DESIGN ENTREPRENEURSHIP WORKSHOP 2

Bachelor in Architectural Studies BAS SEP-2023 DEW2-AS.3.S.A

Area Architecture and Design
Number of sessions: 21
Academic year: 23-24
Degree course: THIRD
Number of credits: 3.0
Semester: 2º
Category: COMPULSORY
Language: English

Professor: **SIGRID M. ADRIAENSSENS**

E-mail: sadrianenssens@faculty.ie.edu

CONCURRENT UNIVERSITY APPOINTMENTS
Associated Faculty, School of Architecture , Princeton University
Associated Faculty, Andlinger Center for Energy and the Environment
Associated Faculty, High Meadows Environmental Institute
Associated Faculty, Princeton Institute for the Science and Technology of Materials
Associated Faculty, Princeton Institute for International and Regional Studies
Executive Committee Member, Certificate Program Architecture and Engineering
Executive Committee Member, Certificate Robotics and Intelligent Systems Certificate
Executive Committee Member, Certificate Urban Studies

HONORS, AWARDS, DISTINCTIONS
Chair ASCE Aesthetics in Design Committee, 2020
Barry Onouye Endowed Visiting Chair,University of Washington 2019
ASCE George Winter Award 2018
Chair IASS Working Group 5 Shells 2014-present
Princeton University Alfred Rheinstein Award 2015

RESEARCH INTERESTS
Dr. Adriaenssens's research focuses on lightweight surface systems and how they can be optimized and realised to interact with extreme structural or environmental loading. This includes research on flexible and rigid shells and plates, submerged flexible membranes and nets, and metamaterials with applications for a resilient urban environment. The applications range from adaptive building shading devices to large-scale inflatable storm surge barriers and are sometimes inspired by systems that evolved in biology, art or architecture. Dr. Adriaenssens' research spans analytical approaches to study non-linear mechanics, seeking new numerical form finding, optimization and machine-learning approaches and fluid-interaction models as well as experimental aspects based on prototyping of small and medium scale systems using CAD/CAM and robotic construction.

COURSES

CEE205 Mechanics of Solids
STC209/EGR209/MUS 209 Transformations in Engineering and the Arts
CEE418/VIS418 Extraordinary Processes
CEE519 Elasticity and Geometry in Shells and Plates
CEE546 Form Finding of Structural Surfaces
GLS263/CEE263 A Social and Multi-Dimensional Exploration of Structures
CEE463 A Social and Multi-Dimensional Exploration of Structure

Office Hours

Office hours will be on request. Please contact at:

sadrianenssens@faculty.ie.edu

Professor: **WESAM AL ASALI**

E-mail: walasali@faculty.ie.edu

Wesam Al Asali is an architect, educator, researcher, and enthusiast for combining digital and manual fabrication technologies with local building crafts and natural materials. His work spans construction history, building technology, and craft studies to explore the role of culture and society in rethinking architectural practice in the context of climate challenges.

Wesam received his Ph.D. in 2021 from the University of Cambridge, where he worked on design strategies for thin-tile vaults for low-carbon ceiling systems. Following his Ph.D. completion, Wesam was the 2021-2022 Global Fung fellow at Princeton University before joining IE School of Architecture and Design. His research received the RIBA President's Awards for Research in Architecture (2021) and the Salje Medal for Best Doctoral Research in Arts and Humanities at Clare Hall, Cambridge University (2022). He received research funds and commissions from the Arab Council for the Social Sciences, Instituto de Tecnología Cerámica, and Princeton University. His current projects include the use of natural materials in Spanish building crafts, scarcity-driven informal and vernacular architecture in the Middle East, and the relationship between domestic spaces and food production in Syria during the crisis.

Wesam is a design and innovation lead at his co-founded architectural practice (IWlab) and founder of the social enterprise (CERCAA), a center for learning and innovation in building crafts and natural materials in Spain-Valencia. His practice engages with heritage knowledge for contemporary environmental design.

Office Hours

Office hours will be on request. Please contact at:

walasali@faculty.ie.edu

SUBJECT DESCRIPTION

The Design Entrepreneurship sequence is intended to give students a series of immersive studio- based experiences with leading professionals, in order to explore how the role of the architect can be redefined, and architecture practice transformed from a reactive posture, to an active posture, in which architects initiate proposals rather than waiting to be engaged by forces external to the discipline. Additionally, by engaging professionals not affiliated with the University, these workshops will provide students with exposure to other approaches to the design process, as well as to the varied international realities of practice.

DESIGN ENTREPRENEURSHIP WORKSHOP 2024 SERIES
Reversible: Folding, Skins, and Transformable Architecture

As one of the most ancient innovations, textiles have played an essential role in the development of human history. From cloths enveloping our bodies to membrane sheltering our dwellings, the notion of skins becomes a cross-scale concept that both materializes and interacts with our essence of living. The entrepreneurship workshops will explore the possible futures of textiles in our built and worn environments, as shelters from heatwave, as folded shells, and as double skins for our individual and collective bodies. Reversible workshops will focus on the intersection between engineering and art, the understanding of textile and tensile structures and techniques, and the innovative approaches in materials and crafts.

DESIGN ENTREPRENEURSHIP WORKSHOP 2_2024

Porf. Sigrid Adriaenssens

Wear Your Weave: Fashion, Performance, Structures

“One way of invigorating engineering education is to combine engineering with liberal arts, grounding students more firmly in creative and innovative design, social responsibility, and critical thinking. These three outcomes are key to forming our future civil engineers.” Prof. Sigrid Adriaenssens

In this workshop, students will design woven structures as extended wearable skins. The workshop will cover topics related to structural engineering, crafts, performance, and liberal arts. Students will learn about bending-active structures through a series of lectures, hands-on exercises, and digital software tools. Following that, students will collaborate with master weaver Carlos Fontanels to create 1:1 scale prototypes of woven structures intended to function as individual and collective shelters. The workshop will culminate in an exhibition-performance of the designs.

This workshop is coordinated by Prof. Wesam Al Asali with IE Visitng Proffessor Prof. Sigrid Adriaenssens

Guests

Carlos Fontales is a master basket maker and weaver. Born in 1964, he has been a dedicated wicker artisan since 1988, starting as a wickerwork teacher and researcher in 1991, Carlos has conducted courses nationwide, exploring various wickerwork disciplines, from traditional techniques to design applications. He has collaborated with professionals like Lois Walpole, Martín Azúa, and Joan Farré, offering his expertise nationally and internationally. Carlos has been a key figure in organizing International Wickerwork Encounters and has delivered lectures in Spain, Denmark, and the United Kingdom. Carlos has undertaken continuous fieldwork since 1991, collecting firsthand information about Spanish popular wickerwork. His research includes extensive documentation, including written records, photographs, and video footage.

Axel Larsson is a PhD Students in Civil Engineering at the Form Finding Lab. He holds a bachelor's degree in architecture and engineering at Chalmers University of Technology and a master's in digital theory at The Bartlett School of Architecture, London, UK. Axel has practice experience as a computational designer at Design-to-Production in Zürich, Switzerland and an architectural engineering internship at Jan Knippers Ingenieure in Stuttgart, Germany. Axel is broadly interested in programming and mathematics and how to create digital tools to design smarter structures. During the course of his PhD he is working on Machine Learning and to conduct research on, and develop methods to predict the behavior of elastic rod networks.

LEARNING OBJECTIVES

2.1 BASIC AND GENERAL OBJECTIVES

- CB1: Students have demonstrated knowledge and an understanding of a given area of study, building upon the foundation of secondary education, supported by advanced texts, and including aspects that engage the latest advances in their area of study.
- CB2: Students know how to apply their knowledge professionally to their work or vocation and possess the competencies that are often demonstrated through elaboration and defense of arguments and the resolution of problems within their area of study.
- CB3: Students can gather and interpret relevant facts (usually within their area of study) in order to make judgments that include reflection on relevant social, scientific, and ethical topics.
- CB4: Students can transmit information, ideas, problems, and solutions to both specialized and nonspecialized audiences.
- CB5: Students have developed the necessary learning skills to continue their studies with a high degree of autonomy.
- CG8: Knowledge of the role of entrepreneurship and management in the execution of projects in architecture and design.
- CG9: An understanding of the various employment possibilities available to the architect, and the application of the disciplinary tools of architecture to various related disciplines.

2.2 SPECIFIC COMPETENCIES

- CE38: Ability to conceive, execute, and develop urban projects (W).
- CE55: Adequate knowledge of the relationship between cultural patterns and the social responsibilities of the architect.
- CE60: Knowledge of feasibility studies and the supervision and coordination of integrated projects.

2.3 TRANSVERSE COMPETENCIES OF THE UNIVERSITY

- CT3: Manage unforeseen situations with the capacity to respond to changes within organizations. CT4: Use disciplinary knowledge to analyze and evaluate current situations.
- CT5: Integrate oneself into interdisciplinary and multicultural teams to achieve common goals in a context of diversity.
- CT6: Work actively at in an international context.

TEACHING METHODOLOGY

IE University teaching method is defined by its collaborative, active, and applied nature. Students actively participate in the whole process to build their knowledge and sharpen their skills. Professor's main role is to lead and guide students to achieve the learning objectives of the course. This is done by engaging in a diverse range of teaching techniques and different types of learning activities such as the following:

Learning Activity	**Weighting**	**Estimated time a student should dedicate to prepare for and participate in**
Lectures	8.0 %	6.0 hours
Discussions	8.0 %	6.0 hours
Exercises in class, Asynchronous sessions, Field Work	40.0 %	30.0 hours
Group work	40.0 %	30.0 hours
Individual studying	4.0 %	3.0 hours
TOTAL	100.0 %	75.0 hours

PROGRAM

SESSION 1 (LIVE IN-PERSON)

Introductory lecture by Sigrid Adriaenssens

SESSION 2 (LIVE IN-PERSON)

Lecture on Bending Active Structures

SESSION 3 (LIVE IN-PERSON)

Demonstration Bending Active Sculpture

SESSION 4 (LIVE IN-PERSON)

Students Prototyping Bending Active Sculptures

SESSION 5 (LIVE IN-PERSON)

Demonstration of bending active digital tool

SESSION 6 (ASYNCHRONOUS)

Studio work

SESSION 7 (LIVE IN-PERSON)

Review Student's work: Digital shapes and Active Sculptures

SESSIONS 8 - 9 (LIVE IN-PERSON)

Workshop on Spanish weaving techniques

SESSION 10 (LIVE IN-PERSON)

Final project Introduction

SESSION 11 (LIVE IN-PERSON)

Visit to IE Center

SESSIONS 12 - 13 (LIVE IN-PERSON)

Working on Prototype

SESSIONS 14 - 15 (LIVE IN-PERSON)

Pin up and review

SESSIONS 16 - 17 (LIVE IN-PERSON)

Studio Work

SESSIONS 18 - 19 (LIVE IN-PERSON)

Installation of exhibition at IE Creative Center

SESSIONS 20 - 21 (LIVE IN-PERSON)

Exhibition and Reviews

EVALUATION CRITERIA

GENERAL EVALUATION CRITERIA

(Per Ministerial Decree EDU/2075/2010, 29 of July; and the official accreditation request for the Bachelor in Architectural Studies, July 2015; see BOCYL, 14 March 2018: p. 10477-10481)

This course will involve the following evaluation methods:

- SE1: Attendance and Active Participation
- SE2: Submission and/or Presentation of Group Projects
- SE3: Submission and/or Presentation of Individual Projects SE4: Evaluation of Group Exercises
- SE5: Evaluation of Individual Exercises

GRADING STANDARDS

According to IE University policies, the students will be evaluated on a scale from 1 to 10. The standards of each grades are described below:

- 1, 2, 3, 4: Not passing level of work -- significant areas needing improvement and/or incomplete or insufficient deliverables to evaluate student properly.
- 5: Minimum acceptable passing level of work with several areas needing critical improvement, and/or the further development of deliverables.

- 6: Fair level of work with some areas needing improvement.
- 7: Consistent, solid work during the whole semester. The student producing what is expected at that year level.
- 8: Advanced level of work for what can be expected at that year level.
- 9: Exceptional level of work, highly advanced for the student's year level. Starting at the grade of 9, the student may (according to the necessary consensus among professors) receive "Honors / Matricula de Honor/Honors" as a recognition of an exceptional work.
- 10: Beyond exceptional level of work, within the standards of a much higher year level.

criteria	percentage	Learning Objectives	Comments
Final Group Presentation	50 %		
Process and Intermediate Deliverables	30 %		
Individual work	10 %		
Class Participation	10 %		

RE-SIT / RE-TAKE POLICY

Students that have failed the subject in first enrollment during the ordinary period will pass to the second enrollment. Those who do not meet the minimum attendance percentage according to IE University policies during the ordinary period will not have the option of attending the second enrollment and will automatically pass to the third enrollment.

For those attending the second extraordinary exam period, the exam will have two parts:

- Part I will consist of the presentation of the project originally produced during the ordinary period with a further development of those areas that were underdeveloped for the final review. The professor in charge of the course will explain to the student the areas to improve in order to obtain a passing grade.
- Part II will consist of a design exercise to be presented and administered the day of the exam. The students will have to pass Part I to be able to pass to Part II. Those students that do not pass Part I will go to third enrollment. the design excersise take place in person and at the campus where the student enrolled during the ordinary period.

Part I and Part II should obtain a passing grade for the student to be able to pass the second enrollment. The minimum grade to pass the second enrollment is 5.0. The maximum grade that a student may achieve in second enrollment is an 8.

BEHAVIOR RULES

Please, check the University's Code of Conduct here. The Program Director may provide further indications.

ATTENDANCE POLICY

Please, check the University's Attendance Policy here. The Program Director may provide further indications.

For in-person programs, students should attend their live, in-person sessions on campus.

According to IE University policy, attendance is mandatory; bachelor's and master's degree students are expected to attend 100% of the sessions as attendance is an essential component of IE´s learning methodology. For this reason, we monitor attendance closely and have established a policy for exceptional reasons for absence.

This policy applies to any type of session as planned in the syllabus: live in-person, asynchronous, and live online. Students attending less than 80% of sessions will receive a FAIL for the course. For bachelor-degree programs, this fail will apply to the ordinary and extraordinary calls of the current academic year.

ETHICAL POLICY

Please, check the University's Ethics Code here. The Program Director may provide further indications.