

COMPUTATIONAL DESIGN AND DIGITAL FABRICATION (MSc)

Degree awarded: Master of Science (MSc)

Duration of Study: 3 semesters

Mode of Study: full or part time

ECTS credits: 90

Language of instruction: English

Mode of delivery: online

UTBK-SPRING 2022 Robotic Fabrication Workshop

PROGRAMME

PROFILE

OVERVIEW

The MSc in Computational Design and Digital Fabrication is offered in collaboration with the University of Innsbruck, Institute for Experimental Architecture Hochbau.

The programme explores the relationship between computational tools and architectural design, in an effort to attain a new insight into the relationship between design intent and built form.

Prospective participants will have the opportunity to develop computational design skills and acquire hands-on cutting-edge fabrication experiences, while cultivating analytical and creative thinking on the applications of computation in design.

Furthermore, the programme aims at promoting international exchange of research knowledge, through the connection to the University of Innsbruck and its Robotic Lab (REXLAB) at the Institute for Experimental Architecture. This encourages participants to become part of the global community of computational research in digital fabrication, a growing industry increasingly important for the production of the built environment.

CAREER PROSPECTS

The programme aims to equip participants with cutting-edge technology skills and critical design thinking offering a very promising global employment outlook due to increasing European demands on computational designers and increased need of professional Architecture/Design expertise.

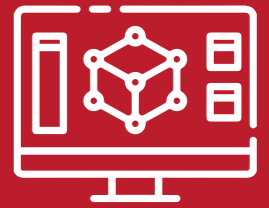
Destinations of graduates may include:

- Architectural firms searching for computationally skilled designers
- Computational design positions in design practices
- Software companies developing construction industry software
- Digital and robotic fabrication positions in the manufacturing industry
- Academic research/teaching

KEY LEARNING OUTCOMES

Upon completion of the programme, graduates are expected to have acquired knowledge and expertise in computational design and digital fabrication in relation to the design of buildings and architecture in general, and be able to:

- Interpret and criticise specific design methodologies, current applications and emerging advances in the field of computational design and digital fabrication
- Assess the effect of these methodologies and applications in the production of the built environment
- Conduct research leading to new knowledge
- Propose original applications of analysis and research knowledge in the field of computational design and digital fabrication through design projects
- Evaluate current methodologies and develop critiques of them, in relation to the question set and the outcome of the method
- Identify problems in design-to-fabrication workloads and develop solutions based on feedback loops between digital and material world
- Display high-level and sought-after skills in pursuing computational design research, including software skills, 3D-modelling, visual computer programming and text-based programming
- Display high-level skills in pursuing digital fabrication and material research, including material properties understanding and physical prototyping
- Formulate material fabrication techniques and physical prototyping as a medium for improving design communication and outcome
- Unfold leadership skills, through teamwork and workshops, relative to architectural workflows with the purpose of enriching current practices or introducing new processes that can provide design solutions as a result of automated, computational processes
- Develop the capacity to creatively deal with complex problems either individually or as part of a group through research and design projects
- Acquire the ability to communicate research and design conclusions clearly to specialist and non-specialist audiences through design projects and presentations
- Interpret literary texts in English from the Early Modern to the contemporary eras.



WHY STUDY COMPUTATIONAL DESIGN AT UNIC

- 1** Computational Design is an emerging field of study with increasing international demand and high rate of employability
- 2** Involved international industry partners
- 3** Collaboration between the Architecture departments of Innsbruck University and the University of Nicosia, along with a global network of large-scale robotic infrastructure operators
- 4** Digital Fabrication enhances design skills allowing designers to translate complex ideas directly into physical form
- 5** Computational Designers are increasingly sought-after, as they mediate between the disciplines of Architecture and Engineering
- 6** Distance Learning delivered courses with ground-based intensive and international workshops offered
- 7** Renowned guest lecturers from academia and practice



PROGRAMME PROFILE

STRUCTURE OF THE PROGRAMME

The MSc in Computational Design and Digital Fabrication is structured around three academic semesters. In each semester participants are required to take 30 ECTS, completing 90 ECTS after 3 semesters of full-time tuition.

- 60ECTS are completed through Required Courses (Semester 1 and Semester 2)
- 30ECTS are completed through Elective Courses (Semester 3)

During Semester 3 participants have to complete either a Thesis (ARCH-592DL) or a Design Project (ARCH-591DL) as part of their elective courses. The selection should be made by the end of the first Semester of study.

A minimum cumulative grade point average (CPA) of 2.0 is required. Thus, although a 'D-' is a PASS grade, in order to achieve a CPA of 2.0 an average grade of 'C' is required.

LABS AND INDUSTRIAL PARTNERS

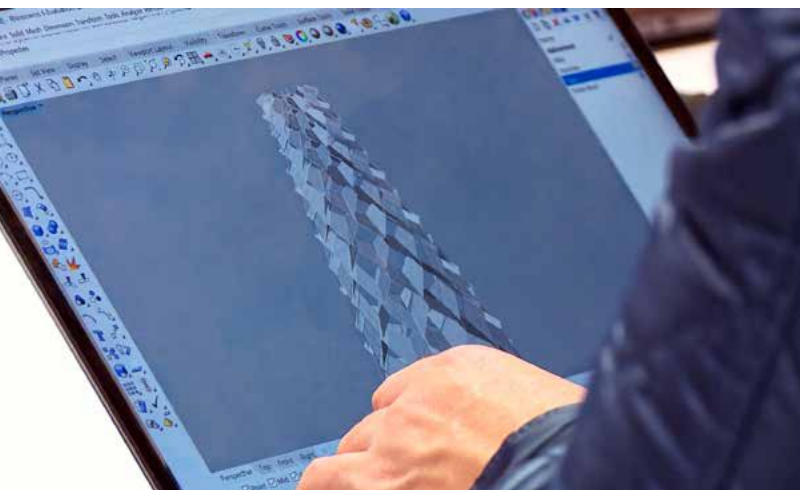
- University of Innsbruck REX Lab-Robotic Fabrication
- University of Nicosia ARC F-Lab-Digital Fabrication
- University of Nicosia ARC C-Lab-Computer Lab
- Andreou Laser – CNC Metal Cutting and Bending
- Pavlides Marble – Robotic Fabrication Unit
- Z-Morph – Multi-tool 3D Printers

PROGRAMME COORDINATORS

- Michail Georgiou, Associate Professor, University of Nicosia
- Pavlos Fereos, Senior Scientist, Robotic Experimentation Lab, University of Innsbruck

ADVISORY BOARD

- Dr Marjan Colletti, Chair Professor UIBK & UCL, Head of Institute for Experimental Architecture – Hochbau, Director of Computing The Bartlett – UCL
- Martha Tsingari, Partner Design Systems Analyst, Fosters and Partners UK



ACADEMIC PATH

Code	Course Title	ECTS
Major Requirements		60
ARCH-570DL	Digital Fabrication	10
ARCH-571DL	Theory and Evolution of Computational Design	10
ARCH-572DL	Computational Design Processes	10
ARCH-580DL	Robotic Fabrication	10
ARCH-581DL	Interactive Design	10
ARCH-582DL	Performance Based Design	10
Elective Courses		30
ARCH-590DL	Research Methodology in Design & Technology	10
ARCH-591DL	Design Project	20
ARCH-592DL	Thesis	20
ARCH-593DL	Special Topics in Computation	10
Total		90



ADMISSION CRITERIA

The programme operates as a cross-disciplinary platform aiming to bring together participants of various design and engineering specialisations. The postgraduate course is open to architects, interior designers, industrial designers, artists, graphic designers, engineers and suitably qualified candidates from other disciplines. For admission to the programme please visit www.arc.unic.ac.cy/computationaldesign/

ALUMNI AND STUDENT TESTIMONIALS



I am grateful for the MSc CDDF programme as it equipped me with multidimensional problem-solving skills and also connected me with worldwide computational design communities.

Mana Koike, Japan
Product Designer, Class of 2022



The MSc in Computational Design and Digital Fabrication (CDDF) has been a life-changing opportunity for me and has truly equipped me with a computational mental framework, logic, and confidence to pursue a future of world-class design, with the aid of bleeding-edge fabrication technologies and methodologies. With thanks to my lecturers.

Dino Evangelos Kartoudes, South Africa
Architect, Class of 2023

Within the Master programme Computational Design and Digital Fabrication (CDDF) I met fellow professionals who helped me build upon previous knowledge in research and design. The exchange of methodologies and ideas within the class and tutors was a truly valuable experience!

Iman Hadzhivalcheva, Bulgaria
Researcher/Designer, Class of 2021



The MSc in Computational Design and Digital Fabrication has provided me with the necessary practical and theoretical knowledge in a range of software and machine operation techniques to address and resolve diverse problems in the design field.

Anastasios Balabanides, Georgia
Architect, Class of 2020



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FOR MORE INFORMATION

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