CIEE Global Institute – Berlin

Course name:	Future Cities Design Studio
Course number:	ARCH 3001 GGAD
Program offering course:	Global Architecture and Design
Language of instruction:	English
U.S. semester credits:	6
Contact hours:	90
Term:	Spring 2019

Course Description

For the first time in history, the majority of human population now lives in cities, a milestone that coincides with the awareness that earth's systems are increasingly influenced by human activity. This studio supposes extreme solutions to an extreme predicament, asking the question: How will future cities simultaneously serve demanding human populations and support natural systems? The studio views the forms, systems, and technologies of the city collectively and synthesizes urban studies with the field of ecology. Project sites are selected based on significance in dynamic ongoing development in Berlin. Students will develop a program and urban design solution. Students receive training in software for digital design, environmental analysis, as well as rapid prototyping. Students in this course will have access to the Global Fab Lab for 3D printing and CNC milling. The course is taught "vertically" meaning that students are assessed individually per their level of experience.

Learning Objectives

By the end of the course, students will be able to:

- begin to understand the practice of architecture and design within an emerging global context.
- conduct urban investigations and present their findings coherently in verbal and graphic formats.
- learn from relevant urban precedents.
- critically communicate architectural and urban design ideas.
- develop a comprehensive project, in other words, be able to tell a complete story using a range of media.
- have a rudimentary understanding of the phenomenon of building at all scales,

from detail to city.

- work productively in a group. Students should begin to understand the relationship of architecture and design to allied disciplines; students should be able to work in interdisciplinary teams.

Course Prerequisites

To participate in the Global Architecture and Design program, students must be majoring in Architecture, Environmental Design, Industrial Design, Interior Design, Landscape Architecture, Sustainability Studies, Urban Design or minoring in these areas--and have completed 2-3 semesters of design studio or a project-based course in their major.

Methods of Instruction

Class presentations and discussions, readings, and site visits. The studio has a vertical and highly individualized structure to teach students with varied experience. This also means that students must be prepared to exhibit more self-motivation and discipline. Design exercises are gradually applied to the project. The studio operates in tangent with the concepts introduced in the Future Cities Seminar and the skills learned in the Science and Technology Workshop. A range of tools may be deployed including computational and/or parametric modeling, performance simulation, physical experimentation, and rapid prototyping equipment, e.g. 3D printing, vacuum forming, CNC or laser cutting.

Assessment and Final Grade

1.	Participation	25%
2.	Mid Review Presentation	25%
3.	Final Presentation	25%
4.	Final Documentation (Book)	25%
TOTAL:		100%

Course Requirements

Participation/Communication/Process

As a studio course, students should be ready to engage in group activities as well as manage their time appropriately for individual design work.

Mid Review Presentation

(1) Research Presentation

- Site typology and site analysis: exploded axonometric drawings including morphology, context, circulation, and environment analysis
- Supporting research

(2) Concept Proposal

- Program and parti diagram(s)
- Circulation and Sun Shading diagrams and/or video(s)
- Physical model massing and form-finding studies
- Site plan and section, scale 1:1000
- Perspective (model photo or digital render)

Final Documentation and Presentation

The Final Project is presented in presentation as well as more detailed "book" documentation, for print and web publishing. Boards may be required depending on the presentation venue. Remember to include drawings from the mid review to provide supporting argument.

(1) Drawings

- Concept parti, program diagram(s), circulation diagram(s), supporting research
- Solar analysis and simulation
- Design drawings in plan and section at 1:500 scale
- 2 perspective renders, aerial and ground

(2) Physical model(s)

- physical model 1:500 (also remember to include photographs of the model in presentation)
- 1:1 prototype(s) if applicable

Participation

Participation is valued as meaningful contribution in the digital and tangible classroom, utilizing the resources and materials presented to students as part of the course. Meaningful contribution requires students to be prepared in advance of each class session and to have regular attendance. Students must clearly demonstrate they have engaged with the materials as directed, for example,

through classroom discussions, online discussion boards, peer-to-peer feedback (after presentations), interaction with guest speakers, and attentiveness on co-curricular and outside-of-classroom activities.

Individual progress is also considered an important part of participation in the course. This is defined as a consistent effort to develop the semester assignment. Although the studio project is due at the end of the semester, you should not wait until the end to work seriously. Points are also awarded for written responses to readings and site visits, especially during the first block. Please see the below weekly outline of activities and assignments and the detailed assignment briefs for more specific information about readings, classroom discussions, and posting to canvas.

Attendance Policy

Regular class attendance is required throughout the program, and all unexcused absences will result in a lower participation grade for any affected CIEE course. Due to the intensive schedules for Open Campus and Short Term programs, unexcused absences that constitute more than 10% of the total course will result in a written warning.

Students who transfer from one CIEE class to another during the add/drop period will not be considered absent from the first session(s) of their new class, provided they were marked present for the first session(s) of their original class. Otherwise, the absence(s) from the original class carry over to the new class and count against the grade in that class.

For CIEE classes, excessively tardy (over 15 minutes late) students must be marked absent. Attendance policies also apply to any required co-curricular class excursion or event, as well as to Internship, Service Learning, or required field placement. Students who miss class for personal travel, including unforeseen delays that arise as a result of personal travel, will be marked as absent and unexcused. No make-up or re-sit opportunity will be provided.

Attendance policies also apply to any required class excursion, with the exception that some class excursions cannot accommodate any tardiness, and students risk being marked as absent if they fail to be present at the appointed time.

Unexcused absences will lead to the following penalties:

Percentage of Total Course Hours Missed	*Equivalent Number of Open Campus Semester classes*	*Minimum Penalty*
Up to 10%	1 content classes, or up to 2 language classes	Participation graded as per class requirements
10 – 20%	2 content classes, or 3-4 language classes	Participation graded as per class requirements; **written warning**
More than 20%	3 content classes, or 5 language classes	Automatic **course failure**, and possible expulsion

Project Introduction: [BIO]Urban

NOTE: *The project is subject to change based on ongoing consideration in Berlin.*

This is primarily an urban and architectural design studio. The course provides students with a theoretical framework from which to develop a program and conceptual design. The studio explores perspectives of landscape urbanism and ecological urbanism and therefore includes site and landscape design associated with building design.

[BIO]Urban (Bio is the German term for organically produced) explores the role of ecology in contemporary society and urbanism. Can cities be productive environments or even self-sufficient? Students are encouraged to speculate on future states of sustainable urbanism and to explore innovative and provocative solutions.

The project brief asks students to “rethink” the urban condition with a new waterfront park installation. The project is site is located on the former Berlin wall separating the Kreuzberg and Treptow districts along the Lohmühle canal. This canal was previously used for industrial and commercial traffic including military use during WW2. After separation and construction of the Berlin

wall the canal served as an important border control between West and East Berlin. After reunification area was reopened as a park space featuring an island community center and public park. Local caravan groups have also remained near the site at the Wagonburg Lohmühle. Kayakers and paddle boats are increasingly common in the summer. A thriving and rapidly developing district of Wranglekiez is also intensifying the use along the canal. Although it is not used for motor-boat traffic, it is also not accessible for swimming due to pollution.

How can we design for intensifying demand for clean and accessible water in cities? The studio task is to redevelop the canal as amphibious usable urban space, swimming hall, kayaking center, and small café/restaurant. Using sustainable technologies, the water will be cleaned at least for accessible recreational use. The studio begins with intensive site analysis into local history, current context, and environmental factors. Based on this analysis the program can be modified in class.

Program:

Water- and Landscape Design:	20,000 m²
Swimming Center:	800 m²
Kayaking Center:	500 m²
Café:	100m²

Training in computational/parametric design and digital fabrication technologies (especially morphogenetic design) supports the studio design work.

Image: Google Maps

Weekly Schedule

NOTE: This schedule is subject to change at the discretion of the instructor to take advantage of current experiential learning opportunities.

Block I **1 class session per week**

Week 1 **Introduction**

Class 1	Academic Orientation / Q & A
Week 2 – Week 6	**Background Research: Site Analysis and Concept Development**
Class 2 – Class 6	Students receive an introduction to the project, site, and an overview of development history in Berlin including pre-war, reconstruction and division, and reunification. Architectural masterworks will be visited and discussed, such as the Reichstag Dome by Foster and Partner, Potsdamer Platz by Renzo Piano Workshop, and the Jewish Museum by Daniel Libeskind. Further attention will then be paid to the state of the art in sustainable urban development illustrated by in-class presentations and site visits. Students will visit the Berlin City Planning Offices and current sustainable development initiatives. The project site investigations focus on local context including typology and morphology studies, local culture study, and environmental analysis. Students will be provided a range of tools analysis and graphic representation. Supporting background research concerns the evolution of thought an practice in the area of sustainable design innovation, urban ecology, and biologically-inspired design. Reading selections from: • Mostafavi, Mohsen, ed. *Ecological Urbanism*. Zurich: Lars Mueller, 2010. • Myers, William. *Bio Design: Nature. Science. Creativity.* London: Thames & Hudson, 2012. • Hoyer, J., Dickhaut, W., Kronawitter L, *Water Sensitive Urban Design* • Ecological Urbanism, *The Architectural Review*, March 16 2015. • Güney, “Type and Typology,” Sandalack, “Typology of Public Space”

Block II **2 class sessions per week**

Week 1 – Week 3 **Program and concept**

Class 1 – Class 6

Reflecting on the background and site research, students define the main objectives for the project, develop a program and dive into conceptual design. Students conduct form-finding studies based on the principles of "bio-inspiration". The design is developed iteratively, beginning with massing studies in response to program, local context, and especially environmental influence. Students receive training in digital modeling with Rhino 3D and Grasshopper. For the mid-review the concept is presented with corresponding drawings and models.

Students receive training in digital fabrication. Digital models are prepared for 3D-Printing and/or Milling.

Reading selections from:

- Menges, A., *Material Computation: Higher Integration in Morphogenetic Design Architectural Design*.
- Schumacher, "Parametricist Manifesto."
- Weinstock, *Fabricating Architecture*
- *Global Fab Lab Manual* (safety test required before using equipment).

Week 4 – Week 6 **Design Development**

Class 7 – Class 12

Following the mid-review project goals are refined and a strategy is developed for the completion of the project. It is very important that students learn how research can effectively inform decisions and projects, how to develop a project plan, manage expectations, and stay on schedule.

The project is developed further with a focus on finalizing design drawings in plan, section, and elevation. Students continue working towards preparing models for final digital fabrication.

Training is provided on generating drawings and diagrams from Rhino and Grasshopper.

Reading selections from:

- Menges, A., *Material Computation: Higher Integration in Morphogenetic Design Architectural Design*.
- Spyrotoulos, Theodore. *Adaptive Ecologies, Correlated Systems of Living*.

Block III **2 class sessions per week**

Week 1 – Week 6 **Design Development and Communication**

Class 1 – Class 12

Project drawings are developed for further consideration of construction and technical schematics, and utilization of digital fabrication technology is used to realize the project. Communication of the project and especially the "narrative" is developed in class. Training is provided in project rendering and graphic communication.

Finally, projects are compiled in the PDF "book" for digital publishing. Presentations are given to an audience of reviewers and peers in a public exhibition.

Readings

Allen, Stan and Marc McQuade. *Landform Building: Architecture's New Terrain.* Zurich: Lars Mueller, 2011.

Angles, Magda. *In Favour of Public Space: Ten Years of the European Prize for Urban Public Space.* New York: Actar, 2010.

Garcia, Mark. *The Diagrams of Architecture: Volume 1 of AD Reader.* New York: Wiley, 2010.

Hensel, Michael and Achim Menges, eds. *Versatility and Vicissitude: Performance in Morpho-Ecological Design.* New York: Wiley, 2008.

Hensel, Michael, Achim Menges, and Michael Weinstock, eds. *Techniques and Technologies in Morphogenetic Design.* New York: Wiley, 2006.

Hensel, Michael, Achim Menges, and Christopher Hight, eds. *Space Reader: Heterogeneous Space in Architecture.* New York: Wiley, 2009.

Hou, Jeffrey. *Insurgent Public Space: Guerrilla Urbanism and the Remaking of Contemporary Cities.* New York and London: Routledge, 2010.

Menges, Achim, ed. *Material Computation: Higher Integration in Morphogenetic Design.* New York: Wiley, 2012.

Mostafavi, Mohsen, ed. *Ecological Urbanism.* Zurich: Lars Mueller, 2010.

Myers, William. *Bio Design: Nature. Science. Creativity.* London: Thames & Hudson, 2012.

Spyrotoulos, Theodore. *Adaptive Ecologies, Correlated Systems of Living.* London: Architectural Association, 2013.

Weinstock, Michael. "Fabricating Architecture, Self Organization and Materials Computation," in Rober Corser, ed. *Fabricating Architecture: Selected Readings in Digital Design and Manufacturing.* New York: Princeton Architectural Press, 2010.

White, Mason, Lola Sheppard, and Neera Bhatia. *Pamphlet Architecture 30: Coupling Strategies for Infrastructural Opportunism.* New York: Princeton Architectural Press, 2011.