

Course Number: **ARC 3880 Section 4171**
Course Name: **SUSTAINABLE ARCHITECTURE**

School of Architecture

College of Design, Construction, and Planning

University of Florida

Spring 2015

Credits: 3

Class meets: Monday 10th–11th period and Wednesday 10th period RNK 0225

Instructor: Van (Dr. Vandana Baweja) Office: 242 Arch Email: vbaweja@ufl.edu

Office Hours: Mondays 4:00–5:00 pm and by appointment via email.

GOALS:

- 1) The objective of this course to examine how environmentalism has informed architectural discourses, and how discourses on the built environment and urbanism have impacted environmentalism globally.
- 2) The course will introduce students to the various paradigms of environmentalism, such as: environmental apocalypticism, the limits of resources, environmental health and toxic discourse, environmental justice, sustainability, and urban environmentalism, and how these have impacted architecture and urbanism in the nineteenth and twentieth centuries.
- 3) We will look at Sustainable Architecture as a discursive construct and examine the competing logics of Green buildings.

We will look at environmentalism and sustainable architecture globally with special emphasis on different meanings of sustainable architecture in the global south and the global north. We will begin with the nineteenth century concerns about hygiene and health and its impact on architecture globally. We will examine how environmental health discourses including hygiene, Silent Spring, Sick Building Syndrome, and obesity, shaped architectural debates. We will consider how debates over equity in the third world have impacted how we think of social sustainability in the context of the built environment. We will not only look at architects, but environmental thinkers such as John Muir, Rachel Carson, Gandhi, Stewart Brand, and E. F. Schumacher.

We will look at the work of architects such as Laurie Baker, Bernard Rudofsky, and Hassan Fathy, impacted our thinking of the relationship between architecture and the environment. We will look at how counter cultural communes such Drop City in Colorado and Auroville in India transformed the geodesic dome from a mass produced object into a countercultural symbol. We will study the material and architectural transformations in fast growing economies like China and India, and how these developments have shaped the sustainability debate in the contemporary context.

This course is loosely divided into four chronological sections: the pre-history of environmentalism; Silent Spring and the counter culture of the 1960s; the 1970s OPEC energy crises; and the discourse of sustainability. The course is global in its scope. The stress is on themes in environmental thinking, rather than a strict chronological narrative. The course will introduce students to the pre-history of architectural and urban environmentalism prior to 1960 through the writings of Mahatma Gandhi, Lewis Mumford, Patrick Geddes, Doxiadis, Ian McHarg, Victor Olgay, and Otto Koenigsberger. The second section will comprise readings on the whole earth catalogue, dome cookbooks, counter culture, Appropriate Technology, Laurie Baker, Hassan Fathy, and Buckminster Fuller. The third section will contain readings on the energy crises in the 1970s; the architectural response to the energy crises; solar architects of the 70s such as

Steve Baer, Alexander Pike, and the Vales; and the New Alchemists: John and Nancy Todd. The fourth section will contain readings on sustainability and Green Architecture right up to the present. We will look at the work of Bill Mc Donough, Ken Yeang, Richard Rogers, Rem Koolhaas, Monica Ponce de Leon, and several others.

TEXT BOOK: There is no textbook for this class. There will be electronic readings on Canvas-E-learning. Lecture notes and grades will be posted on Canvas/e-learning on the web at <https://lss.at.ufl.edu/>

CANVAS/ E-learning: The class is operated through Canvas. It is your responsibility to download notes and materials from Canvas from "Files" in a timely manner. Not being able to download the materials from Canvas one night before the exam due to high internet traffic is not an excuse. Not being able to upload your exam on Canvas due to internet troubles is not an excuse. If you are not sure that you were able to submit your assignments and paper on Canvas, please email it to me via Canvas to be sure that you submitted your work by the deadline.

WHAT TO BRING TO THE CLASS: Printouts or electronic copies of the lectures and readings placed on Canvas-E-learning. In addition you will need a laptop or a tablet that will access Canvas to complete in class attendance assignments.

E-MAIL POLICY: Please email me at vbaweja@ufl.edu. If you email me via Canvas, please be sure to check the box that says "deliver message to receiver's UF email." I do not check Canvas mail every day. I check my UF email regularly, unless I am sick or travelling. If you wish to submit a late assignment via email, please email that via Canvas mail. This is because I need an archive of your work on Canvas and it prevents my UF email from reaching its annual memory quota. E-mail is appropriate only for quick messages and replies. You are welcome to e-mail me with *brief* questions or comments (e.g., a request for an appointment, a question that can be answered in a sentence or two). I will answer your messages as I have the opportunity, but cannot guarantee immediate responses. Note also that e-mail messages (particularly last minute e-mail messages) cannot be accepted as fulfilling class obligations or providing excuses for failing to do so.

GENERAL INFORMATION:. The instructor will follow the topics outlined below but these topics are by no means binding as a topic may be changed at any time according to the discretion of the instructor.

ATTENDANCE POLICY: A record of students' attendance will be kept. You are required attend all classes on Monday, and Wednesday. There will be 20 unannounced occasions on which attendance will be assessed through a surprise quiz or a writing assignment. Each of these will be 10 points each. Unless you have a valid documented reason for missing the attendance writing assignment, such as sickness, family emergency, or religious holiday, you will not be given a chance to make it up. You only need to have 20 of these assignments turned in. There will be more than 20 occasions on which attendances will be marked. So, if you have to miss class once or twice due to any reason, you will still have the opportunity to make up your required attendance.

LECTURE NOTES: Part of the lecture notes will be placed on the web as powerpoint presentations. **The lecture notes on Canvas/e-learning will not be complete.** It is strongly recommended that you come to each class and take notes.

MAKE UP EXAMS: Students will be allowed to take exams at times other than the set dates only if extenuating circumstances such as sickness, family emergency, or religious holidays occur and prevent students from taking the exam. **Students must provide proof of this prior to the exam.** If we don't hear from you within 24 hours after the exam, you will not be allowed to take the make up exam. **There will be no make up exams without documented proof.** Requirements for class attendance and make-up exams, assignments, and other work in this

course are consistent with university policies that can be found in the online catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

CLASSROOM ETIQUETTE: Talking to each other and disrupting the class while a lecture is going on violates your fellow students' right to have a good learning experience in the class. If a student must say something to another person or persons besides the instructor, that student is free to leave the room. Students need to be considerate that others must be able to hear the instructor clearly without being disturbed by unnecessary conversations or disruptions. Cell phones and all noise making devices must be turned off during class times as well.

STUDENTS WITH DISABILITIES: Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

ACADEMIC INTEGRITY: UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obliged to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.

MOBILE PHONE POLICY: The use of mobile phones for making phone calls and texting is not allowed in the class. Mobile phones can be used to access Canvas.

LAPTOP AND TABLET POLICY: You may only use these devices to complete attendance or access a reading. Laptops may not be used at other times in the class.

TEACHING PHILOSOPHY: This class will encourage you to think critically and independently about sustainable and its history. I will equip you with several paradigms with which you can comprehend sustainability. The course relies on the role of the student as an active agent in charge of his or her learning. I treat my students with the highest respect. I foster a classroom environment where students feel encouraged and safe to voice their views. I constantly rely on your feedback to improve this class.

INSTRUCTIONAL METHODS: This is an interactive lecture class that relies on student participation to maintain an active dialogue in the class. In addition to lectures, you will have the opportunity to participate in discussion sessions and workshops.

COURSE EVALUATION: Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu>

IMPORTANT PHONE NUMBERS: Phone number and contact site for university counseling services and mental health services: 392-1575, <http://www.counseling.ufl.edu/cwc/Default.aspx>
University Police Department: 392-1111 or 9-1-1 for emergencies

GRADING CRITERIA AND POLICY

1. Exams are not cumulative.
2. **Exams (600 points):** There will be four online take home essay exams of 200 points each. Each exam will comprise 4 questions of 50 points each. If you take all four exams, I will take into account the best three of the four exams. Alternatively, you can skip one

exam. You will have 48 hours to finish the exam. Exams will be open for at least a week, so that you can take it as per your schedule. Once you start the exam, you have 48 hours to finish.

3. **Attendance (200 points):** Calculated through 20 writing assignments or quizzes of 10 points each.
4. **Enviro-Fiction (200 points):** Five group projects of 40 points each. You are expected to present four enviro-fiction projects in groups of 3 to 4.
5. Your grade is not negotiable. Unless there is a mechanical or computational error, I will not increase your grade.
6. Due to university privacy policy grades cannot be discussed over email or phone. You will have to come see me in the office to discuss your grade in person.
7. Extra credit: There is no extra credit in this class.
8. **Your grade: (what you scored out of 600 from exams + what you scored out of 200 from attendance + 200 Enviro-Fiction)/10=your final grade**

GRADING SCALE

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Numeric Grade	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	0-59
GPA	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0

EXAM SCHEDULE	TAKE ANY THREE
■Week 5 B February 3	EXAM ONE
■Week 9 B March 2	EXAM TWO
■Week 13 B March 30	EXAM THREE
■April 25 (after classes end)	EXAM FOUR

WEEKLY OUTLINE

■ Week 1 B INTRODUCTION

Jan. 06:

■Week 2 A ENVIRONMENTAL DESIGN IN 19TH C

Jan. 11

ATT1

■Chapter 2: Environmental Management 18-28

■Chapter 3: A Dark Satanic Century 29-44

In Banham, Reyner. *The Architecture of the Well-Tempered Environment*. London; Chicago: Architectural Press; University of Chicago 1973.

MODERN ARCHITECTURE AND ENVIRONMENTAL DESIGN

■Chapter 4: The Kit of Parts Heat and Light 45-70

■Chapter 5: Environments of Large Buildings 71-92

In Banham, Reyner. *The Architecture of the Well-Tempered Environment*. London; Chicago: Architectural Press; University of Chicago 1973

POST-WAR ENERGY CONSUMPTION

■Chapter Two: From the Solar Home to the All-Electric Home pp45-86
In Rome, Adam Ward. *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism*, Studies in Environment and History. Cambridge; New York: Cambridge University Press, 2001.

■Week 2 B
Jan. 13
ATT 2

GANDHI'S ENVIRONMENTAL VISION

■ "Mahatma Gandhi and the Environmental Movement." pp153-168.
In Guha, Ramachandra, and J. Martinez-Alier. *Varieties of Environmentalism: Essays North and South*, Delhi; New York: Oxford University Press, 1998.

■Week 3 A
Jan. 18

NO CLASS MARTIN LUTHER KING DAY

■Recommended that you watch this film on your own: GANDHI

■Week 3 B
Jan. 20
ATT 3

OBESITY AND THE BUILT ENVIRONMENT

■Reid, Tom Schmid, Richard Killingsworth, Amy Zlot, and Stephen Raudenbush. "Relationship Between Urban Sprawl and Physical Activity, Obesity, and Morbidity." In *Urban Ecology*, 567-582. Springer US, 2008.

■Week 4 A
Jan. 25
ATT 4

THE TOXIC ENVIRONMENT

■Hynes, H. 1985. "Ellen Swallow, Lois Gibbs and Rachel Carson: Catalysts of the American environmental movement". *Women's Studies International Forum*. 8, no. 4: 291-298

SICK BUILDING SYNDROME

■Murphy, Michelle. *Sick building syndrome and the problem of uncertainty: environmental politics, technoscience, and women workers*. Durham [N.C.]: Duke University Press, 2006.

■Week 4 B
Jan. 27
ATT 5

BUCKY FULLER: DYMAXION HOUSE AND GEODESIC DOME

■Anker, Peder. "Buckminster Fuller as Captain of Spaceship Earth." *Minerva* 45, no. 4 (December, 2007): 417-434.

■Massey, Jonathan. "Buckminster Fuller's Cybernetic Pastoral: The United States Pavilion at Expo 67'." *The Journal of Architecture* 11, no. 4 (2006): 463-483.

Recommended for further study

■Mrkonjic, Katarina. "Environmental Aspects of Use of Aluminium for Prefabricated Lightweight Houses: Dymaxion House Case Study " *Journal of Green Building* 2, no. 4 (Fall 2007): 130-136.

■Nicholas Grimshaw and Partners. *The Architecture of Eden*. London: Eden Project Books in association with Grimshaw, 2003.

■Week 5 A
Feb. 1
ATT 6

COUNTERCULTURE COMMUNES: DROP CITY AND AUROVILLE (Lecture plus two groups EF)

■"Chapter 6: Revolutionaries or Drop Outs." 151-184
In Scott, Felicity. *Architecture or Techno Utopia*, Cambridge: MIT Press, 2007.

- Sadler, Simon. "Drop City Revisited." *Journal of Architectural Education* Vol. 59, no. 3 (February 2006): 5-16.
- Kapoor, Rakesh. "Auroville: A Spiritual-Social Experiment in Human Unity and Evolution." *Futures* 39 (2007): 632–643.
- Kundoo, Anupama. "Auroville: An Architectural Laboratory." *Architectural Design* 77, no. 6 (November/December 2007): 50-55.
- Sorkin, Michael. "Utopia Now: India Is Magnet for Planned Communities, from the Spiritualistic to the Capitalistic." *Urban Land* 61, no. 11-12 (2002): 108-113.

■Week 5 B **NO CLASS EXAM 1** No Attendance
Feb. 3

■Week 6 A **WHOLE EARTH CATALOGUE**
Feb.8
ATT 7
 ■Kirk, Andrew, "Appropriating Technology: The Whole Earth Catalog and Counterculture Environmentalism." *Environmental History* 6, no. 3 (Jul 2001): 374-394.
 ■Sadler, Simon, "An Architecture of the Whole." *Journal of Architectural Education* 61, no. 4, (May 2008): 108-129.
 ■Browse through the Portola, Institute. *Whole Earth Catalog: Menlo Park, Calif., Portola Institute, 1968.*

■Week 6B **SMALL IS BEAUTIFUL**
Feb. 10
ATT 8
 1.1. The problem of Production 12-20
 2. 5. Technology with a Human Face 138-153
 3.1 Development 154-160
 3.2 Social and Economic Problems Calling for Intermediate Technology 161-179
 3.3 Two Million Villages 180-193
 3.4 The Problem of Unemployment in India 194-208
 ■Schumacher, E. F. *Small Is Beautiful: Economics as if People Mattered.* New York Harper Perennial, 1989.

■Week 7A **HASSAN FATHY, EGYPT AND LAURIE BAKER, INDIA**
Feb. 15
ATT 9
(Three groups EF)
 ■Taragan, Hana "Architecture in Fact and Fiction: The Case of the New Gournia Village in Upper Egypt." *Muqarnas* 16 (1999): 169-178.
 ■Section 1 p1-66
 In Bhatia, Gautam. *Laurie Baker: Life, Works, and Writings.* New Delhi: Viking/Hudco, 1981.
 ■Handbooks by Laurie Baker. Available on
<http://lauriebaker.net/work/work/booklets-and-writing-by-laurie-baker.html>

■Week 7B **APPROPRIATE TECHNOLOGY (Three groups EF)**
Feb. 17
ATT 10
 ■Chapter 1: What is Appropriate Technology; Chapter 5: Technologies in context; Chapter 6: Man/machine context In Rybczynski, Witold.
 In *Paper Heroes: A Review of Appropriate Technology.* Garden City, N.Y.: Anchor Press/Doubleday, 1980

■Week 8 A **TROPICAL ARCHITECTURE IN AFRICA: DREW AND FRY BIOCLIMATIC ARCHITECTURE IN THE UNITED STATES**
Feb. 22:
Lecture plus EF three groups

- ATT11 ■Fry, Maxwell. *Tropical architecture in the dry and humid zones*. 2nd ed. Malabar Fla.: R.E. Krieger Pub. Co., 1982.
 ■Introduction pp 1-13; Bio-climatic Approach pp 14-23; Environment and Building Forms pp 84-93; In Olgyay, Victor. *Design with Climate: Bioclimatic Approach to Architectural Regionalism*. Princeton, N.J.: Princeton University Press, 1963.
- Week 8 B **THE AUTONOMOUS HOUSE**
 Feb. 24 Chapter One: Definitions and Introduction to the Problem.
 ATT12 ■Vale, Brenda, and Robert James Dennis Vale. *The New Autonomous House: Design and Planning for Sustainability*. New York, N.Y.: Thames & Hudson, 2000.
 ■Skurka, Norma, and Jon Naar. *Design for a Limited Planet: Living with Natural Energy*. New York: McGraw-Hill, 1976
- Week 9: **SPRING BREAK EXAM TWO**
- Week 10 A **THE BRUNDTLAND REPORT (DISCUSSION)**
 Mar. 7 .From One Earth to One World, pp 1-26
 ATT13 A threatened Future, pp 27-42
 Towards Sustainable Development, pp 43-66
 Energy: Choices for the Environment,pp 168-205
 The Urban Challenge,pp 235-260
 ■In World Commission on Environment and Development. *Our Common Future*. Oxford; New York: Oxford University Press, 1987.
- Week 10 B **THE RIO SUMMIT**
 Mar. 9 Chapter 1: Understanding Agenda,pp 21 1-23
 ATT 14 Chapter 3: The efficient use of Earth’s natural resources,pp 30-56
 Chapter 5: The Management of Human Settlements, pp170-197
 ■ In United Nations Conference on Environment and Development In *Agenda 21: The Earth Summit Strategy to Save Our Planet*, edited by Daniel Sitarz,. Boulder, Colorado: EarthPress, 1993.
- Week 11 A **ENVIRONMENTAL JUSTICE**
 Mar. 14 ■ Cole, Luke W, and Sheila R. Foster. “A History of the Environmental Justice
 ATT 15 Movement.” In *From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement*. New York, N.Y: New York University Press, 2001.
 ■ Cuesta, Camacho D. E. *Environmental Injustices, Political Struggles: Race, Class, and the Environment*. Durham: Duke University Press, 1998.
 ■ Sze, Julie. “Racial geography of New York City garbage: local and global trash politics.” In *Noxious New York: The Racial Politics of Urban Health and Environmental Justice*. Cambridge, Mass: MIT Press, 2007
 ■ Voyles, Traci B. “Hot Spots Justice, Power, and Gender in the Radioactive Present” in *Wastelanding: Legacies of Uranium Mining in Navajo Country*. University of Minnesota Press, 2015

■Week 11 B **ENVIRONMENTAL JUSTICE**

Mar.16 **Readings TBA**
ATT 16

■Week 12 A **CRADLE TO CRADLE**

Mar.21 Chapter One: A Question of Design pp17-44
ATT 17 Chapter Two: Why Being Less Bad is no Good, pp45-67
■McDonough, William, and Michael Braungart. *Cradle to Cradle: Remaking the Way We Make Things*. New York: North Point Press, 2002.

■Week 12 B **ECOLOGICAL ARCHITECTURE**

(Mar.23): ■Anker, Peder. "The Closed World of Ecological Architecture." *The Journal of Architecture* 10, no. 5 (2005): 527-552.
ATT 18 Recommended:
■McHarg, Ian L. *Design with Nature*. Garden City, N.Y.: Published for the American Museum of Natural History by the Natural History Press, 1969.

BIOSHelters

■ "Chapter six: From Shelter to Bioshelter to Gaia" In
Todd, Nancy. *A safe and sustainable world: the promise of ecological design*. Washington D.C.: Island Press, 2005.

■Week 13 A **BUILDINGS AS ECOLOGICAL SYSTEMS**

Mar. 28 ■Chapter 2: The Origins of Ecological Design
ATT 19 Chapter 3: The Design Revolution: Notes for Practitioners
Orr, David. *Design on the Edge: The Making of a High-Performance Building*, MIT Press, 2006.

■Week 13 B **EXAM THREE NO CLASS**

Mar. 30

■Week 14 A **SUSTAINABLE ARCHITECTURE GREEN BUILDINGS**

Apr. 4 ■Guy, Simon, and Graham Farmer. "Reinterpreting Sustainable Architecture:
ATT20 The Place of Technology." *Journal of Architectural Education* 54, no. 3
(February 2001): 140–148.
■Reed, Bill. "Shifting from 'Sustainability' to Regeneration." *Building Research & Information* Volume 35, no. 6 (November 2007): 674 - 680.

■Week 14 B **ENVIRONMENTAL ASSESSMENT METHODS: guest lecture**

Apr. 6 ■ Del Percio, Stephen T. "Skyscraper, Green Design, & the LEED Green
ATT21 Building Rating System: The Creation of Uniform Sustainable Standards for the
21st Century or the Perpetuation of an Architectural Fiction," *28 Environs: Env'tl, L. & Pol'y J.* 117 (2004-2005) pp117-154.
■Retzlaff, Rebecca. 2009. "Green Buildings and Building Assessment Systems". *Journal of Planning Literature.* 24, no. 1: 3-21.

■Week 15 A **ENVIRONMENTAL JUSTICE**

Apr. 11
ATT22

■Week 15 B **VERNACULAR ARCHITECTURE MEETS HI-TECH ARUP: DRUK WHITE LOTUS SCHOOL RENZO PIANO: TJIBAOU CULTURAL CENTER**

Apr. 13
ATT23

■Blaser, Werner. *Renzo Piano: Centre Kanak = Kulturzentrum Der Kanak = Cultural Center of the Kanak People*. Basel: Birkhäuser, 2001.

■Findley, Lisa. "Architectural Intervention and the Post-Colonial Era: The Tjibaou Cultural Center in New Caledonia by the Renzo Piano Building Workshop." In *The Green Braid: Towards an Architecture of Ecology, Economy, and Equity.*, edited by Kim Tanzer and Rafael Longoria. London: Routledge, 2007.

■Hart, Sara. "Double Indemnity: Renzo Piano's Double-Shelled Structures Recall Ancient Forms and Ensure Cultural Continuity." *Architecture* 87, no. 10 (October 1998): 152-56.

■Ford, Alan. "Druk White Lotus School." In *Designing the Sustainable School*. Mulgrave, Vic: Images Pub, 2007.

■Week 16 A **BIOMIMICRY**

Apr. 18
ATT24

■Benyus, Janine. *Biomimicry: innovation inspired by nature*. 1st ed. New York: Morrow, 1997.

■Week 16 B **FILM SCREENING:TBA
WRAP UP AND EVALUATIONS**

Apr. 20
ATT25

■April 21–22 **READING DAYS**

■Apr. 25 **EXAM FOUR**