

ARCH 434 – Parametric Design Thinking

February 20th, 2021

Together with parametric design's upsurge from the 21st century, this course tries to make an introduction by presenting essential knowledge about the concept of parametric design through exemplary applications. Concepts like algorithm, parameter, topology and form will be discussed together with computer-aided design and its theoretical background. Buildings and/or projects will be discussed and analyzed, and algorithms will be devised from those, providing an integral understanding of parametric design thinking. However, it should be unmistakably cleared out that, this course does not aim to and would not act as a tutorial for various software. Instead, it would position itself as a tool for creating the necessary requirements for learning such software by your own efforts and at the end of the semester, with proper approach and care, you may be highly integrated with parametric design tools and its logics.

One final note, each week the lectures will be arranged by students. Each pair of students would present a reading. However, the readings will not be solely for the presenters, but the contribution of non-presenters will be valued more and through this type of interactive discussion will enrich the discussions, hence the presentations and presenters much more. Therefore, several readings will be assigned for the first few weeks. The presentations will also be strengthened, directed, and falsified/corrected if needed.

For each course you are required to have your names written on small tokens. For each worthwhile comment, you will be asked to submit a token. At the end of the semester, number of handed-in tokens will determine your **non-presenters' contribution** scores depending on the MAX and MIN number of tokens throughout.

Each week, you will be given a question/assignment. They will contribute to your course grade, and **YOU HAVE TO SOLVE THE QUESTIONS/ASSIGNMENTS ON YOUR OWN**. Each question will be worth a **TOTAL of 10 pts**. Ones who answer correctly will **SHARE 10pts** each week. If only one of you answers the question correctly s/he will earn 10 pts and if four of you answer the question correctly, they will earn 2.5 pts each and so on.

Tentative Calendar

Course sessions are on **Mondays, from 14.00 to 16.50**. Depending on the intensity of each session, break and end times may vary.

February 20th	Overview & Introduction
February 27th	Concept of parameter and algorithm
March 6th	Architecture and Parametric Design
March 13th	Architecture and Parametric Design
March 20th	Architecture and Parametric Design
March 27th	CNC techniques and machines
April 3rd	Parametric design techniques
April 10th	Parametric design techniques
April 17th	Parametric design techniques
April 24th	Case studies
April 31st	Case studies
May 1st	Preliminary discussions
May 8th	Final projects
May 15th	Final presentations
May 22nd	Final presentations

Attendance

Attendance will be taken throughout the semester; more than 30% non-attendance will result in direct failure. Absence (either physical or mental) would lead to a significant drop in your final grades and furthermore you will be given weekly tasks. You are required to complete tasks for each week.

The preliminary studio juries throughout the semester will be followed and sessions will be revised accordingly.

Grading

Weekly presentations	15
Non-presenters' contribution	50
Final project and presentation	35
Weekly assignments/questions	10 / # of correct answers
TOTAL 100 ⁺	

Readings

Beorkrem, Christopher. *Material Strategies in Digital Fabrication*. New York: Routledge, Taylor & Francis Group, 2013.

Dunn, N. *Digital Fabrication in Architecture*. Laurence King Publishing, 2012.

Gramazio & Koehler. *Digital materiality in architecture*. Baden: Lars Müller Publishers, 2008.

Carpo, Mario. *The alphabet and the algorithm*. Cambridge, Mass: MIT Press, 2011. Print.

Kolarevic, B. *Architecture in the Digital Age: Design and Manufacturing*. Taylor & Francis, 2004.

Lindsey, Bruce, and Frank O. Gehry. *Digital Gehry: Material Resistance, Digital Construction*. Basel Boston: Birkhäuser, 2001.

Terzidis, Kostas. *Algorithmic architecture*. Oxford Burlington, MA: Architectural Press, 2006.

Weekly Question #1

You are asked to design a non-planar triangular shape.