METRICS

This set of 10 measures and supporting metrics is the foundation of the COTE Top Ten Green Projects, an annual awards program in its tenth year, and the basis of the COTE theory of sustainable design. COTE recognizes that great design includes environmental, technical, and aesthetic excellence. Stewardship, performance, and inspiration are essential and inseparable. Top Ten entrants are asked to provide narratives (maximum 200 words each) responding to specific categories and indicate an understanding of the connections between them, quantifying features when possible using the suggested metrics. While emphasis should be placed on measurable results whenever possible, the narrative format recognizes that qualitative goals are often subjective and therefore cannot always be evaluated quantitatively. The brief essays allow the entrants to describe in their own words how the project's goals were pursued and achieved. Narrative and metrics should refer only to the final built project without regard to design measures that were not implemented. Selection favors beautifully designed solutions that exhibit an integration of natural systems and appropriate technology, verified through building systems modeling, analysis, and best practices. (Entrants also provide a description, key environmental features, project economics, and details about the process and results.)

Top Ten Measure 1: Sustainable Design Intent and Innovation

Narrative: Sustainable design embraces the ecological, economic, and social circumstances of a project. How did these circumstances drive the project's design? How were they expressed? Describe the most important sustainable design ideas for your project as well as the specific circumstances or constraints that generated those ideas. (This should not be a list of sustainable design measures.) Describe any unique sustainable design innovations. How does the architectural expression demonstrate the sustainable design intent? How did the sustainable design effort lead to a better overall project design?

Top Ten Measure 2: Regional/Community Design and Connectivity

Narrative: Sustainable design recognizes the unique cultural and natural character of a given region. Describe how the design promotes regional and community identity and an appropriate sense of place. Describe how the project contributes to public space and community interaction. Does the project's selected location reduce automobile travel from home, work, shopping, or other frequent destinations? Does the project make use of any alternative local or regional transportation strategies as well as successful efforts to reduce locally mandated parking requirements?

Metrics: Indicate percentage of the building population traveling to the site by public transit (bus, subway, light-rail or train), carpool, bicycle or on foot. Please indicate in the narrative whether there are company transportation policies and incentives, and efforts made to provide a quality experience for those using transportation alternatives (enhancements to bikeway or pedestrian streets, etc.)

AND: Divide the total number of parking spaces available by the total building population (occupants and visitors). Parking spaces that are dedicated to the building use but not part of the building project must be counted. Please indicate in narrative if project is

successful in providing fewer parking spaces than zoning requirements through proactive measures.

Percent of building population using transit options other than the single occupancy vehicle: _____ %

Number of parking spaces per person: _____

Top Ten Measure 3: Land Use and Site Ecology

Narrative: Sustainable design reveals how ecosystems can thrive in the presence of human development. Describe how the development of the project's site responds to its ecological context. How does the site selection and design relate to ecosystems at different scales, from local to regional? How does the development of the immediate site and its buildings relate to a larger master plan and/or land use guidelines for the area?

Describe the landscape design and the creation, re-creation or preservation of open space, permeable groundspace, and/or on-site ecosystems. Briefly describe any strategies for habitat creation and regionally appropriate planting. (Water will be addressed elsewhere.)

Describe any density or land use assessments and objectives. Is the site rural, suburban or urban, brownfield or other previously developed land, infill or greenfield? (Or can its land use be best characterized in other terms?) How does the project address sustainable land use practices within its given context?

Top Ten Measure 4: Bioclimatic Design

Narrative: Sustainable design conserves natural resources and maximizes human comfort through an intimate connection with the natural flows and cycles of the surrounding bioclimatic region. Describe how the building responds to these conditions through passive design strategies. What are the most important issues to address for your climate and building type? Describe your site analysis and how the building footprint, section, orientation, and massing respond to this analysis and to regional and local climate conditions, the sun path, prevailing breezes, and seasonal and daily cycles. Discuss design strategies and energy conserving techniques that reduce or eliminate the need for active systems or mechanical solutions. Describe how passive ventilation and solar design strategies shaped the building.

Top Ten Measure 5: Light and Air

Narrative: Sustainable design creates and maintains a comfortable interior environment while providing abundant daylight and fresh air. Outline design strategies that create a healthful and productive indoor environment through daylighting, lighting design, ventilation, indoor air quality, view corridors, and personal control systems. Describe how the project's design enhances connections between indoors and outdoors. Provide drawings or diagrams to illustrate these strategies.

Metrics: Identify the percentage of the total building area that uses daylight as the dominant light source during daylight hours (with electric lights off or dimmed below 20%). This calculation should include all areas of the building, including stairways, restrooms, corridors, etc. Identify the percentage of the total building area that can be adequately served by

natural ventilation (with all HVAC systems shutdown) for all or part of the year.

Percent of total building area that is daylit: _____

Percent of building that can be ventilated or cooled with operable windows: _____

Top Ten Measure 6: Water Cycle

Narrative: Water is an essential resource for all life on earth. Describe how building and site design strategies conserve water supplies, manage site water and drainage, and capitalize on renewable sources (such as precipitation) on the immediate site. Outline water-conserving landscape and building design strategies, as well as any water-conserving fixtures, appliances, and HVAC equipment. List water reuse strategies for rainwater, graywater, and/or wastewater.

Metrics: What percentage of precipitation from a typical (regularly occurring in spring/summer/fall) storm event falling on the site is retained and infiltrated/recharged on-site? Naturally occurring storm water flows due to topography and soils inherent to the pre-development conditions on the site (unaffected by development) can be deducted from this calculation.

AND: This calculation must include all water use inside and outside of the building (e.g., plumbing fixtures, appliances, HVAC equipment, landscape irrigation, etc.). Potable water is defined as water that is extracted from municipal supply, wells or irrigation ditches. Reclaimed graywater and harvested rainwater should not be deducted for this calculation, but note the percentage of reclaimed water used and note the source in the narrative. Please describe water conserving strategies used and projected water savings in the narrative.

AND: If wastewater is re-used on site, rather than discharged to municipal treatment systems or conventional septic systems, identify the portion of wastewater that is reused on site.

Precipitation managed on site: _____ %

Total water used indoors: _____ gal/yr

Total water used outdoors: _____ gal/yr

Percent of total water from reclaimed sources. ____%

Percent wastewater reused on-site: _____ %

Top Ten Measure 7: Energy Flows and Energy Future

Narrative: Good design of building mechanical and electrical systems and integration of those systems with passive design strategies is essential for conserving natural resources and improving building performance. Describe how the design of building systems contributes to energy conservation, reduces pollution, and improves building performance and comfort. Describe techniques for integrating these systems with other aspects of building design. Describe effective use of controls and technologies, efficient lighting strategies, and any on-site renewable energy systems.

Sustainable design carefully considers the long-term impact of current decisions in order to protect quality of life in the future. Describe how your project responds to the on-going

reduction and possible loss of fossil fuels. Does the project employ or encourage alternative energy sources? Describe strategies to reduce peak electrical demand through design, programming, use patterns, equipment selection, HVAC / lighting controls, and on-site energy generation. Describe how the building or parts of the building could function in a blackout (operable windows and daylight / independent power for life-safety etc.).

Metrics: Use the Environmental Protection Agency's (EPA) Energy Star Target Finder tool and enter your score here. (Note that a limited number of building types are available for this analysis.) Use actual utility meter or billing data whenever possible. Go to:

www.energystar.gov/index.cfm?c=new_bldg_design.bus_target_finder

EPA Performance Rating _____

For residential projects, if you used the HERS rating system, enter your score here. Go to:

www.energystar.gov/index.cfm?c=new_homes.hm_verification

HERS Performance Rating _____

Determine percentage of annual energy cost savings achieved with the design, as compared to a minimally code compliant base model. Use ASHRAE 90.1-2004, or the local code/standard, whichever is more stringent. Other, more stringent codes may be used as a baseline. However, the alternate code must be identified (including year of issue), and the calculation method (e.g., DOE-2 energy modeling, utility meter data, etc.) must be described. Also provide a PDF of the energy calculations (energy model summary, LEED energy sheet, Title 24 analysis, or other.) Use the Supplemental Narrative field below to provide details on your base case and energy model

Percent total energy savings: _____

Provide the requested detailed information to the extent possible. Note that total energy (consumption) includes all purchased and site generated energy, and refers to all related loads including HVAC, lighting, and plug loads. Square footage (sf) refers to gross square footage. Provide building "standard design" or "base case" from building energy model.

	Base Case	Actual	
Total annual energy:	_____	_____	Btu/sf/yr
Total annual energy by fuel:			
Electricity	_____	_____	Btu/sf/yr
Natural Gas	_____	_____	Btu/sf/yr
Other (Specify)	_____	_____	Btu/sf/yr
Heating:	_____	_____	Btu/sf/yr
Cooling (If Necessary):	_____	_____	Btu/sf/yr

Cooling capacity: _____ sf/ton

Lighting Load Connected: _____ W/sf

Lighting Load after Controls _____ W/sf
(estimate used in energy model):

Plug Load (estimate used in energy model): _____ W/sf

AND: Identify peak electrical demand per net square footage of building area (subtract mechanical space and loading docks), and identify the extent to which you have reduced peak power demands through demand side management and renewable energy generation.

AND: What percentage of total annual energy usage for the facility is provided by on-site renewable energy sources? Identify the mix from the following list: PV, solar thermal, wind, micro-hydro, biomass (define) electricity, biomass thermal, geothermal, biogas (define), electricity, passive solar, others.

AND: What portion of the total annual energy usage for the facility is generated from grid supplied renewable sources that meet the Center for Resource Solutions (CRS) Green-E requirements? Please identify the sources used and the proportion from each source.

Base Case

Design Case

Identify watt per net SF peak electricity demand _____ W/sf

Percent on-site renewable energy generation _____

Percent grid-supplied renewable energy _____

Top Ten Measure 8: Materials and Construction

Narrative: The careful selection of materials and products can conserve resources, reduce impacts of harvesting, production, and transportation, improve building performance, and enhance occupant health and comfort. Describe the most important selection criteria, considerations, and constraints (such as optimizing health, durability, maintenance, and energy use, and/or reducing the impacts of extraction, manufacturing, and transportation) for materials or building assemblies for your project? What were the most important considerations in developing the building envelope? What were the most important material or building assembly decisions or selections (no more than 3) and how did they meet the criteria? Include consideration given to impacts on the environment over the full life cycle and the results of life cycle assessment if available. Describe any materials that are part of a "green lease" program. Describe construction waste reduction and any strategies to promote recycling during occupancy. (<200 words)

Top Ten Measure 9: Long Life, Loose Fit

Narrative: Sustainable design seeks to maximize ecological, social, and economic value over time. Describe how the project's design creates enduring value through long-term

flexibility and adaptability. Why is this project likely to continue thriving far into the future? Identify the anticipated service life of the project, and describe any components designed for disassembly. Describe materials, systems, and design solutions developed to enhance versatility, durability, and adaptive reuse potential. Describe efforts to “right size” the project and to reduce unnecessary square footage.

Top Ten Measure 10: Collective Wisdom and Feedback Loops.

Narrative: Sustainable design recognizes that the most intelligent design strategies evolve over time through shared knowledge within a large community. Clearly and specifically describe how your design process enhanced the ultimate performance and success of the building. How did collaborative efforts between the design team, consultants, client, and community contribute to success?

What lessons were learned during the design, construction, and occupation of the building? If starting over today, how would your approach or emphasis change? Identify efforts to document and share these lessons with the larger community. Describe commissioning and any on-going monitoring of building performance and occupant satisfaction. How do (or will) these contribute to building performance, occupant satisfaction, or design of future projects? (<200 words)

AIA COTE TOP TEN GREEN PROJECT AWARD RECIPIENTS

The AIA COTE Top Ten Green Project Awards have honored many leading efforts in sustainable design. Submissions are juried based on a series of measures of sustainable design (land use, site ecology, community design and connections, water use, energy performance, energy security, materials and construction, light and air, bioclimatic design, and issues of long life and loose fit) and supporting metrics of performance.

1997
William McDonough + Partners
The ENSAR Group Inc.
Susan Maxman Architects
Burt Hill Kosar Rittelmann Associates
Design Harmony
Dougherty + Dougherty
Croxton Collaborative Architects
Donald Watson, FAIA
Thompson Ventulett Stainback & Associates
Innovative Design
1998
GreenVillage Co.
WLC Architects Inc.
Jones Studio Inc.
Osborn Sharp Architects
Thompson Ventulett Stainback & Associates
Miller/Hull Partnership
Pratt/Whitelaw Architects Inc.
Hellmuth, Obata + Kassabaum Inc.
Tanner Leddy Maytum Stacy Architects
BSE International
1999
Conservation Consultants and Breen Building Services
Denver Urban Renewal Authority and Affordable Housing Development Corporation
Herbert S. Newman & Partners PC
Stewart & Stewart, Rosser Babrap with Roger Preston + Partners
BNIM Architects
SHW Group Inc.
Hellmuth, Obata + Kassabaum Inc.
Gastinger Walker Harden Architects
Van der Ryn Architects
Mithun Partners Inc.
2000
Miller/Hull Partnership
Matsuzaki Wright Architects Inc.
Siegel & Strain Architects
LHB Architects and Engineers
Marc Rosenbaum PE

Overland Partners
Stein White Architects
L. Robert Kimball Associates
LHB Architects and Engineers
Hellmuth, Obata + Kassabaum Inc.
2001
Pei Cobb Freed & Partners Architects LLP
Leger Wanaselja Architecture
Marketplace Architects
Architects: SmithGroup
Mithun Architects + Designers + Planners
Leddy Maytum Stacy Architects
Hellmuth, Obata + Kassabaum Inc.
L. D. Astorino Companies
Jones & Jones Architects and Landscape Architects
National Park Service, Denver Service Center
2002
Sarah Nettleton Architects
Mithun Architects + Designers + Planners
SMWM
William McDonough + Partners
Hellmuth, Obata + Kassabaum Inc.
RDG Bussard Dikis
Hellmuth, Obata + Kassabaum Inc.
Siegel & Strain Architects
CTG Energetics
Tom Bender, Architect
2003
450 Architects
Farr Associates Architecture and Urban Design
Pugh Scarpa Kodama
Susan Maxman & Partners Ltd.
Miller Hull Partnership LLP
Integrated Architecture
Arkin Tilt Architects
Hellmuth, Obata + Kassabaum Inc.
Randall Stout Architects
Siegel & Strain Architects
2004
Cesar Pelli & Associates
Busby + Associates Architects
Esherrick Homsey Dodge & Davis
Behnisch, Behnisch & Partner
Maya Lin Studio and Cybul & Cybul Architects
Krueck & Sexton Architects
Fields Devereaux Architects & Engineers
Miller Hull Partnership
Robert A. M. Stern Architects

William McDonough + Partners
2005
Arkin Tilt Architects
Bohlin Cywinski Jackson
Croxton Collaborative Architects and Gould Evans
David Gardner Gannon Pope and Bruce Lindsey
LZT Architects
Mahlum Architects
Mithun Architects + Designers + Planners
Polshek Partnership Architects
Rob Wellington Quigley

SBSE RETREAT PROBES THE INTEGRATION OF SUSTAINABLE DESIGN EDUCATION INTO BEGINNING DESIGN STUDIOS

Alex Wilson, executive editor of Environmental Building News, was a special guest at the 2005 SBSE retreat and provided this report:

The June 2005 retreat of the Society of Building Science Educators (SBSE) in Savannah, Ga., tackled the question of how first-year design studio courses at architecture schools can more effectively integrate teaching about environmental design topics. Participants in this annual retreat listened to—and participated in—dynamic presentations by some of the leading thinkers in sustainable design education, including Mary Guzowski of the University of Minnesota, Mark DeKay of the University of Tennessee, Gary Coates of Kansas State University, author Ed Allen of Cambridge, Mass., Virginia Cartwright and John Reynolds of the University of Oregon, and Bruce Haglund of the University of Idaho.

According to James Wasley, president of SBSE and associate professor of architecture at the University of Wisconsin-Milwaukee, the design studio is “the heart and soul” of an architecture student’s educational experience. He argues that addressing ecological literacy early on for design students “means that it will be part of the core, not layered on in later years.” This is not always the norm in architecture schools. Often, students aren’t exposed to environmental technology until the middle years of the curriculum.

There seemed to be universal agreement among participants at the retreat that addressing environmental technology early on in the curriculum was critical. Strategies for doing that are widely varying, though, and much of the program illustrated those differences. Some professors described hands-on design exercises that capture students’ excitement and spawn their creativity at the outset. David Lee Smith, from the University of Cincinnati, for example, uses an involved design exercise in which each student creates a musical instrument out of a discarded appliance, to inspire creative thinking about design solutions in a way that is both engaging and fun. The success stories that were described at the retreat demonstrated the tremendous creativity that can be found at some of the nation’s leading architecture schools and left participants with a feeling of optimism that, at least at some architecture schools, we’re on the right track.

WEB SURVEY REPORT

Part I: Prominent Themes

Each course or program described by an architecture program as pertaining to sustainable design or ecological issues is identified to focus on one of the following: Site/Land, Studio, Daylighting, Energy Systems, Integrated Design Process, LEED, Materials and Community Involvement.

Part II: Curriculum Information by Program

Each accredited architecture program in the United States is listed along with the following information: type of curriculum information available online, amount of curriculum information related to sustainable design, key courses related to ecological literacy, key programs related to ecological literacy, and key faculty members teaching ecological literacy. Further descriptions are included when necessary to explain a course or program.

Part III: Research Method

Description of the questions, tools, and processes employed to execute this project.

Part I: Prominent Themes

The following abbreviations will be used for each of the Prominent Themes in Part II:

- SITE/LAND (S/L)
- STUDIO (S)
- DAYLIGHTING (D)
- ENERGY SYSTEMS (E)
- INTEGRATED DESIGN PROCESS (I)
- LEED (L)
- MATERIALS (M)
- COMMUNITY INVOLVEMENT (CI)
- OTHER (O)

The majority of courses and programs identified in this study were found to be related to Energy Systems. In addition, evidence showed that many programs offer some form of the Site/Land or Community Involvement approaches. Conversely, the more specific topics of Daylighting, Integrated Design Process, LEED and Materials did not prove to be consistently evident in the curriculum information collected.

Part II: Curriculum Information by Program

ANDREWS UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Sustainable Design Studio (S)
Environmental Technology II (E)

ARIZONA STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Building Systems I (E)
Building Environmental Science (E)
Daylighting Design (D)
Passive Heating and Cooling (E)
Building Energy Efficiency (E)

AUBURN UNIVERSITY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Low

Courses: Environmental Controls (E)

Programs: Rural Studio (CI)
Urban Studio (CI)

BALL STATE UNIVERSITY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Environmental Systems I (E)

Programs: Center for Energy Research/Education/Service (CI)
Clustered Academic Minors in Environmentally Sustainable Practices (O)

BOSTON ARCHITECTURAL CENTER

Information Available Online: school catalog

Amount of Sustainable Design Information: None

Courses: Technology and Management sequence

CALIFORNIA COLLEGE OF THE ARTS

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Building Technology: Environmental Control Systems (E)

CALIFORNIA POLYTECHNIC STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Environmental Control Systems I (E)
Environmental Control Systems II (E)
Climatic Determinants of Building Design (S/L)

Programs: Sustainable Environments Minor (O)
Renewable Energy Institute (E)

Faculty: M. McDonald, AIA

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environmental Controls (E)
Energy Conservation (E)
Solar Design Application in Architecture (E)

CARNEGIE MELLON UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Materials & Assemblies (M)
Architecture Design Studio: Site (S)
Site Engineering, Foundations & Landscape (S/L)
Environment I: Climate & Energy in Buildings (E)
Environment II: Acoustics & Light (E)
Environment III: Mechanical Systems (E)
Architecture Design Studio: Systems Integration (S)
Advanced Building Systems (I)
Urban Design (S/L)
Architectural Design in the Urban Context (S)

Programs: Center for Building Performance Diagnostics (E)

Faculty: V. Hartkopf, R.A., PhD, S. Lee, AIA, V. Loftness, FAIA, D. Lewis, FAIA

THE CATHOLIC UNIVERSITY OF AMERICA

Information Available Online: required course listing

Amount of Sustainable Design Information: None

Courses: Environmental Design I & II

CITY COLLEGE OF CUNY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Construction Technology I (M)

CLEMSON UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Collaborative Studio III (S)
Architectural analysis and design problems focusing on understanding the context of architecture. Specific investigation of the relationship between buildings and the cityscape and landscape.
Energy In Architecture (E)

COLUMBIA UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Low

Courses: Enclosures & Environments I (E)

THE COOPER UNION

Information Available Online: curriculum listing

Amount of Sustainable Design Information: None

Courses: Environmental Technology I & II

CORNELL UNIVERSITY

Information Available Online: curriculum listing

Amount of Sustainable Design Information: Mid

Courses: Environmental Controls II: Mechanical and Passive Solar Systems (E)

DREXEL UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Studio 4-1 (S)

Investigates the design relationship between the man-made and the natural environment in a study of large scale site design and building development in relation to natural forces.

Studio 4-3 (S)

Addresses architectural problems with specific environmental and site restraints and criteria. Issues of sustainable design will also be explored.

Energy and Architecture (E)

DRURY UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Low

Courses: Environmental Systems I (E)

Environmental Systems II (E)

FLORIDA AGRICULTURAL AND MECHANICAL UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environmental Technology II (E)

Vital Signs (I)

FLORIDA ATLANTIC UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Site Planning & Engineering (S/L)

FLORIDA INTERNATIONAL UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Design Theory (S/L)

Graduate Design II (S)

Programs: Southeast Environmental Research Center (CI)

FRANK LLOYD WRIGHT SCHOOL OF ARCHITECTURE

Information Available Online: curriculum description

Amount of Sustainable Design Information: High

Courses: Site & Environmental Design Core Area (S/L)

GEORGIA INSTITUTE OF TECHNOLOGY

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Environmental Systems & Design Integration I (E)

Environmental Systems & Design Integration II (E)

Construction Technology & Design Integration II (S/L)

HAMPTON UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Architectural Ecology (S/L)

HARVARD UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environmental Technologies in Building: Climate & Thermal Behavior (E)
Energy, Technology & Building (E)

Faculty: M. Addington

HOWARD UNIVERSITY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Introduction to Environmental Systems I (E)
Principles of Site Design (S/L)

ILLINOIS INSTITUTE OF TECHNOLOGY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Energy Conscious Design I & II (E)

IOWA STATE UNIVERSITY

Information Available Online: curriculum listing

Amount of Sustainable Design Information: None

Courses: Environmental Forces in Architecture

JUDSON COLLEGE

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Environmental Technology I (S/L)

KANSAS STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environmental Systems in Architecture I (E)

KENT STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environmental Technology I (E)
Environmental Technology III: The Secret Life of Buildings (E)

LAWRENCE TECHNOLOGICAL UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Environmental Systems I (E)
Passive Solar Design Strategies (E)
Allied Design Studio: Sustainable Architecture (S)

LOUISIANA STATE UNIVERSITY

Information Available Online: curriculum listing

Amount of Sustainable Design Information: None

Courses: Environmental Control Systems

LOUISIANA TECH UNIVERSITY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Building Systems II (E)
Architectural Design II (S)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Building Technology Laboratory (E)
Fundamentals of Energy in Buildings (E)
Daylighting in Buildings (D)

Programs: Alliance for Global Sustainability (CI)

Faculty: L. Glicksman, M. Andersen

MIAMI UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Low

Courses: Environmental Systems (E)

MISSISSIPPI STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Site Planning for Architects (S/L)
Passive Building Systems (E)

MONTANA STATE UNIVERSITY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Issues in Sustainability (O)
Environmental Controls I (E)

Programs: Community Design Center (CI)

MORGAN STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Low

Courses: Architectural Technology III (E)

NEW JERSEY INSTITUTE OF TECHNOLOGY

Information Available Online: curriculum description

Amount of Sustainable Design Information: Mid

Courses: Landscape Architecture (S/L)

NEWSCHOOL OF ARCHITECTURE

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Energy Fundamentals (E)

NEW YORK INSTITUTE OF TECHNOLOGY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Site Planning (S/L)
Landscape Design (S/L)
Energy Conservation (E)

Programs: Energy Management concentration (E)

NORTH CAROLINA STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Ecological Design (O)
Natural Systems and Architecture (E)

NORTH DAKOTA STATE UNIVERSITY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Low

Courses: Environmental Control Systems I (E)

NORTHEASTERN UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Low

Courses: Environmental Systems (E)

NORWICH UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Introduction to Passive Environmental Systems (E)

THE OHIO STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Passive Solar Energy I & II (E)
Mechanical Systems in Architecture (E)

OKLAHOMA STATE UNIVERSITY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Environmental Control (E)
Sustainability Issues in Architecture (O)

PARSONS SCHOOL OF DESIGN (Candidate School)

Information Available Online: studio descriptions

Amount of Sustainable Design Information: Low

Courses: Architecture Design III: Land and Artifact (S)

THE PENNSYLVANIA STATE UNIVERSITY

Information Available Online: curriculum description

Amount of Sustainable Design Information: Low

Courses: Architectural Environmental Control Systems (E)

PHILADELPHIA UNIVERSITY

Information Available Online: undergraduate bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Building Technology II (M)
Environmental Controls II (E)

POLYTECHNIC UNIVERSITY OF PUERTO RICO

Information Available Online: course descriptions

Amount of Sustainable Design Information: (Mid)

Courses: Site Planning (S/L)

Advanced Design II (S)

PRAIRIE VIEW A&M UNIVERSITY

Information Available Online: select course descriptions

Amount of Sustainable Design Information: Low

Courses: Environmental Systems (E)

Programs: Community, Urban and Rural Enhancement Service (CI)

PRATT INSTITUTE

Information Available Online: curriculum description

Amount of Sustainable Design Information: Mid

Courses: Site Design (S/L)

Energy-Conscious Architectural Design Applications (E)

PRINCETON UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Energy and Form (E)

Environmental Engineering of Buildings (E)

Faculty: H. Brown; D. Nall; M. Raman

RENSSELAER POLYTECHNIC INSTITUTE

Information Available Online: select course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environmental Systems (E)

Advanced Environmental Systems (E)

Programs: The Lighting Research Center (D)

Faculty: S. Van Dessel, W. Kroner

RHODE ISLAND SCHOOL OF DESIGN

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Mechanical: HVAC & Plumbing (E)

Faculty: D. Tidwell

RICE UNIVERSITY

Information Available Online: curriculum listing

Amount of Sustainable Design Information: Low

Courses: Building Climatology (E)

ROGER WILLIAMS UNIVERSITY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Site and Environment (S/L)

Sustainable Paradigms (O)

SAVANNAH COLLEGE OF ART AND DESIGN

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Sustainable Design (O)

Environmental Control I (E)

Landscape Design (S/L)

SOUTHERN CALIFORNIA INSTITUTE OF ARCHITECTURE

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Hardtech: Intro to Environment and Climate (S/L)
 Hardtech: Smart, Sustainable, Emerging Technologies (I)

SOUTHERN POLYTECHNIC STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Low

Courses: Environmental Technology I (S/L)
 Environmental Technology II (E)

SOUTHERN UNIVERSITY AND A&M COLLEGE

Information Available Online: course descriptions

Amount of Sustainable Design Information: Low

Courses: Environmental Control Systems (E)
 Site Planning and Landscape Architecture (S/L)

SYRACUSE UNIVERSITY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Building Systems Design I (E)
 Reading the Landscape (S/L)
Programs: Community Design Center (CI)

TEMPLE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Site Investigations (S/L)
 Energy and Building Design (E)
Programs: Vital Signs (E)

TEXAS A&M M UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Energy Conservation in Residential Architecture (E)
 Energy & Architecture Design (E)
 Energy Optimization in Building Design (E)
 Environmental Control Systems (E)
Programs: Energy Systems Laboratory (E)
 Day lighting and Energy Laboratory (D)

TEXAS TECH UNIVERSITY

Information Available Online: curriculum listing

Amount of Sustainable Design Information: Low

Courses: Architecture Site Planning (S/L)

TULANE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Natural Landscape and Built Form (S/L)
 Structures/Technology III (E)
 Structures/Technology IV (E)

Sustainability & Tectonics (M)
Faculty: J. Klingman

TUSKEGEE UNIVERSITY

Information Available Online: curriculum description
Amount of Sustainable Design Information: Low
Programs: Solar Home

UNIVERSIDAD DE PUERTO RICO

Information Available Online: course descriptions (in Spanish)
Amount of Sustainable Design Information: Mid
Courses: Tecnologia I (E)
Tecnologia II (S/L)

UNIVERSITY AT BUFFALO

Information Available Online: course descriptions
Amount of Sustainable Design Information: Mid
Courses: Landscape/Environment sequence (E)

UNIVERSITY OF ARKANSAS

Information Available Online: course descriptions
Amount of Sustainable Design Information: Mid
Courses: Architectural Technology I, V & VI (E)

UNIVERSITY OF ARIZONA

Information Available Online: course descriptions
Amount of Sustainable Design Information: High
Courses: Building Technology II (I)
Building Technology III (E)
Design Studio III: A Land Ethic (S)
Programs: House Energy Doctor (CI)

UNIVERSITY OF CALIFORNIA, BERKELEY

Information Available Online: course descriptions
Amount of Sustainable Design Information: High
Courses: Design for Sustainability (I)
Natural Cooling and Sustainable Design (E)
Introduction to Energy and Environmental Management (E)
Diagnostics of Land Form, Settlement and Architecture (S/L)

UNIVERSITY OF CALIFORNIA, LOS ANGELES

Information Available Online: curriculum listing
Amount of Sustainable Design Information: Mid
Courses: Building Climatology (E)

UNIVERSITY OF CINCINNATI

Information Available Online: course descriptions
Amount of Sustainable Design Information: Mid
Courses: Environmental Technology I (E)
Site Systems (S/L)

UNIVERSITY OF COLORADO

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Design Studio II (S)
Environmental Control Systems I (E)
Solar & Sustainable Design (E)

UNIVERSITY OF DETROIT MERCY

Information Available Online: curriculum listing

Amount of Sustainable Design Information: Mid

Courses: Building and Energy (E)
Programs: Detroit Collaborative Design Center (CI)

UNIVERSITY OF FLORIDA

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environmental Technology I (E)
Architecture, Energy & Ecology (E)

UNIVERSITY OF HARTFORD (Candidate School)

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Site Planning & Development (S/L)
Advanced Site Planning (S/L)

UNIVERSITY OF HAWAII AT MANOA

Information Available Online: curriculum listing

Amount of Sustainable Design Information: Mid

Courses: Lighting, Power, Acoustical Systems (E)
HVAC & Mechanical Systems (E)
Programs: Asian-Pacific Center for Architecture (CI)
Environmental Control Systems Laboratory Projects (E)

UNIVERSITY OF HOUSTON

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environmental Systems I & II (E)

UNIVERSITY OF IDAHO

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Architectural Site Design (S/L)
Environmental Control Systems (E)
Programs: Idaho Urban Research & Design Center (CI)

UNIVERSITY OF ILLINOIS AT CHICAGO

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Design and Environment (S/L)
Architectural Technology concentration (E)
Landscape Urbanism concentration (S/L)
Programs: City Design Center (CI)

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

Information Available Online: curriculum listing

Amount of Sustainable Design Information: High
Courses: Architecture Design and the Landscape (S/L)
Building Systems and Design Integration (I)
Programs: East St. Louis Action Research Project (CI)
Building Research Council (CI)
CIVITAS Community Design Center (CI)

UNIVERSITY OF KANSAS

Information Available Online: curriculum listing
Amount of Sustainable Design Information: Mid
Courses: Landscape Design (S/L)

UNIVERSITY OF KENTUCKY

Information Available Online: course descriptions
Amount of Sustainable Design Information: High
Courses: Environmental Controls I (E)
Environmental Controls II (E)
Design Studio IV: Ecology and Context (S)
Programs: Building Technology Concentration (E)

UNIVERSITY OF LOUISIANA AT LAFAYETTE

Information Available Online: course descriptions
Amount of Sustainable Design Information: Mid
Courses: Natural Environmental Systems (E)

UNIVERSITY OF MARYLAND

Information Available Online: course descriptions
Amount of Sustainable Design Information: High
Courses: Technology I (I)
Solar Energy Applications for Buildings (E)
Design and Energy (E)
Programs: National Center for Smart Growth (CI)

UNIVERSITY OF MIAMI

Information Available Online: course descriptions
Amount of Sustainable Design Information: Mid
Courses: Architecture and the Environment (S/L)
Programs: Center for Urban and Community Design (CI)

UNIVERSITY OF MICHIGAN

Information Available Online: course descriptions
Amount of Sustainable Design Information: Mid
Courses: Environmental Technology I (E)
Intro to Urban and Environmental Planning (S/L)
Building Ecology (I)

UNIVERSITY OF MINNESOTA

Information Available Online: curriculum listing
Amount of Sustainable Design Information: Mid
Courses: Environmental Technology I (E)
Environmental and Material Forces in Architecture (E)
Programs: Center for Sustainable Building Research (CI)

UNIVERSITY OF NEBRASKA - LINCOLN

Information Available Online: curriculum listing

Amount of Sustainable Design Information: Mid

Courses: Arch Design: Ecological Context (S)
Day lighting and Energy (D)

UNIVERSITY OF NEVADA, LAS VEGAS

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Design With Climate (E)
Solar Energy Applications in Architecture (E)

UNIVERSITY OF NEW MEXICO

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Site/Environment (S/L)
Environmental Controls I (E)
Programs: Design and Planning Assistance Center (CI)

UNIVERSITY OF NORTH CAROLINA – CHARLOTTE

Information Available Online: curriculum listing

Amount of Sustainable Design Information: Low

Courses: Environmental Control Systems (E)
Architectural Technology concentration (E)
Programs: Charlotte Community Design Studio (CI)

UNIVERSITY OF NOTRE DAME

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Environmental Systems (E)
Environmental Studies (I)
Programs: Downtown Design Center (CI)
Faculty: Crowe, DeFrees

UNIVERSITY OF OKLAHOMA

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Architecture and the Environment (S/L)
Environmental Controls I (E)
Architectural Design/Environmental Factors (I)
Theory of Sustainability (O)
Sustainable Technology (E)
Programs: Graduate program with focus on "Sustainability and Regional Response" (O)

UNIVERSITY OF OREGON

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Climate Analysis for Design (E)
Environmental Control Systems I (E)
Environmental Architecture (I)
Passive Cooling (E)
Solar Heating (E)

Programs: Daylighting (D)
Ecological Design Center (student group) (O)
Energy Studies in Buildings Laboratory (E)
Materials Resource Center (M)

UNIVERSITY OF PENNSYLVANIA

Information Available Online: course descriptions
Amount of Sustainable Design Information: Low
Courses: Environmental Systems I (E)

UNIVERSITY OF SOUTH FLORIDA

Information Available Online: course bulletin/catalog
Amount of Sustainable Design Information: Mid
Courses: Environmental Technology (E)
Programs: Florida Center for Community Design and Research (CI)

UNIVERSITY OF SOUTHERN CALIFORNIA

Information Available Online: course descriptions
Amount of Sustainable Design Information: Mid
Courses: Design for the Thermal and Atmospheric Environment (E)

THE UNIVERSITY OF TENNESSEE

Information Available Online: curriculum listing, elective course descriptions
Amount of Sustainable Design Information: Mid
Courses: Environmental Control Systems (E)
Green Design (O)
Building Energy Analysis (E)

UNIVERSITY OF TEXAS AT ARLINGTON

Information Available Online: course descriptions
Amount of Sustainable Design Information: Mid
Courses: Environmental Control Systems II (E)
Energy Use and Conservation in Architecture (E)

UNIVERSITY OF TEXAS AT AUSTIN

Information Available Online: course descriptions
Amount of Sustainable Design Information: High
Courses: Environmental Controls I (E)
Environmental Controls II (E)
Advanced Design: Climate, Site Design (S)
Programs: Center for Sustainable Development (CI)

UNIVERSITY OF TEXAS AT SAN ANTONIO

Information Available Online: curriculum listing
Amount of Sustainable Design Information: Low
Courses: Construction Materials and Sustainable Technology (M)
Environmental Systems I (E)

UNIVERSITY OF UTAH

Information Available Online: course bulletin/catalog
Amount of Sustainable Design Information: Mid
Courses: Environmental Controls I (E)
Environmental Controls II (E)

Advanced Technology: Sustainable Design (I)

UNIVERSITY OF VIRGINIA

Information Available Online: select course descriptions

Amount of Sustainable Design Information: High

Courses: Building & Climate (E)
Buildings & Climate (E)
Environmental Control Systems & Lighting (E)
Programs: Institute for Environmental Negotiation (CI)
Faculty: W. Sherman

UNIVERSITY OF WASHINGTON

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Passive Environmental Control Systems (E)
Environmental Control Principles (E)

UNIVERSITY OF WISCONSIN - MILWAUKEE

Information Available Online: course descriptions

Amount of Sustainable Design Information: High

Courses: Architecture and Environmental Response (E)
Landscape Architecture (S/L)
Sustainable Architecture Studio (S)
Green Building Design (I)
Programs: Milwaukee Idea Home (CI)

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environment & Building Systems (I)
Building Environmental Systems (E)
Programs: Environmental Systems Laboratory & Research and Demonstration Facility (CI)

WASHINGTON STATE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Site and Landscape Design (S/L)

WASHINGTON UNIVERSITY in St. LOUIS

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Site Planning (S/L)
Programs: Metropolitan Research and Design Center (CI)

WENTWORTH INSTITUTE OF TECHNOLOGY

Information Available Online: course bulletin/catalog

Amount of Sustainable Design Information: Mid

Courses: Site Planning & Landscape (S/L)
Site Engineering & Planning (S/L)
Materials and Methods in Sustainable Design (M)

WOODBURY UNIVERSITY

Information Available Online: curriculum listing

Amount of Sustainable Design Information: Mid

Courses: Design Studio 2B: Site Orders (S)
Environmental Systems (E)

Programs: Hollywood Center for Community Research and Design (CI)

YALE UNIVERSITY

Information Available Online: course descriptions

Amount of Sustainable Design Information: Mid

Courses: Environmental Systems in Buildings (E)
Simulation and High Performance Green Design (E)

Programs: Yale Building Project (CI)

Part III: Research Method

Surveyed web sites of all 115 accredited (and candidate) architecture programs in the United States. This investigation was first executed by visiting the home page of each specific program directly. If more information was necessary after this initial query, the home page of the entire institution was used as a starting point to search for a course catalog or other administrative tool with useful curriculum information.

Compiled spreadsheet of all attainable information for each program including: type of curriculum information available online, key courses, key programs and key faculty members. In general, courses and programs were identified to some degree, while names of key faculty members were less commonly found online.

After the full survey was complete, executed analysis of the information collected. The objective of this analysis was to investigate the following questions:

- What level of information on sustainable design does the program offer online?
- What are the predominant themes across the curriculum information related to sustainable design?

Using both quantitative and qualitative curriculum information, rated the amount of sustainable design information provided by each program. To rate programs, the following guidelines were employed:

- None* No information about sustainable design is stated or can be inferred by the curriculum information provided.
- Low* Information about programs or courses may imply issues of sustainable design without stating these concepts directly.
- Mid* Information about one to three programs or courses state issues of sustainable design directly.
- High* Information about three or more programs or courses state issues of sustainable design directly.

Among the programs identified as providing a *Low*, *Mid* or *High* amount of sustainable design information within the curriculum, identified predominant themes across the information. The categories of Site/Land, Studio, Daylighting, Energy Systems, Integrated Design Process, LEED, Materials, and Community Involvement were identified and curriculum information was used to match each course to the appropriate grouping.

TEACHING DESIGN THAT GOES FROM CRADLE TO CRADLE

By William McDonough, FAIA

Editor's note: This article originally appeared in the July 23, 2004, issue of the Chronicle of Higher Education. It is reprinted here with permission.

Each year American colleges and universities hand out design degrees by the thousands. Credentials in hand, an army of young architects and urban planners, engineers, and product designers enter the job market and, with a little luck, begin to practice their professions. But what exactly is the “system” within which they are practicing? Have their college educations prepared them to be the designers of the 21st-century world?

These are not merely academic questions. Designers create the human environment. They make the objects we use, the places we live and work, our modes of communication and mobility. Simply put, design matters. And at a moment in our history when the scientific community has warned of some technologies' negative consequences—global warming, water pollution, the loss of biodiversity and natural resources—designers have a crucial role to play in the creation of a more just, healthful, and sustainable world.

Our colleges, by and large, are not preparing design students for that challenge. While design for sustainability is increasingly seen as an important element of both basic and specialized courses, we still have a long way to go. Consider, for example, the 2003 *Metropolis* magazine survey of more than 350 deans, department chairs, and professors on the relevance of sustainability to design education. Although 67 percent of the respondents strongly agreed that sustainability is relevant to their design curricula, only 14 percent said their institutions were developing programs to educate their instructors about sustainable design. When asked how many graduate courses their department offered that included considerations of sustainability, 28 percent said none and 45 percent said they didn't know.

That lack of focus on sustainability, of course, has a profound impact on professional practice. A separate *Metropolis* survey of practicing design professionals, conducted in 2002, found that 70 percent did not feel equipped to do a sustainable-design job.

The impact on our world is profound, as well. Instead of designs for buildings and products and manufacturing systems that effectively use energy and resources and generate a wealth of positive environmental, economic, and social effects, we get designs that reiterate the “take, make, and waste” sensibility of conventional industry. Instead of safe, healthful materials designed for many lifecycles, we get toxic materials designed for a one-way trip to the landfill or incinerator. In short, conventional design tends to diminish the long-term health of human culture and the natural world on which it depends.

We can do much better.

The first step is to define sustainability and good design more clearly. What is it that we intend to teach young architects when we teach them about sustainable design? Typically, sustainability is used as a descriptive term for a range of cultural responses to the environmental and social impacts of economic growth. It is often defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Sustainable design puts that sensibility into practice. Many approaches to “sustainable”

architecture, for example, focus primarily on outlining strategies for building systems that make efficient use of energy and materials. Sustainable land planning and site design emphasize an environmentally responsive use of vegetation, water, and other natural systems. Yet while those strategies represent a marked improvement over conventional practice, they most often rely on minimizing human impact on the environment, striving only to be “less bad.”

And “less bad” is not good enough for our young designers. A reductive approach to design may allow architects and manufacturers to use fewer resources, produce less waste, and minimize toxic emissions, but it does not change the fundamental design paradigm. As a result, many so-called “sustainable” technologies use energy and materials within a conventional, cradle-to-grave system. Although they dilute pollution and slow the loss of natural resources, they don't deal with the design flaws that create waste and toxic products in the first place.

Thankfully, sustainable design is not limited to simply trying to be more efficient. A new approach offers a clear alternative: an ecologically intelligent framework in which the safe, regenerative productivity of nature provides models for wholly positive human designs. Within that framework, every material is designed to provide a wide spectrum of renewable assets. After a useful life as a healthful product, such cradle-to-cradle materials (as opposed to materials designed for a one-way trip from cradle to grave) either replenish the earth with biodegradable matter or supply high-quality resources for the next generation of products. When materials and products are created specifically for use within these closed-loop cycles—the flow of biological materials through nature's cycles and the circulation of industrial materials from producer to customer to producer—businesses can realize both enormous short-term growth and enduring prosperity. As well, we can begin to redesign the very foundations of architecture and industry, creating systems that purify air, land, and water; use current solar income and generate no toxic waste; and use only safe, healthful, regenerative materials. The benefits would enhance all life.

Such a positive agenda can redefine design education. Rather than teach architecture students and designers how to reduce the impact of their work to meet today's environmental standards, we should inspire them with an altogether different assignment: Design industrial and architectural systems for the 21st century that

- introduce no hazardous materials into the air, water, and soil
- measure prosperity by how much we enhance the positive effects of the human footprint
- measure productivity by how many people are gainfully and meaningfully employed
- measure progress by how many buildings have no smokestacks or dangerous effluents
- do not require regulations whose purpose is to stop us from killing ourselves too quickly
- produce nothing that will require future generations to maintain constant vigilance
- generate more energy than they consume
- make every building a life-support system
- celebrate the abundance of biological and cultural diversity and renewable energy

Colleges need to support students who engage in this revolutionary design assignment in the classroom. In the 1970s, when green architecture began to emerge in response to the energy crisis, most design students interested in creating solar-powered buildings found themselves working with faculty members who didn't understand—and didn't want to understand—the principles of ecologically intelligent design. In fact, one of my professors at Yale University, an architect well known for his sophisticated Modernist designs, went as far as to say that “solar energy has nothing to do with architecture.”

Vitruvius would have disagreed. The Roman master's encyclopedic treatise on architecture,

hugely influential in ancient times and again in the Renaissance, contained whole chapters on the profound significance of the sun's movement in relation to the location of rooms, the size of apertures, thermal mass, and so on. A building insensitive to the movement of the sun would have left Vitruvius aghast.

But not the Modernists. Indeed, my professor's rebuttal suggests just how far the Modernist project had divorced architecture from place and from the past. Following Le Corbusier, the Modernist ideal was "one single building for all nations and climates." The house was to be "a machine for living in." No need to understand local energy flows in that paradigm; just add fossil fuels. Style, too, was fiercely ideological, defined by the Bauhaus maxim, "Less is more." Energetically applied, the "less is more" lens had a clarifying effect on architectural theory and practice, but as it calcified into academic rhetoric, its effect in the classroom was ultimately chilling.

And so architecture students, their ideas dismissed by their teachers, often graduated and began to practice ecological design without a suitable aesthetic foundation. The results were less than handsome. Architects who designed solar-powered buildings typically delivered machines for living in with solar collectors on the roof. The devices were crude and utilitarian, and they did not really change the basic Modernist approach: same materials, same generally insensitive relationship to place and history, same ecological illiteracy.

The architecture critic Nikolaus Pevsner wrote that "a bicycle shed is a building" while a cathedral is "architecture." The new solar buildings in the 1970s were seen as bicycle sheds, and, in fact, they were. That cast a shadow over ecological design for years, which meant our colleges were not blessed with a new generation of faculty members capable of helping students pursue aesthetically rich designs that also express ecological intelligence.

The situation has begun to change. It is worth noting that even though only 14 percent of the design educators responding to the *Metropolis* survey said their colleges were developing sustainable-design curricula for instructors, 67 percent saw the relevance of sustainability to design education. Even 10 years ago that number would have been considerably smaller.

Moreover, the work of prominent architects is now demonstrating that ecological design and aesthetic excellence create a wonderful synergy. Consider Norman Foster's designs for the Commerzbank Tower, in Frankfurt; the Reichstag, in Berlin; and London's new city hall, all of which combine a formally rich design sensibility with a keen sensitivity to the larger ecological context of architecture. As *The New York Times* has reported, for decades Foster has been "mining the expressive potential of low-energy construction" to create buildings "as elegant as any in the world."

In the Commerzbank Tower, Foster created a 60-story atrium at the center of the building and built multistory sky gardens, replacing air-conditioning with natural ventilation. The Reichstag's domed assembly hall is also naturally ventilated, and its three-story mirrored sun reflector sends light down into the Bundestag. The spherical shape of London's city hall reduces the buildup of solar heat, keeping the building cool with far less energy than most structures of its size would require. As described in the *Times*, it should put to rest any lingering notion that an ecologically intelligent building is destined to be a bicycle shed: "In the gorgeous Assembly Chamber, an oculus of unusually transparent water-white glass (regular glass has a slight greenish tint) opens the chamber northward through a diagonal fretwork of tubular-steel supports to a splendid vista of the Tower of London and London Bridge. The room is bathed in light as limpid and serene as a Vermeer painting. (This is also part of the low-energy scheme: the Assembly need switch on the

lights only for nighttime and televised events.)"

Now when students express interest in ecological design, not only is there no reasonable argument for dismissing their enthusiasm, but also there are inspiring examples that they can emulate.

But while that is a salutary change in the general atmosphere of design education, it is not enough to power a true transformation. The creativity unleashed by our new design assignment—which is really a lifetime design assignment—can be sustained in the classroom only when the classroom itself embodies the same values. As David W. Orr, professor and chair of the environmental-studies program at Oberlin College, has pointed out, architecture always serves a pedagogical function: The design of buildings teaches and reinforces how we use resources, how we relate to nature, and what our culture values. It is absurd, he believes, to teach young people about the world—especially young people interested in intelligently redesigning the world in buildings that devour fossil fuels, have no relationship to their surroundings, are generally uncomfortable and uninspiring, and express ignorance of how nature works.

To redress the shortcomings of the contemporary classroom, Orr worked with my architecture firm, William McDonough + Partners, to design the Adam Joseph Lewis Center for Environmental Studies at Oberlin, which teaches ecological intelligence rather than ecological illiteracy. Drawing the bulk of its power from solar energy, the Lewis Center already has exceedingly low energy demands, and with additional solar panels it may one day produce more energy than it needs to operate. Its other sustainable-design features include geothermal wells, for heating and cooling; daylight and fresh-air delivery throughout; an extended botanical garden that recovers nutrients from circulating water on-site; and a landscape that offers gathering spaces, instructional gardens and orchards, and a newly planted grove of native trees that has begun re-establishing the habitat of the building's location.

The building and its classrooms provide opportunities for learning how nature and human industry can work together, the foundation of ecological literacy. Perhaps the most moving lesson that the building imparts is that the human presence in the landscape can be regenerative. Not simply benign or less bad, but positive, vital, and good. That is not a rhetorical lesson. At Oberlin habits of mind grow out of daily interactions with wind, water, soil, and trees as well as the workings of experimental building and energy systems. Those habits become the skills and knowledge that inform intelligent design.

Learning like this can be integrated into the curricula of many disciplines. Chemists aware of the concerns of sustainability can master the skills necessary to assess the environmental health and safety of industrial and architectural materials. "Green" engineers, who are employed throughout the sustainable-design process, can garner the technical know-how to develop an array of sustainable systems, from solar-collection technology to chemical-recycling processes that allow the reuse of valuable materials. MBA students who understand the value of design for the "triple top line"—the creation of ecological, economic, and social value through cradle-to-cradle product development—will generate extraordinary value for shareholders of the companies they go on to lead.

Although it will take time for colleges to change the way they construct buildings, they can begin now to revamp curricula so that they reflect the interdisciplinary values of a sustainable world. When young professionals knowledgeable about good sustainable design begin to practice, they can change the nature of "the possible." Ten years ago if a young architect walked into a firm and said, "I think we can build a green roof," he would have met considerable resistance; there wasn't

a single green roof in North America. Now, however, thousands of architects have seen the multiple successful examples that have not only met budget and time restrictions but have also created a new way of thinking about the relationship between building and landscape. At Ford Motor Company's revitalized River Rouge Manufacturing Center, for example, the Dearborn Truck Plant has a 10.5-acre green habitat on its roof, which effectively filters storm-water runoff and saved millions of dollars in construction costs alone. When a young architect suggests a green roof today, his superiors know that some of the smartest firms are creating successful, cost-effective versions of the same thing.

The very purpose and nature of learning should evolve from what is largely a celebration of human intelligence toward a sensibility that seeks to replace dominion over nature with a more fulfilling relationship between humanity and the natural world. This movement away from simple stewardship and toward a sense of kinship with life—what the biologist E. O. Wilson calls biophilia—is a source of creativity and deep learning. We also find that human beings are profoundly affected for the better by the life-sustaining systems that this design agenda creates.

Our educational institutions, inasmuch as they support and nurture this new sensibility, can be home to the flowering of a 21st century that becomes known for prosperity, beauty, and growth. To achieve a sustaining world, the design assignment for our students in all disciplines could be the same: Seek a delightfully diverse, safe, healthy, and just world with clean air, water, soil, and energy that is economically, equitably, ecologically, and elegantly enjoyed.

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