DCP 6221/DCP 4930 | 3 Credits
Economics of Sustainability
Spring 2026

Instructor:	**Patricia Kio, Ph.D., MNIA, INT'L ASSOC. AIA, LEED AP, CM-LEAN, WELL AP** **Assistant Professor Architecture	SBE Research Faculty** College of Design, Construction and Planning (DCP)	University of Florida
Class Correspondence:	Phone: 352-294-1425 (Kio) Email: p.kio@ufl.edu Messaging through Canvas is preferred
Course Time & Location:	**DAY	M PERIOD	3 - 4 TIME	9:35** AM - 11:30 AM **LOCATION:** Rinker 0106 & Online **DAY	W PERIOD	3 TIME	9:**35 AM - 10:25 AM **LOCATION:** Rinker 0106 & Online
Course Co/Prerequisite:	Junior standing or higher (student should have completed at least 60 semester credit hours)
Final Exam Schedule:	N/A
Instructor Office hours:	**Kio:** Monday & Wednesday 9:00-11:00 AM **ZOOM** or by appointment at Antevy Hall Room 132
Course Website:	https://ufl.instructure.com/courses/555013 for modules, announcements, assignments, discussions, lecture slides, readings, practice quizzes, and grades

Catalog Description

Students explore the economic principles and practices that inform the built environment's sustainability efforts. Students will analyze the intersection of economic, social, and environmental factors influencing the design, operation, and maintenance of built environments, and develop key skills in assessing economic viability, measuring social impact, and prioritizing environmental concerns. This is a co-listed course, and two levels (graduate and undergraduate) are included in the same classes.

Course Objectives

- Develop a comprehensive understanding of economic principles and practices in the built environment
- Assess the economic viability, social impact, and environmental outcomes of sustainable built environment projects

- Apply innovation and entrepreneurship in sustainability practice
- Engage and participate with local stakeholders, policymakers, and experts in the sustainability sector
- Plan and implement sustainability projects in a built environment context.

Student Learning Outcomes (SLOs)

Upon completion of this course, the students will be able to:

- Understand the importance of sustainability and its relationship to economic growth, social welfare, and environmental protection.
- Identify the key factors contributing to sustainability, including human well-being, environmental quality, and economic efficiency.
- Analyze the market and non-market forces affecting environmental quality and ecological systems.
- Understand the concept of externalities and their impact on social welfare.
- Explain the concept of cost-benefit analysis and its application to environmental policy.
- Understand the different types of sustainability policies, including market-based instruments, command-and-control regulations, and hybrid approaches.
- Explain the pros and cons of each policy instrument, considering the economic, social, and environmental impacts.

Required Text/Reading

- Nordhaus, W. (2013). *The climate casino: Risk, uncertainty, and economics for a warming world*. Yale University Press.
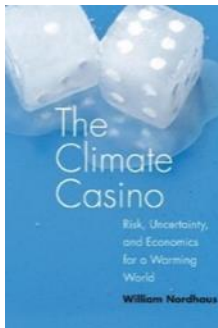
Recommended Readings:

- The economics of ESG disclosure regulation

Students are expected to complete reading reflections on Perusall for class discussions and project goals.

Course Requirements

This class will be delivered through hybrid instructions. The instructor will utilize the UF Canvas e-Learning portal as the primary medium to send announcements and to distribute course information, assignments, reading materials, resources, and grading. Students are responsible for checking Canvas portal regularly for announcements, course content, access to all supplemental readings, and to submit assignments and projects. Readings and changes to the syllabus will also be posted on Canvas. Lecture slides will be posted on Canvas in advance of each scheduled lecture. Reviewing materials online is not a substitute for class attendance. Lectures posted on Canvas by the instructor are not intended to be a complete study aid and should be viewed as supplementary to personal notes.

Autodesk Forma

This course includes two major projects that will be conducted using Autodesk Forma. Autodesk Forma is a cloud-based platform designed for early-stage planning and design in architecture, urban planning, and sustainable development. It enables professionals to model, analyze, and optimize building and site designs with real-time data and performance insights. Key features include:

Generative Design Tools: Quickly explore multiple design options based on constraints and goals.

Environmental Analysis: Assess factors like solar exposure, wind patterns, and energy performance to support sustainable decisions.

Collaboration in the Cloud: Work seamlessly with teams and stakeholders using shared models and integrated workflows.

Integration with BIM: Connect early-stage concepts to detailed design in tools like Revit for a smooth transition.

Forma empowers designers to make data-driven decisions that improve building performance, reduce environmental impact, and enhance urban livability.

Course Grades

Grades are based on the completion of a series of assignments (a percentage is presented representing the assignments portion of the overall course grade). More detail for each assignment and a grading rubric will be further explained in separate handouts.

	Item	Points (Percentage)	Description	Due dates
1	Attendance	100 (10%)	Regular class attendance	Every class
2	Participation Exercises in class leading to homework	150 (15%)	During classes	Weekly

3	Homework (Reading Reflections + Exercises)	200 (20%)	Perusall	Canvas
4	Project 1	200 (20%)	Housing Innovation Challenge	3/09 (6 weeks)
5	Project 2	200 (20%)	San Felasco Tech City	4/20 (4 weeks)
6	Quizzes (Open book)	150 (15%)	2 quizzes Undergrad 3 quizzes Graduate students	• 1/26 • 2/23 • 3/30
	Total	1000 (100%)		

Project 1: Housing Innovation Challenge – (Team Project) 20%

The individual project utilizes the H.O.M.E. framework, which looks beyond construction costs to examine how design, innovation, and long-term value shape true housing affordability. It considers four dimensions: H – The Cost of Homes, which captures the full cost of producing a home, including land, labor, materials, regulations, and market factors that determine its price; O – The Cost of Occupancy, encompassing all upfront and ongoing expenses required to occupy a home, from closing costs and deposits to financing, taxes, insurance, and fees; M – The Cost of Maintenance, Repairs, and Operation, which accounts for the recurring maintenance, repairs, and daily operational costs needed to keep a home functioning over time; and E – Access to Equity, reflecting the value, liquidity, and accessibility of home equity as a key offset to housing costs and a major driver of long-term wealth..

Project 2: San Felasco Tech City (Individual Project) 30%

Students will use Autodesk Forma and other tools to develop an environmental, social and governance (ESG) report for San Felasco Tech City, a sustainable mixed-use development featuring 270,000 square feet of tech space, residential neighborhoods with 252 homes, and community amenities such as a clubhouse, walking and jogging trails, public art, sports courts, and over 500 campus bicycles. The site also includes a drive-thru café, a preschool for 75 children, and a fire station, all adjacent to the 7,200-acre San Felasco Hammock Preserve—renowned for its 30 miles of bike trails and extensive horseback riding paths. Planned enhancements include a new public access point and pedestrian flyover, reinforcing connectivity and environmental stewardship. Students will assess energy efficiency, water management, social impact, and governance practices to create a comprehensive sustainability profile.

Final Report

Students will complete a final report (Graduate students – 4,500 words minimum & Undergraduate Students – 3,000 words minimum) on Project 2 to be submitted on Canvas. You are welcome to submit earlier than the deadline. Plagiarism will result in a grade of 0 (this includes self-plagiarism). Students agree that by taking this course, all required papers may be subject to

submission for a textual similarity review to Turnitin.com via Canvas for the detection of plagiarism. All submitted reports will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site. Students who do not agree should contact the course instructor immediately. The maximum Turnitin similarity index report of submissions is 20% and the report will be graded with this rubric.

Group Work Rules

Students will work in teams using folders in OneDrive. The instructor will create folders for each group and check the log for the documents to assess individual contributions to the group project. Each student will complete an allocated task that contributes to the final group outcomes and gets the grade for that task. In addition, team members will complete a peer evaluation form. The last page of your report should be titled "Group work" where you will submit a list of all your team members and state each team member's contribution.

Grading

The scale for letter grades is as follows:

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	S
Range	93-100	90-92.99	87-89.99	83-86.99	80-82.99	77-79.99	73-76.99	70-72.99	67-69.99	63-66.99	60-62.99	
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0

Policies

Item	Policy
Course	The following university-level academic policies and campus resources supersede any information provided in this syllabus: https://go.ufl.edu/syllabuspolicies
Provide Constructive Feedback	Students - Faculty Evaluations - University of Florida
Course Evaluation	https://my-ufl.bluera.com/
Attendance	Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/
Grading	https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/
Honor Code	Student Honor Code and Student Conduct Code – Regulation and Policy Hub
Conduct Code Process	Conduct Code Process	SCCR
Accommodations	Accommodations - DISABILITY RESOURCE CENTER

Counselling	Homepage - UF Counseling and Wellness Center (CWC)
Emergency	UF Health Shands Emergency Room / Trauma Center - UF Health
Writing Studio	https://writing.ufl.edu/writing-studio/
Library Support Undergrad	https://uflib.ufl.edu/using-the-libraries/library-support-services-for-undergrads/
Writing Support	https://writing.ufl.edu/writing-studio/for-students/writing-assistance/
Career Connections	https://career.ufl.edu/

Class Field Trips

Some class field trips may take place outside of the scheduled studio hours. All students are required to attend.

Work Products

All work produced in class is the property of the University of Florida College of Design, Construction, and Planning. Instructors may elect to keep samples of student work for accreditation purposes.

Preliminary Course Schedule Spring 2026

Detailed weekly plans, readings, quizzes, and course content will be available on Canvas throughout the semester and will be announced in class.

WK	DAY	DATE	CLASS SCHEDULE	DUE ITEMS
1	M	1/12	**Introduction to Economics in Sustainability** Overview of economic principles in sustainability	
	W	1/14	Key sustainability metrics and indicators ***Intro Project 1***: Housing Innovation Challenge	HW1
2	M	1/19	MLK Holiday	
	W	1/21	Economic Systems and Sustainability	HW2
3	M	1/26	Valuing Sustainability in the Built Environment	Quiz 1
	W	1/28	Environmental Economic Accounting (EEA) and its applications	Quiz 1

4	M	2/2	Field Trip: San Felasco Tech City (10:00 – 11:30 AM)	
	W	2/4	Green Finance and Investing	HW3
5	M	2/9	*Guest Lecture*: Ann Baird, Library Resources for Projects	
	W	2/11	Sustainable Business Models and Urban Regeneration	HW4
6	M	2/16	*Guest Lecture*: James Oluwasegun on GIS Mapping of Variables	
	W	2/18	Sustainable Business Models in the Built Environment	Due: Quiz 2
7	M	2/23	Social-Economic-Environmental Interactions in the Built Environment	Quiz 2
	W	2/25	Exploring interdependencies and feedback loops between social, economic, and environmental components	HW6
8	M	3/2	Policy and regulatory frameworks for sustainability in the built environment	
	W	3/4	Case studies: effective policy and regulatory frameworks for sustainability Community Engagement and Co-Production in Sustainability	
9	M	3/9	Project 1 Presentation	Project 1
	W	3/11	Operational energy and water use / Framework Development	HW7
10			Spring Break	
11	M	3/23	Community-led approaches to sustainability planning and implementation	**Intro Project 2**: San Felasco Tech City
	W	3/25	The Future of Work in Sustainability: Emerging Trends and Innovations	Quiz 3

12	M	3/30	New work models and cooperative ownership structures in sustainability	Quiz 3
	W	4/1	Evaluation of the economic implications of different sustainability strategies and technologies	HW8
13	M	4/6	Development of strategies for integrating economic principles into sustainability decision-making in practice	
	W	4/8	Evaluation of the effectiveness of sustainability metrics and performance metrics	HW9
14	M	4/13	Final Project Review	
	W	4/15	Review of course materials and objectives	HW10
15	M	4/20	Final presentations for Project 2	Project 2
	W	4/22	Final report review and upload	
	F	5/1	Commencement	