ARC6911 Section VAND (Class# 25632)
Course Title ARCHITECTURE AND CLIMATE
Spring 2026
Class Meets: Posted on canvas
Instructor: Dr. Vandana Baweja, Associate Professor, School of Architecture
Email: vbaweja@ufl.edu
Office Hours: Posted on canvas

Short Description
The dominance of climate change and the carbon cycle in the development of Sustainable Architecture has signified a major shift in the relationship between climate and architecture. This course examines how anthropogenic climate change became a global architectural concern and how architects have responded to shifting environmental concerns, particularly in Europe. Prior to the ascendancy of climate change and the carbon cycle as metrics of the relationship between buildings and the environment, the architectural environmental paradigms of the 1950s to 1980s were predicated on architecture as mediator between the human body and the outdoor climate. Climate was viewed as a stable environmental actor, which determined architecture. As it became apparent that buildings, as one of the key consumers of fossil fuels, contribute significantly to climate change, the relationship between architecture and climate went through a paradigmatic shift—from one in which climate was a determinant of architectural metrics, to one in which architecture became an active agent in the transformation of global climatic systems.

COURSE PRE-REQUISITES / CO-REQUISITES: None

MATERIALS AND SUPPLY FEES: None

TEXTBOOK: There is no required textbook.

CLASS REQUIREMENTS FOR STUDENTS
1. Attend class regularly.
2. Each student is expected to present readings as assigned. You are expected to present six readings in the entire semester.
3. Participate in class discussions.
4. Complete a final project or paper.

Attendance Policy, Class Expectations, and Make-Up Policy
Attendance will be assessed via roll call. You must arrive within the first 5 minutes of the class to get your attendance. If you arrive within the first 20 minutes of class, after the roll call is concluded, you will be marked late. If you arrive later than 20 minutes after class beings, you will be marked absent.

Excused absences are consistent with university attendance policy in the undergraduate catalog (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) and require appropriate documentation if applicable.

Late Work Policy
If you need an extension on your work for an excused reason, consistent with the university attendance policy in the undergraduate catalog (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx), please contact your instructor and make arrangements for an extension.

No deadline extensions are granted for unexcused reasons, consistent with university attendance policy in the undergraduate catalog.

Each assignment deadline has a grace period of 24 hours, within which your work will be accepted with a late penally of -1% of your grade for every hour that your work is late.

Once canvas closes for an assignment, no work will be accepted unless you have a valid reason for an extension listed here: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

For UF ACADEMIC POLICIES & RESOURCES
Please visit this link https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

CLASS PARTICIPATION SCALE
Your participation in class discussions will be evaluated using this scale for points towards your final grade for the semester.

100 = Student **often** contributes thoughtful comments and insights based on class materials and has been a catalyst for other student comments as well as instructor response; AND listens to the comments and insights of others with respect and attention.

80 = Student **regularly** contributes thoughtful comments and insights based on class materials and **sometimes** results in student as well as instructor response (overall, quality counts more than quantity); AND listens to the comments and insights of others with respect and attention.

60 = Student **sometimes** contributes comments and insights based on class materials, more often at instructor's prompting; generally polite but could be more engaged in class discussions.

40= Student **seldom** contributes comments and insights of her/his own volition; comments not always relevant to materials or discussion at hand; needs to pay more attention to the contributions of the instructor and peers.

0= Student **rarely** and reluctantly contributes to class discussions; comments minimal and/or disrespectful; often noticeably disinterested in instructor's and peers' contributions.

Evaluation Methods

Assignment Group	**Weight**	**Date**
Six Reading Responses	30%	Any six classes of your choice
Proposal for Final Project	10%	March 2, 2026
Final Project Presentation last day of class in class	10%	April 16, 2026
Final Project	40%	April 30, 2026
Attendance	10%	
Total	100%	

Detailed Description

The dominance of climate change and the carbon cycle in the development of Sustainable Architecture has signified a major shift in the relationship between climate and architecture. This course examines how anthropogenic climate change became a global architectural concern and how architects have responded to shifting environmental concerns, particularly in Europe. Prior to the ascendancy of climate change and the carbon cycle as metrics of the relationship between buildings and the environment, the architectural environmental paradigms of the 1950s to 1980s were predicated on architecture as mediator between the human body and the outdoor climate. Climate was viewed as a stable environmental actor, which determined architecture. As it became apparent that buildings, as one of the key consumers of fossil fuels, contribute significantly to climate change, the relationship between architecture and climate went through a paradigmatic shift—from one in which climate was a determinant of architectural metrics, to one in which architecture became an active agent in the transformation of global climatic systems.

Climate change and its metrics—energy consumption and the carbon cycle—have come to dominate contemporary discourses on sustainable architecture and design. Competing and overlapping design paradigms and environmental assessment methods such as—Cradle to Cradle, Bioclimatic Architecture, Biomimicry, Passive and Low Energy Architecture (PLEA), Ecological Design, Net Zero buildings, and Zero-carbon building, Leadership in Energy and Environmental Design (LEED), Building Research Establishment Environmental Assessment Method (BREEAM), LEVELS, and Passivhaus—promise sustainability. These design paradigms are targeted towards sustainable development through a reduction in greenhouse gas emissions and accomplishing efficiencies in the use of energy and materials. The larger goal is to

attain an ecological balance between consuming the earth's finite resources and its regenerative capacity. Sustainable development was first defined in the Brundtland Report, titled *Our Common Future*, as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, Gro Harlem and World Commission on Environment and Development. *Our Common Future*. Oxford; New York: Oxford University Press, 1987).

Since the 1990s, as sustainable development emerged as the new paradigm of economic growth based on the carrying capacity of the earth, the term "sustainability" entered the academic discourse and has had an enduring impact on several disciplines in academia. Although the Brundtland Report and the blossoming of the sustainability movement helped to bring awareness to many sectors of society, including architecture and design, the concern for environmental building dates back to postwar period. The growth of the sustainability movement combined with the realization that humans were affecting the climate through the use of fossil fuels (including those used in the built environment) further pushed the architectural world toward sustainable design. Thus, since the late 1980s and early 1990s, sustainable architecture has become an articulated value, and is now regularly associated with the carbon cycle, global ecology, and various facets of sustainability.

Prior to the ascendancy of climate change and the carbon cycle as metrics of the relationship between buildings and the environment, from 1950s to 1980s engineers and architects developed solutions in response to global environmental concerns. Events and phenomena such as—the decolonization and modernization of the tropics, the Cold War, the threat of nuclear holocaust, the Vietnam War, space exploration, the countercultural movement of the 1960s, the civil rights movement, the feminist movement, the OPEC oil embargo 1973–4, rising population, and poverty—transformed public consciousness about the human impact on the environment. In response to environmental problems such as—pollution, energy scarcity, social injustice, poverty, agricultural deficit, ecological catastrophe—that dominated the public consciousness from the 1950s to the 1980s, architects responded with a range of paradigms within different cultural, ideological, and technological contexts. Technocrats and architects and devised resource and energy efficiency, which relied on the optimization of architecture in response to—climate, fossil fuel consumption, and resource conservation.

The architectural solutions that promised almost closed loops of resources and energy were predicated on architecture as mediator between the human body and climate. Climate was viewed as a stable environmental actor, which determined optimum architecture for a given place. As it became apparent that buildings, as one of the key consumers of fossil fuels, contribute significantly to climate change, the relationship between architecture and climate went through a paradigmatic shift—from one in which climate was a determinant of architectural metrics, to one in which architecture became an active agent in the transformation of global climatic systems.

This course will chart the development of postwar architecture to trace how environmental discourses inform design paradigms; and inversely, how design disciplines have been consequential in the transformation, stewardship, and understanding of the environment. This class covers the intersection of design and environmental histories from the 1950s to now, with an emphasis on Europe.

Thursday, January 15, 2026
Week 1: Introduction

Thursday, January 22, 2026
Week 2: Geometries of the Sun—Heliodon, Sun Paths, and Orientation.

- Markku Norvasuo, “Designing Properly Lit Homes: The Question of Daylight and Electric Light in the Housing Architecture of Alvar Aalto between 1927 and 1935,” *ICON*, 16 (2010): 179–200.

- Beal, George Malcolm. *Natural Light and the Inside-outside Heliodon*. United States: School of Engineering and Architecture, University of Kansas, 1956.

- Overy, Paul. *Light, Air and Openness: Modern Architecture Between the Wars.* London, Thames and Hudson, 2007.

Thursday, January 29, 2026
Week 3: Architecture and Climate: Tropical Architecture, UK

- Fry, Maxwell, and Jane Drew. *Tropical Architecture in the Humid Zone*. New York: Reinhold, 1956.
- Huppatz, D J. "Jean Prouvé's Maison Tropicale: the Poetics of the Colonial Object." *Design Issues* 26, no. 4(2010): 32–44

- Immerwahr, Daniel. "The Politics of Architecture and Urbanism in Postcolonial Lagos, 1960–1986." *Journal of African Cultural Studies* 19, no. 2 (2007): 165–186.
- Van der Plaat, Deborah. “Architecture of Sun and Soil: European Architecture in Tropical Australia.” In *Investigating and Writing Architectural History: Subjects, Methodologies and Frontiers*. Papers from the Third EAHN International Meeting, 1119–1130. Turin: Politecnico di Torino, 2014.
  DOI: http://www.eahn2014.polito.it/EAHN2014proceedings.pdf

Thursday, February 5, 2026
Week 4: The Club of Rome, 1968: Earth’ Carrying Capacity

- Meadows, Donella H. and Club of Rome. *The Limits to Growth: A Report for the Club of Rome’s Project on the Predicament of Mankind*. New York: Universe Books, 1972.

- Colombo, Umberto. “The Club of Rome and Sustainable Development.” *Futures* 33, no. 1 (February 1, 2001): 7–11. https://doi.org/10.1016/S0016-3287(00)00048-3.

- Schmelzer, Matthias. “‘Born in the Corridors of the OECD’: The Forgotten Origins of the Club of Rome, Transnational Networks, and the 1970s in Global History*.” *Journal of Global History* 12, no. 1 (March 2017): 26–48. https://doi.org/10.1017/S1740022816000322.

- Mihailov, Nikolai, and Lidia Sakelarieva. “Environmental Alarmism: The Club of Rome and Its Critics.” *Studia Ecologiae et Bioethicae* 14, no. 4 (December 1, 2016). https://doi.org/10.21697/seb.2016.14.4.07.

- Golub, Robert, and Joe Townsend. “Malthus, Multinationals and the Club of Rome.” *Social Studies of Science* 7, no. 2 (1977): 201–22.

Thursday, February 12, 2026
(class Via zoom as Prof. Baweja will travel for a conference)
Week 5: Architecture-Climate and Appropriate Technology: The Institut fur Tropenbau [The Institute for Tropical Building (IFT)] Bavaria, Germany.

- Lippsmeier, Georg, Carol Gray Edrich, and Walter Kluska. *Tropenbau: Building in the Tropics*. München: Callwey, 1969.

- Folkers, Antoni S., and Belinda A. C. van Buiten. “The Faculty of Engineering in Dar Es Salaam.” In *Modern Architecture in Africa: Practical Encounters with Intricate African Modernity*, edited by Antoni S. Folkers and Belinda A. C. van Buiten, 148–67. Cham: Springer International Publishing, 2019. https://doi.org/10.1007/978-3-030-01075-1_7.

- Day, George, and Simon Croxton. “Appropriate Technology, Participatory Technology Design, and the Environment.” *Journal of Design History* 6, no. 3 (January 1, 1993): 179–83. https://doi.org/10.1093/jdh/6.3.179.

- Motylińska, Monika. “‘A Cross Section of Colonial Technology’?Zooming in and Zooming out on a Photograph of a 1930s German Trade Fair.” *ABE Journal. Architecture beyond Europe*, no. 17 (September 2, 2020). https://doi.org/10.4000/abe.8193.

Thursday, February 19, 2026
Week 6: Countercultural Environmentalism and Grahame Caine’s Eco-House, London, UK

- Kallipoliti, Lydia. “From Shit to Food: Graham Caine’s Eco-House in South London, 1972–1975.” *Buildings and Landscapes: Journal of the Vernacular Architecture Forum* 19, no. 1 (Spring 2012): 87–106.

- Roaf, Susan, Manuel Fuentes, and Stephanie Thomas. *Ecohouse: A Design Guide*. Oxford [England]; Boston: Architectural Press, 2001.

- Pursell, Carroll. “Sim Van Der Ryn and The Architecture of The Appropriate Technology Movement.” *Australasian Journal of American Studies* 28, no. 2 (2009): 17–30.

- Richard, Sabrina Gabrielle. “Inputs, Outputs, Flows: The Bio-Architecture of Whole Systems Design, the Energy Pavilion, and the Integral Urban House.” In *Healing Spaces, Modern Architecture, and the Body*, edited by Sarah Schrank and Didem Ekici. London: Routledge, 2016.

Thursday, February 26, 2026
Week 7: Autonomous House, University of Cambridge, UK.

- Hawkes, Dean. “Realising the Autonomous House.” *Architect’s Journal* 201/2, no. 2 (1995): 37–39.

- Lopez, Fanny. *Dreams of Disconnection: From the Autonomous House to Self-Sufficient Territories*. Manchester: Manchester University Press, 2021.

- “The Alexander Pike Autonomous House, Cambridge.” *Architectural Design* 44, no. 11 (1974): 681–89.

- Vale, Brenda, Robert Vale, and Robert James Dennis Vale. *The New Autonomous House: Design and Planning for Sustainability*. New York: Thames & Hudson, 2000.

Thursday, March 5, 2026
Week 8: OPEC Embargo and Energy Efficient Architecture

- Bahgat, Gawdat. “Geopolitics of Energy: Iran, Turkey, and Europe.” *Mediterranean Quarterly* 26, no. 3 (2015): 49–66.

- Borasi, Giovanna, Mirko Zardini, Adam Bobbette, Harriet Russell, and Centre canadien d’architecture. *Sorry, Out of Gas: Architecture’s Response to the 1973 Oil Crisis*. Montréal; Montova, Italy: Canadian Centre for Architecture; Corraini Edizioni, 2007.

- Doubilet, Susan. “Energy in Context: International Meeting Center West Berlin.” *Progressive Architecture* LXII, no. 4 (1981): 150–52.

- Ray, George F. “Impact of the Oil Crisis on the Energy Situation in Western Europe.” In *The Economics of the Oil Crisis*, edited by T. M. Rybczynski, 94–130. Trade Policy Research Centre. London: Palgrave Macmillan UK, 1976. https://doi.org/10.1007/978-1-349-02810-8_6.

- Rüdiger, Mogens. “The 1973 Oil Crisis and the Designing of a Danish Energy Policy.” *Historical Social Research* 39, no. 4 (2014): 94–112. https://doi.org/10.12759/hsr.39.2014.4.94-112.

- Zardini, Mirko. “A Crisis That Made Architecture Real.” *Perspecta* 42 (2010): 79–82.

Thursday, March 12, 2026
Week 9: Sustainable Development and German Forestry

- Ehrenfeld, John R. “Chapter 5. A Radical Notion of Sustainability.” In *Sustainability by Design: A Subversive Strategy for Transforming Our Consumer Culture*, 48–57. Yale University Press, 2008. https://doi.org/10.12987/9780300142808-010.

- Hardin, Garrett. “The Tragedy of the Commons.” *Science* 162, no. 3859 (December 13, 1968): 1243–48.

- Hölzl, Richard. “Historicizing Sustainability: German Scientific Forestry in the Eighteenth and Nineteenth Centuries.” *Science as Culture* 19, no. 4 (December 1, 2010): 431–60. https://doi.org/10.1080/09505431.2010.519866.

- Turnbull, Thomas. “Energy, History, and the Humanities: Against a New Determinism.” *History and Technology* 37, no. 2 (April 3, 2021): 247–92. https://doi.org/10.1080/07341512.2021.1891394.

- United Nations Conference on Environment and Development. *Agenda 21: The Earth Summit Strategy to Save Our Planet*. Boulder, Colorado: EarthPress, 1993.

- World Commission on Environment Development. *Our Common Future*. Oxford Paperbacks. Oxford; New York: Oxford University Press, 1987.

Thursday, March 19, 2026
Week 10: Spring Break

Thursday, March 26, 2026
Week11: Environmental Assessment Methods *Passivhaus* [Germany]

- Hopfe, Christina J, and Robert S McLeod. *The Passivhaus Designer’s Manual: A Technical Guide to Low and Zero Energy Buildings*. New York, NY: Routledge, 2015.

- Passer, Alexander, Helmuth Kreiner, and Roman Smutny. “Adaption of DGNB-Methodology to Austria - Lessons Learned from the First Certificates.” In *SB11*

Helsinki: World Sustainable Building Conference - Helsinki 2011, 1–6. Helsinki, Finland: Finnish Association of Civil Engineers RIL and VTT Technical Research Centre of Finland, 2011. http://www.irbnet.de/daten/iconda/CIB_DC23231.pdf.

- Wright, Graham S, Katrin Klingenberg, and National Renewable Energy Lab. *Climate-Specific Passive Building Standards*. Golden, CO (United States): USDOE Office of Energy Efficiency and Renewable Energy (EERE), Energy Efficiency Office, Building Technologies Office, 2015.

- Yudelson, Jerry. "CHAPTER 1 The PassivHaus Concept and European Residential Design." In *Green Building Trends: Europe*, 1–14. Washington, D.C: Island Press, 2009.

Thursday, April 2, 2026
Week12: Zero Carbon Buildings and LEVELS

- Dodd, Nicholas, Mauro Cordella, Marzia Traverso, and Shane Donatello. "Level(s) -A Common EU Framework of Core Sustainability Indicators for Office and Residential Buildings Parts 1 and 2: Introduction to Level(s) and How It Works (Draft Beta v1.0)." European Commission documents. Science for Policy Report. Luxembourg: Publications Office of the European Union, August 1, 2017. https://doi.org/10.2760/827838.

- Foxell, Simon. "Carbon Sources and Sinks." In *A Carbon Primer for the Built Environment*. London; New York: Routledge, 2014.

- Foxell, Simon. "Climate and Carbon." In *A Carbon Primer for the Built Environment*. London; New York: Routledge, 2014.

- Lovell, Heather. "The Making of a Zero-Carbon Home." Chapter. In *Towards a Cultural Politics of Climate Change: Devices, Desires and Dissent*, edited by Harriet Bulkeley, Matthew Paterson, and Johannes Stripple, 160–72. Cambridge: Cambridge University Press, 2016 https://doi.org/10.1017/CBO9781316694473.011

- Wilby, Robert L. "Why and How Are Carbon Footprints Measured?" Chapter. In *Climate Change in Practice: Topics for Discussion with Group Exercises*, 190–205. Cambridge: Cambridge University Press, 2017. https://doi.org/10.1017/9781316534588.013

Thursday, April 9, 2026
Week13: Net Zero Buildings
Norwegian proposal for a passive house standard (Standard Norge 2010)
Swedish passive house standard (Forum för Energieffektiva Byggnader [Forum for Energy Efficient Buildings] 2009)
Danmarks Lavenergibygning klasse 1

Swiss Minergie-P
French BBC-effinergie

- Cruchten, Gerelle van. *Implementation of the EPBD The Netherlands Status in 2020*. Netherlands Enterprise Agency (RVO), 2020. https://epbd-ca.eu/wp-content/uploads/2021/12/Implementation-of-the-EPBD-in-The-Netherlands-2020.pdf.

- Dequaire, Xavier. "Passivhaus as a Low-Energy Building Standard: Contribution to a Typology." *Energy Efficiency* 5, no. 3 (August 1, 2012): 377–91. https://doi.org/10.1007/s12053-011-9140-8

- Hu, Ming. "Chapter 1: The Evolution of Net Zero Energy Building." In *Net Zero Energy Building: Predicted and Unintended Consequences*, 2019. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/UFL/detail.action?docID=5741718

- Klingenberg, Katrin, Mike Kernagis, and Mike Knezovich. "Zero Energy and Carbon Buildings Based on Climate-Specific Passive Building Standards for North America." *Journal of Building Physics* 39, no. 6 (2016): 503–21.

- Thomsen, Kirsten Engelund; Wittchen, Kim B.; Sandorff, Søren Mark; Hansen, Allan; Kold, Line; Jørgensen, Kasper Eden; Hoang, To Quyen; Varming, Niels Bruus. "Implementation of the EPBD Denmark: Status in 2020." In *Concerted Action - Energy Performance of Buildings: Country Reports 2020*. Aalborg: Department of the Build Environment, Aalborg University; Danish Energy Agency; Danish Transport; Construction and Housing Authority, 2020. https://epbd-ca.eu/wp-content/uploads/2021/07/Implementation-of-the-EPBD-in-Denmark-–-2020.pdf

- Voss, Karsten, Eike Musall, and J. Roderick O'Donovan. "1 Towards Climate Neutral Buildings." In *Net Zero Energy Buildings International Projects of Carbon Neutrality in Buildings*. München: The Detail Business Information GmbH, 2014. https://ebookcentral.proquest.com/lib/ufl/detail.action?docID=1383637

Thursday, April 16, 2026
Week 14: Final Presentations in Class
Final Paper due April 30, 2026