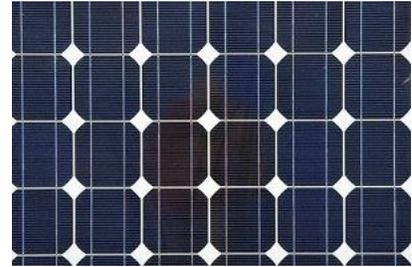
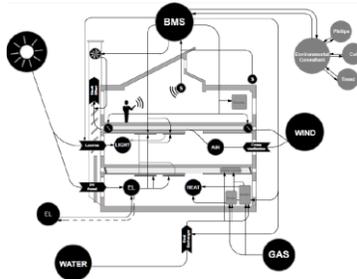
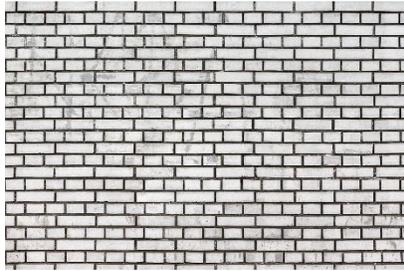


BIOCLIMATIC HYBRIDS



Contemporary buildings are inherently hybrid, intertwining the traditional, bioclimatic elements of buildings—walls, windows, doors—with powerful technologies for delivering modern services. These systems of power and control are mostly used to compensate for the inadequacies of the bioclimatic building, but when they are successfully hybridized, a new, more powerful building emerges. Bioclimatic hybridity remains the foundation of any approach to environmental building, and forms the starting point of this studio.

Climates (and weather) are inherently variable and difficult to predict, even more so with the uncertainties of global climate change, and bioclimatic buildings mitigate those uncertainties by their design and by different modes of response and adaptation. From the opening and closing of window blinds to the use of machine learning techniques embedded in building systems, environmental buildings adjust their capacities to enhance their performance as shelters.

Buildings also experience many other kinds and scales of change, and the studio will simultaneously consider the different kinds of adaptations that might be demanded by future changes in the climate, economy, transportation, and urban settlement patterns. Contemporary standards of building require a remarkably luxurious flow of energy and resources to enable everything from ready comfort to rapidly prepared food and the pulsing streams of information and entertainment. This studio will examine the building-as-a-system-of-exchanges, investigating both the techniques of environmental building and the design methods by which they are achieved.

New Chautauqua

The project for the studio is for the New Chautauqua Institute, a national research and development

corporation, leading the transition to a renewable economy and inspired by the travelling Chautauquas of the late 19th century.

The first phase is a series of 50,000 sf buildings in cities of different climates around the country that serve as a hub for the activities of the institute and demonstrate the principles of bioclimatic design. The buildings include facilities for outreach and education, mixing the typologies of university, conference hotel, and business incubator. The facilities will need to be flexible; able to adapt as the institute's mission evolves and the cities, economies, or climates in which they are located change.

Methods

The project will be introduced in two “layers,” developed one on top of the other to establish the basis for the studio: (1) exploration of iterative techniques for exploring thermodynamic narratives and (2) discovery of those narratives in the different sites and climates. The first considers that different scales and time-frames at which the built environment adapts to different kinds of change and the second explores the many opportunities of the site, program, and climate.

The performance goal of the studio will be bioclimatic hybridization, a building that keeps itself comfortable without explicit conditioning equipment. That will be paralleled by a comprehensive, life-cycle analysis, using e[m]ergy synthesis to evaluate the tradeoff between the materials of construction and operation, and the advantages of adaptation over time.

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Schedule and Organization

The studio will meet on Monday, Wednesday, and Friday. The preliminary schedule is included below.

1	1/11		
	1/13	w	First Meeting: Layer 1, Layer 2
	1/15	F	Workshop Layer 1
2	1/18	M	MLK, no class, post Layer 1
	1/20	w	Discuss Layer 1, Layer 2
	1/22	F	Develop Layer 1
3	1/25	M	Pinup: Layer 1
	1/27	w	desk crits
	1/29	F	
4	2/1	M	Pinup: Layer 2
	2/3	w	
	2/5	F	
5	2/8	M	Pinup: First Proposition
	2/10	w	Studio Travel TBD
	2/12	F	Studio Travel TBD
6	2/15	M	Performance Evaluation/Iteration
	2/17	w	
	2/19	F	
7	2/22	M	Pinup: Diagrams
	2/24	w	
	2/26	F	
8	3/1	M	Preliminary Review TBD
	3/3	w	
	3/5	F	
9	3/8		Spring Break
	3/10		Spring Break
	3/12		Spring Break
10	3/15	M	Mid Review TBD
	3/17	w	Mid Review TBD
	3/19	F	Mid Review TBD
11	3/22	M	
	3/24	w	
	3/26	F	
12	3/29	M	Pinup: Detailed Performance Analysis
	3/31	w	
	4/2	F	
13	4/5	M	
	4/7	w	
	4/9	F	
14	4/12	M	Pinup: Integration and Resolution
	4/14	w	
	4/16	F	
15	4/19	M	
	4/21	w	
	4/23	F	
16	4/26	M	
	4/28	w	
	4/30	F	
17	5/3	M	Final Reviews TBD
	5/5	w	Final Reviews TBD
	5/7	F	Final Reviews TBD



Grading and Evaluation.

Attendance at all studio meetings and reviews is mandatory. Multiple unexcused absences will lead to a reduction in grade or failure. Please notify the instructor in advance if you know that you will not attend class for any reason. Absences will be excused in accordance with School policy. Evaluation of the work will be based on school grading policy, and consider the following: materials presented at the mid- (~30%) and final reviews (~40%), and on the development of the work through the semester (~30%). In each case, the evaluation of the work will consider the team and individual work, including levels of inventiveness, preparation, resolution, effort and engagement, and graphic and verbal presentation.

In addition to formal grades, students will receive verbal assessments and advice through weekly desk crits, regular pinups, and formal reviews with outside critics. It is recommended that students arrange to transcribe or record these different assessments, since they form such an important aspect of studio education.

Students are expected to be independently familiar with the Code of Academic Integrity (www.upenn.edu/ctl/resources/academic_integrity/) and to recognize that their work in the course is to be their own original work that truthfully represents the time and effort applied. Violations of the Code are most serious and will be handled in a manner that fully represents the extent of the Code and that befits the seriousness of its violation.

Materials: Readings and research materials will be developed for each layer of the studio. Course materials will be placed in a School of Design course folder on luno.

Site: Five climates have been identified for the location of the new facilities, which will be investigated in the second layer of research. The climates are as follows

- 1a: Hot-Humid, Miami, Florida
- 2a: Hot-Humid, Austin-San Antonio, Texas
- 2b: Hot-Dry, Phoenix-Tucson, Arizona
- 4c: Temperate-Marine, Seattle, Washington
- 5: Cold-Moist, Chicago, Illinois

Program: The general program of the institute will be adapted by each team to the specifics of their climate, site, and the thermodynamic narrative of their project. In general these are meant to be flexible facilities, able to quickly adapt to changing conditions in their locations, allowing the institute to continue to operate productively over time.

Public, Common	#	SF#	SF	12,500
Lobby	1	700	700	
Retail, as needed	1	5,000	5,000	
Toilets, as needed	6	250	1,500	
Circulation, as needed			2,500	
Mechanical, as needed			2,000	
Trash	1	400	400	
Bicycle Storage, shower	1	400	400	
Administration & Development				5,000
Director and staff	1	800	800	
Team office	8	75	600	
Conference Rm	2	500	1,000	
Small office	6	100	600	
Large office	4	250	1,000	
Files, Servers, Copiers, Kitchen	1	1,000	1,000	
Research & Education				12,800
Research Director & Staff	1	2,500	2,500	
Research Offices	12	200	2,400	
Small Classroom (30)	6	650	3,900	
Auditorium, large (250)	1	3,000	3,000	
Conference & workroom	1	1,000	1,000	
Residential				25,000
Apartments, Hotel, or Dormitory				
			Total	55,300

