

# DESIGN ENTREPRENEURSHIP WORKSHOP 1

## Bachelor in Architectural Studies BAS SEP-2023 DEW1- AS.2.S.A

Area Architecture and Design

Number of sessions: 21

Academic year: 23-24

Degree course: SECOND

Number of credits: 3.0

Semester: 2<sup>o</sup>

Category: COMPULSORY

Language: English

Professor: **JOSEPH CHOMA**

E-mail: [jchoma@faculty.ie.edu](mailto:jchoma@faculty.ie.edu)

Joseph Choma is Director of the School of Architecture and Professor of Architecture at Florida Atlantic University.

Joseph is also the Founder and Director of the Design Topology Lab, an interdisciplinary practice which conducts design research and provides consultation relating to material innovation, unconventional means and methods of construction, and the role of geometry in the built environment. Current topics of exploration include: foldable structures and materials, lightweight deployable shelters, ultra-thin formwork for concrete casting, stay-in-place formwork for shell structures and concrete slabs, and advancements in natural fiber textiles. As a researcher, he uses mathematics, folding, structure and materials as generative design devices to imagine new ways to design and build more sustainably.

He is the author of *Morphing: A Guide to Mathematical Transformations for Architects and Designers* (Laurence King Publishing, 2015), *Études for Architects* (Routledge, 2018) and *The Philosophy of Dumbness* (ORO Editions, 2020). His books have received reviews in *Architectural Record*, *Architecture NZ Magazine*, *Art Libraries Society of North America*, *RIBA Journal*, and the *Journal of Mathematics and the Arts*, among others.

He has received awards from the American Institute of Architects, the American Composites Manufacturers Association, and the Association for Computer Aided Design in Architecture — including the 2023 ACADIA Innovative Research Award of Excellence. His recent material explorations have been noted by *CompositesWorld Magazine* as “spearheading research into the use of foldable composites.” He is the inventor of *Foldable Composite Structures* — U.S. Patent Number 10,994,468. In short, he invented a technique that allows fiberglass to fold by hand — similar to folding a sheet of paper.

Previously, Joseph Choma was an Associate Professor of Architecture and Director of the Master of Science in Architecture program at Clemson University. He has also taught as a Visiting Associate Professor at Massachusetts Institute of Technology and as an Associate Professor Adjunct at The Cooper Union. Additionally, he was the 2019-20 NCCR Digital Fabrication Researcher in Residence at the ETH Zurich.

Joseph completed graduate studies in design and computation at the Massachusetts Institute of Technology and completed his PhD in Architecture at the University of Cambridge, UK where he was a Cambridge International Scholar.

### **Office Hours**

Office hours will be on request. Please contact at:

[jchoma@fau.edu](mailto:jchoma@fau.edu)  
(954) 762-5111

Professor: **WESAM AL ASALI**

E-mail: [walasali@faculty.ie.edu](mailto: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](mailto: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 1\_2024**

Prof. Joseph Choma

#### **Folded Clouds for Heritage Exploration in Coca**

*"Folding is a systematic method that transforms planar material into three-dimensional rigid structures. Depending on the organization of folds, structures can be flat-packed for ease of transport. By beginning with a flat plane, there is the potential to reduce production costs associated with manufacturing parts with curvature. Additionally, there are numerous variations possible with one systematic method."* Prof. Joseph Choma

In this workshop, students will design pop-up pavilions for virtual and physical heritage exploration in Coca, a heritage city in Castilla y Leon facing depopulation. Intended to dot the city like clouds, the Pavilions of Coca will be part of a comprehensive project focusing on developing socio-cultural infrastructure that catalyzes new financial growth through cultural tourism. The pavilions will form a touring path that will host activities such as virtual reality halls, book sales, and information desks. Students are welcome to propose programs and activities.

The students will work with Prof. Choma to design and build these clouds as folded structures—an origami at an architectural scale. The workshop will comprise a set of exercises to understand the design and development of crease patterns, the technique of folding paper, and the main characteristics of folded structures. Subsequently, students will use Prof. Choma's patented technique involving resin and textile to build 1:4 scale models of their pavilion's design.

**This workshop is coordinated by Prof. Wesam Al Asali with IE Visiting Professor Prof. Joseph Choma**

## **LEARNING OBJECTIVES**

(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)

## 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 non-specialized 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.

## 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.

## 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 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:

<b>Learning Activity</b>	<b>Weighting</b>	<b>Estimated time a student should dedicate to prepare for and participate in</b>
Lectures	4.0 %	3.0 hours
Discussions	12.0 %	9.0 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 Joseph Chroma

### **SESSION 2 (LIVE IN-PERSON)**

Lecture: Fold-finding: how to design your crease pattern.

### **SESSION 3 (LIVE IN-PERSON)**

Lecture: Introduction to the case study: the Heritage City of Coca

### **SESSION 4 (LIVE IN-PERSON)**

Hands-on activities: Iterations of designs

### **SESSION 5 (LIVE IN-PERSON)**

Desk Crit: Finalizing the design.

### **SESSIONS 6 - 7 (LIVE IN-PERSON)**

Hands-on workshop: Foldable Composites

### **SESSIONS 8 - 9 (LIVE IN-PERSON)**

Scaling up crease patterns – making a template

### **SESSIONS 10 - 11 (LIVE IN-PERSON)**

Hands-on workshop

### **SESSIONS 12 - 13 (LIVE IN-PERSON)**

Hands-on workshop

### **SESSIONS 14 - 15 (LIVE IN-PERSON)**

Hands-on workshop

### **SESSIONS 16 - 17 (LIVE IN-PERSON)**

Hands-on workshop

## **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.

<b>criteria</b>	<b>percentage</b>	<b>Learning Objectives</b>	<b>Comments</b>
Final Group Presentation	50 %		
Process and Intermediate Deliverable	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 exercise takes 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.