

Postgraduate Diploma

Fab Academy Barcelona

Applications and Implications
of Digital Fabrication

CONTENT

01 AT A GLANCE
Keywords

02 WHAT IS FAB ACADEMY?
The Global Classroom
The Program
The Learning Goals
The Technical Competences
The Schedule
The Journey
Faculty & Instructors

03 WHO CAN JOIN?

04 PROFESSIONAL OPPORTUNITIES
Keywords

05 STUDENTS PROJECTS
What Our Alumni Say

06 WHY FAB LAB BARCELONA?
Barcelona City

07 CONTACT US

04

AT A
GLANCE



PROFESSIONAL
OPPORTUNITIES

12

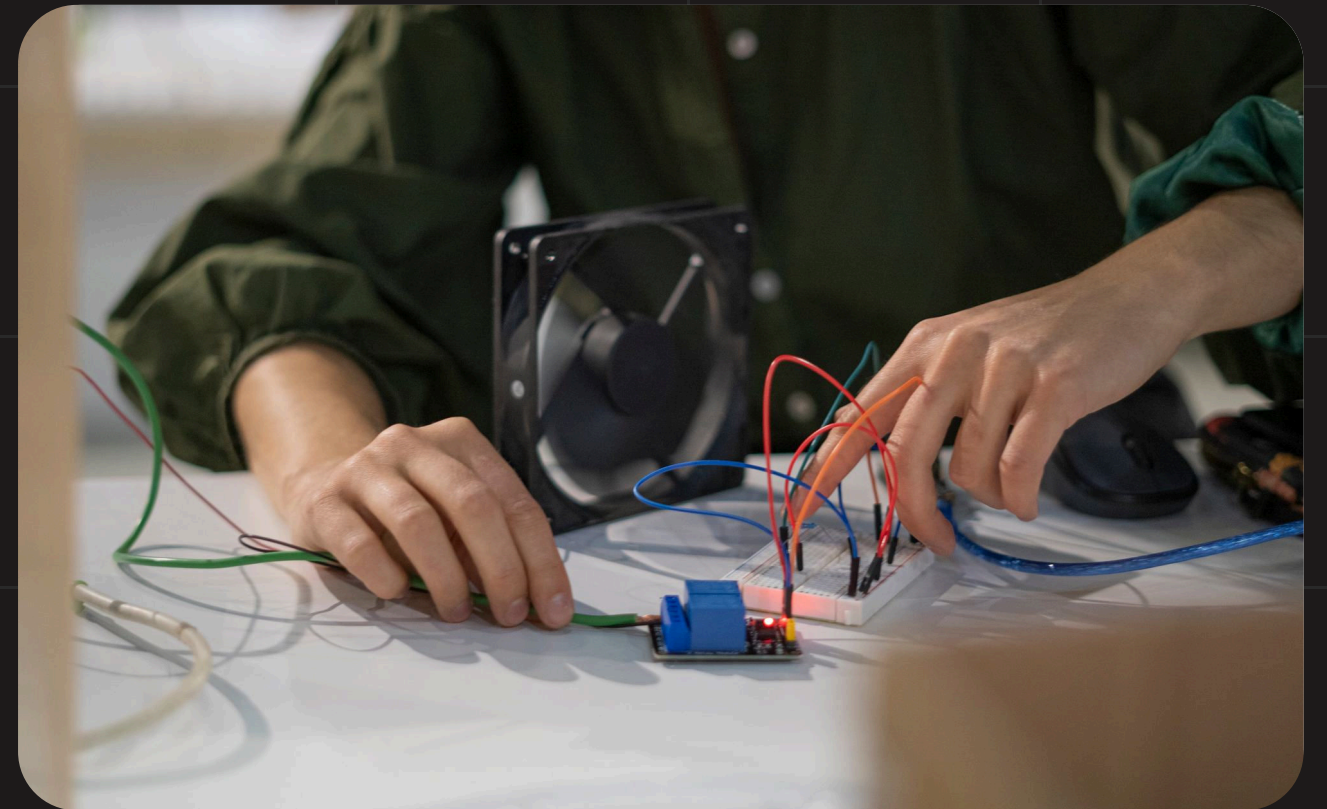
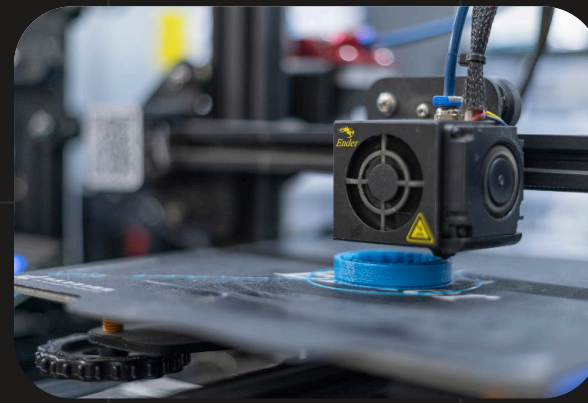


06

WHAT IS FAB
ACADEMY?

WHO CAN JOIN?

13



14

STUDENTS
PROJECTS

17

WHY FAB LAB
BARCELONA?



AT A GLANCE

The Postgraduate Diploma in Fab Academy Barcelona is granted by the School of Professional and Executive Development at the Polytechnic University of Lleida (UdL) – European Higher Education Area (EHEA)

OBJECTIVES

To provide technical knowledge with a learn-by-doing empowering method

To tackle disruptive technologies, materials and processes applied to fast prototyping and hardware design

To develop a range of “soft” skills with a multidisciplinary approach.

To encourage critical thinking and entrepreneurial spirit

To better adapt to the changing global environments

To foster new hybrid careers

COURSE LENGTH

6+ months
Mid-January to End-June/Beginning-July
(specific dates to be confirmed)

CAMPUS

Fab Lab Barcelona – IAAC - Institute for Advanced Architecture of Catalonia

TUITION FEE

7500 Euros

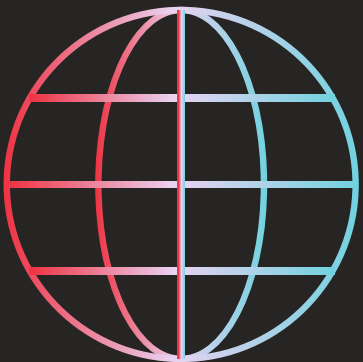
LANGUAGE

English

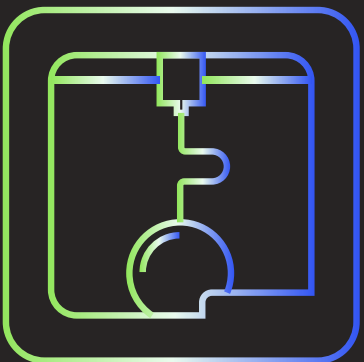
KEYWORDS



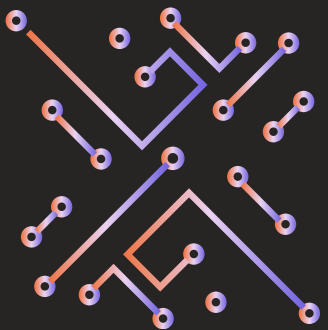
DIY/DWO



FAB
LITERACY



RAPID
PROTOTYPING



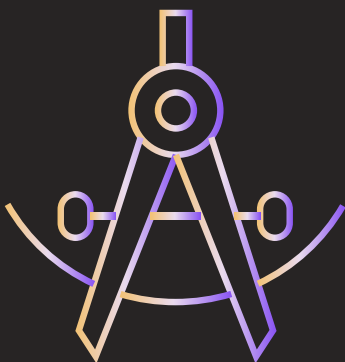
HARDWARE
ACCELERATION



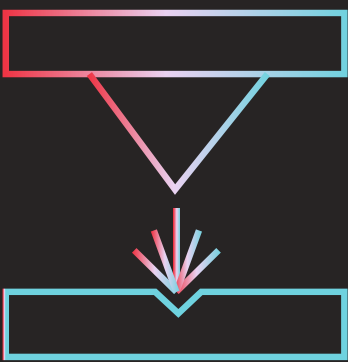
OPEN
SOURCE



DISTRIBUTED
EDUCATION



PROJECT
MANAGEMENT



MAKER
MOVEMENT

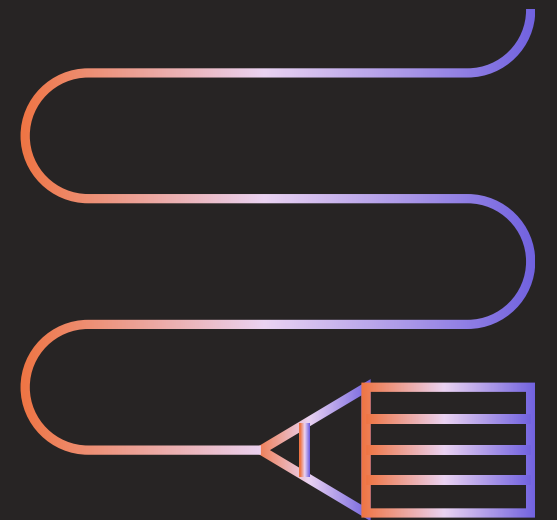
WHAT IS FAB ACADEMY?

The Fab Academy is a fast-paced, hands-on learning experience where students learn rapid-prototyping by planning and executing a new project each week, resulting in a personal portfolio of technical accomplishments. It is an intensive five-month program that teaches how to use digital fabrication tools and machines. Students focus on personal fabrication, prototyping ideas into products, making stuff locally to become active participants in sustainable cities and communities globally. This is the chance to see how bits become atoms, how ideas can impact the real world, and how new challenges are tackled.

The distributed educational experience of the Fab Lab Network and the Fab Lab Barcelona's learning methodologies applied in this course ensure that students will not only get the technical skills needed to design and prototype a broad range of possible projects but also a set of soft skills like problem-solving, collaboration, integration and sustainability, much needed in today's specialized work market, and a key aspect in becoming productive citizens, making local change for global impact.

The Global Fab Academy program is directed by Neil Gershenfeld of Massachusetts Institute of Technology (MIT)'s Center For Bits and Atoms and is based on MIT's rapid prototyping course: How to Make (Almost) Anything.

FUTURE BRINGS NEW CHALLENGES. TO FACE THEM, NEW CAREERS ARE SURFACING.



THE CLASSROOM



A local and global Digital Fabrication playground: Fab Academy consists of both classes online and offline, a method which we call “distributed education“. Students work on two levels – global and local.

The global level, otherwise known as the Global Campus, connects 250+ students enrolled in Fab Academy every year in more than 50 cities worldwide. The students join weekly Global Lectures with Professor Neil Gershenfeld. After every Global Lecture, in which Prof. Gershenfeld explains the content and lays out the assignment for the week, there is a round of reviews that opens the possibility for students to interact with the rest of the global community.

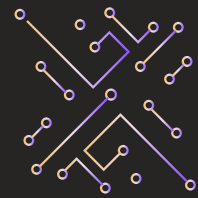
In the local node, students attend in-person classes with their peers at the Lab, taught by our in-house experts on each different weekly topic, develop and fabricate their prototypes, and interact with their peers.



THE PROGRAM

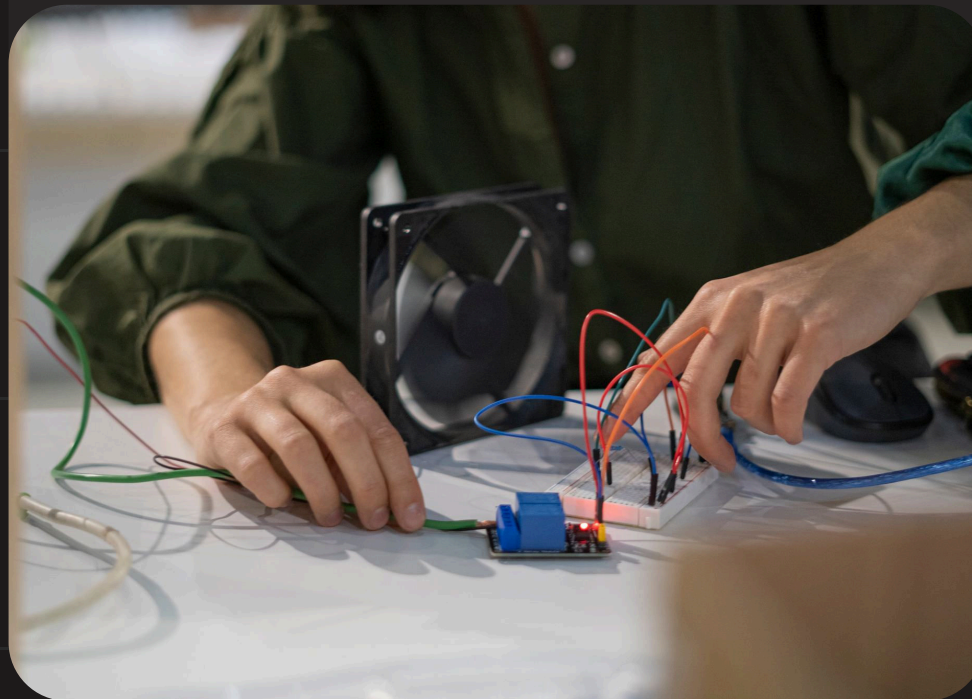
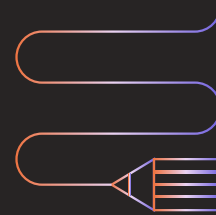
SKILLS SEMINARS

The Postgraduate “Fab Academy BCN: Applications and Implications of Digital Fabrication” comprises 20 week-long intensive seminars that introduce students to the main and transversal aspects of Digital Manufacturing and rapid prototyping, and its implications on project development and design.



PERSONAL PROJECT DEVELOPMENT

The last phase of the program capitalizes on all the learning acquired to develop a mature personal project. Participants focus on individual in-depth applied project research, employing critical thinking, hard and soft skills for the development of innovative solutions that explore and implement more viable, sustainable and fair alternative systems of today.



FAB ACADEMY DIPLOMA

The official title is awarded by the Fab Academy community with the support of the Fab Lab Network and Fab Foundation. In addition, Fab Lab Barcelona offers students the possibility to access 45 ECTS European Credits accredited by University of Lleida (UdL) – European Higher Education Area (EHEA)



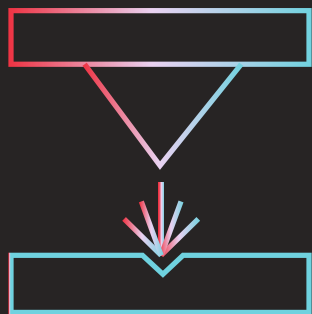
THE LEARNING GOALS

To provide students with theoretical and technical knowledge about disruptive technologies, materials and processes that are transforming the industry and the job market.

To encourage a critical spirit, innovation and sustainability as central principles of any type of intervention.

PHASE I - SKILLS CAPSULES

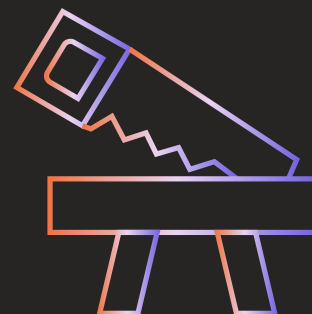
DIGITAL ESSENTIALS



TOOLS

Principles And Practices, Project Management
Computer Aided Design
Computer-Controlled Cutting (Design&CAM)
Electronic Production (Design&CAM)

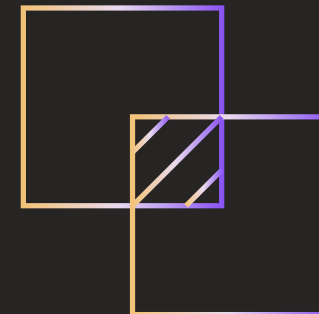
FABRICATION & PRODUCTION



PROCESSES

3D Scanning And Printing (Design&CAM)
Electronic Design
Computer Controlled Machining (Design&CAM)
Embedded Programming

INTERACTIONS & COMMUNICATIONS



PROTOCOLS

Molding And Casting
Output Devices
Mechanical Design, Machine Design
Input Devices
Networking And Communications

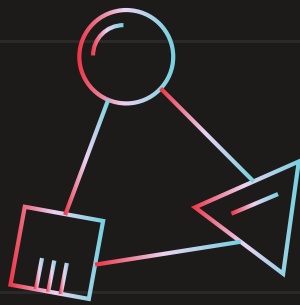
INFRASTRUCTURE & SCALES



STRATEGIES

Interface & Application Programming
Wild Card Week
Applications And Implications
Invention, Intellectual Property And Income
Project Development (Final Thesis)

THE SCHEDULE



The classes run from Monday to Friday, from Mid-January until End-June or Beginning-July (specific dates to be confirmed).

Each week, during the Skills Seminars, students will be expected to complete a different topic fully documented. The knowledge learned will contribute towards the development of the final Personal Project.

In addition to the Global Lectures, which take place every Wednesday, there are two days each week where you will receive specific support for your project and have access to Fab Lab Barcelona's workshop and digital fabrication equipment.

The Fab Academy Graduation takes place during the annual Fab Lab Conference, usually in early-August. The conference consists of online and offline activities such as events, resources, workshops, fairs, and bootcamps that promote and advocate for emerging creative talent and their business productivity and sustainability.

THE JOURNEY

JANUARY	Principles And Practices Project Management Version Control
FEBRUARY	Computer-Aided Design Computer-Controlled Cutting Parametric, Algorithmic, Generative Design Embedded Programming 3D Scanning And Printing Programming
MARCH	Electronics Design Computer-Controlled Machining Debugging Electronics Production Output Devices Machine Building Mechanical Design, Machine Design
APRIL	Input Devices Molding And Casting Networking And Communications
MAY	Interface And Application Programming Wildcard Week Applications And Implications Invention, Intellectual Property, And Income Project Development
JUNE/JULY	Project Presentations Global Evaluation Graduation At The Fab Conference

This Is A Draft Version Based On Last Year's Calendar. It May Be Subject To Changes.

FAB LAB BARCELONA INSTRUCTORS & STAFF

Neil Gershenfeld - Faculty

Center For Bits And Atoms At MIT Director

Daniel Mateos - Fab Academy Barcelona Lead Instructor Digital

Fabrication Expert

Santi Fuentemilla - Fab Academy Barcelona Local Expert Digital

Fabrication And Head Of Future Learning

Adai Suriñac - Fab Academy Barcelona Local Expert Digital

Digital Fabrication Expert

Oscar Gonzalez - Fab Academy Barcelona Local Expert Computer

Science, Tools, Platforms

Julia Leirado - Fab Academy Barcelona Local Expert Digital

Fabrication And Educational Methodologies Expert

WHO CAN JOIN?



There is no specific academic requirement to enroll in Fab Academy: Engineers, Architects, Designers of all kinds that want to deep-dive into the possibilities of prototyping their ideas becoming products.

People from all backgrounds (arts, social sciences, scientific, and more) that want to reflect on the impact of making through the act of making. Professionals from different academic and professional experiences that want to refresh their knowledge or simply take a turn towards making. This means, everyone is welcome!

In order to get the ECTS, students must present a Bachelor or higher degree. However, students that don't aspire to get the ECTS credits don't need to submit a Bachelor Diploma.



PROFESSIONAL OPPORTUNITIES

Fab Academy provides a set of skills and tools that will help you to translate ideas into prototypes, and prototypes into products. Fab Academy Alumni have used their learned skills to build leading roles in the global Fab Lab network and the creative community, establishing their own design studios and becoming entrepreneurs in the innovation and social design fields.

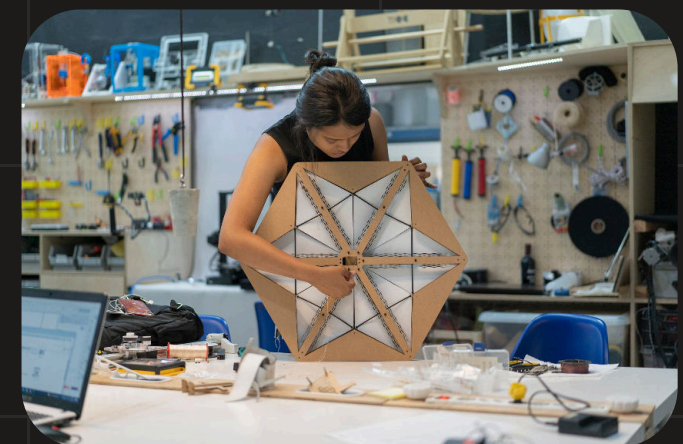
This skill set will open the possibility to join innovation teams looking for profiles capable of fast prototyping ideas, or thinking of creative solutions for products and services. You will have the capacity not only to prototype but to have a critical approach on the design and fabrication processes, and the impulse to continuously and autonomously learn new ways to approach them.



After Fab Academy, you will not only get jobs! You will also be able to invent:

- new roles
- new practices
- new products

Either if you are looking for the right skills to bring into life your personal project or to join the job market, Fab Academy is for you!



SOME OF OUR STUDENT'S PROJECTS

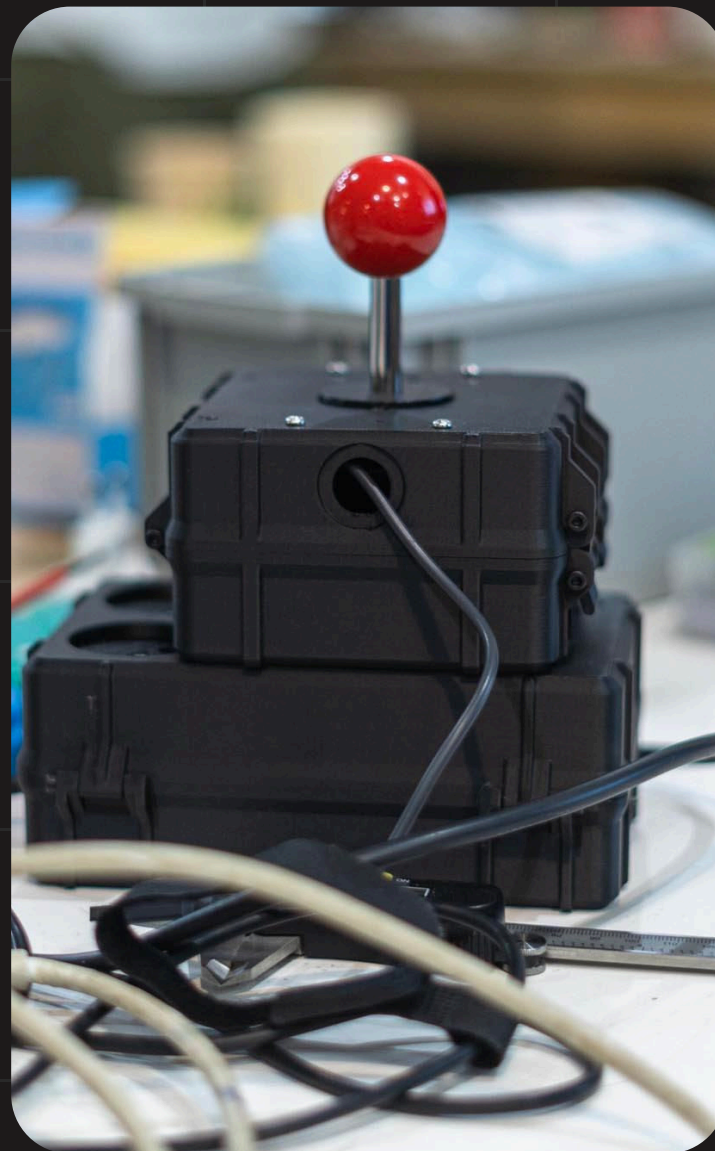
Our students have designed and prototyped dozens of projects that have our agenda imprinted; projects that are based on sustainability principles, taking into account local materials & cycles, and re-localization of production; Projects that promote diversity and inclusion; that offer tools to local communities to approach specific located complexities; And, of course, projects that fulfill personal interests & agendas Here you can find some of the latest projects.

HAPPY_STICK is a modular network allowing users to remote control everyday objects with a joystick. Through the use of a wireless modular network sending data from one input to various outputs, users are able to give a playful new dimension to their basic everyday objects.

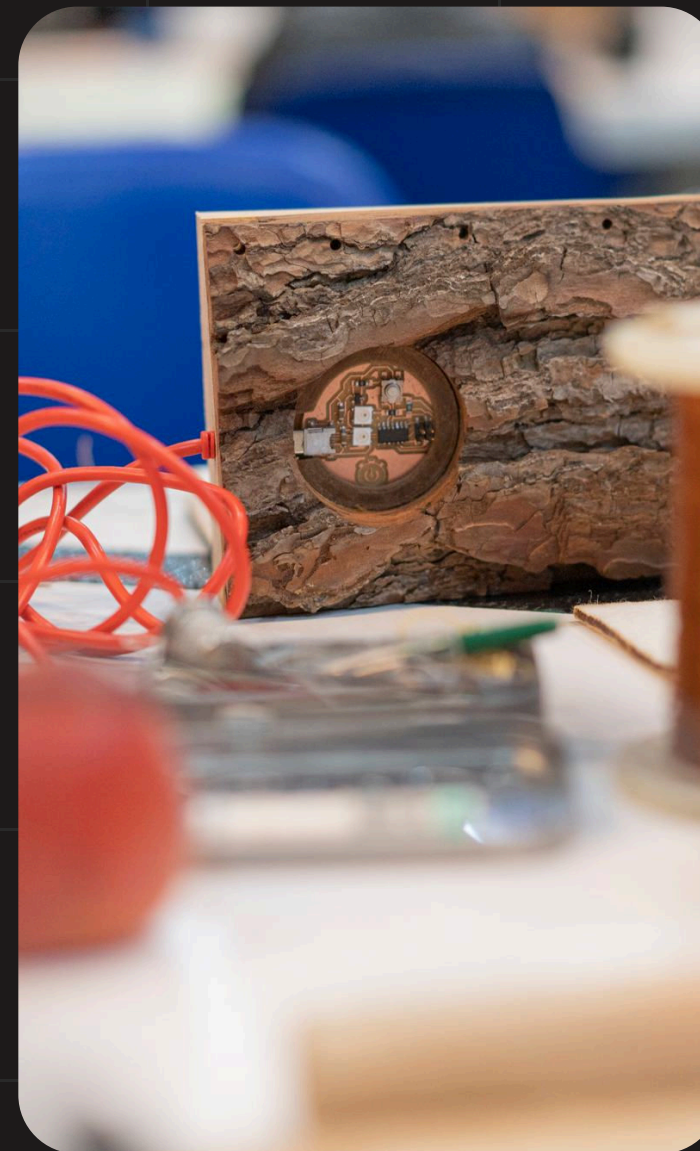
SQUEZE ME is an electronic device to function as a pelvic floor muscle trainer (PFMT), intended for the treatment of stress urinary incontinence (SUI). It provides a sequence of seven home-based workouts for each day of the week.

LUX is a smart object that interacts with the user and reacts to their movement, voice, and touch. It is also in equilibrium with the ambient; depending on the light external input it changes intensity, brightness, and light temperature.

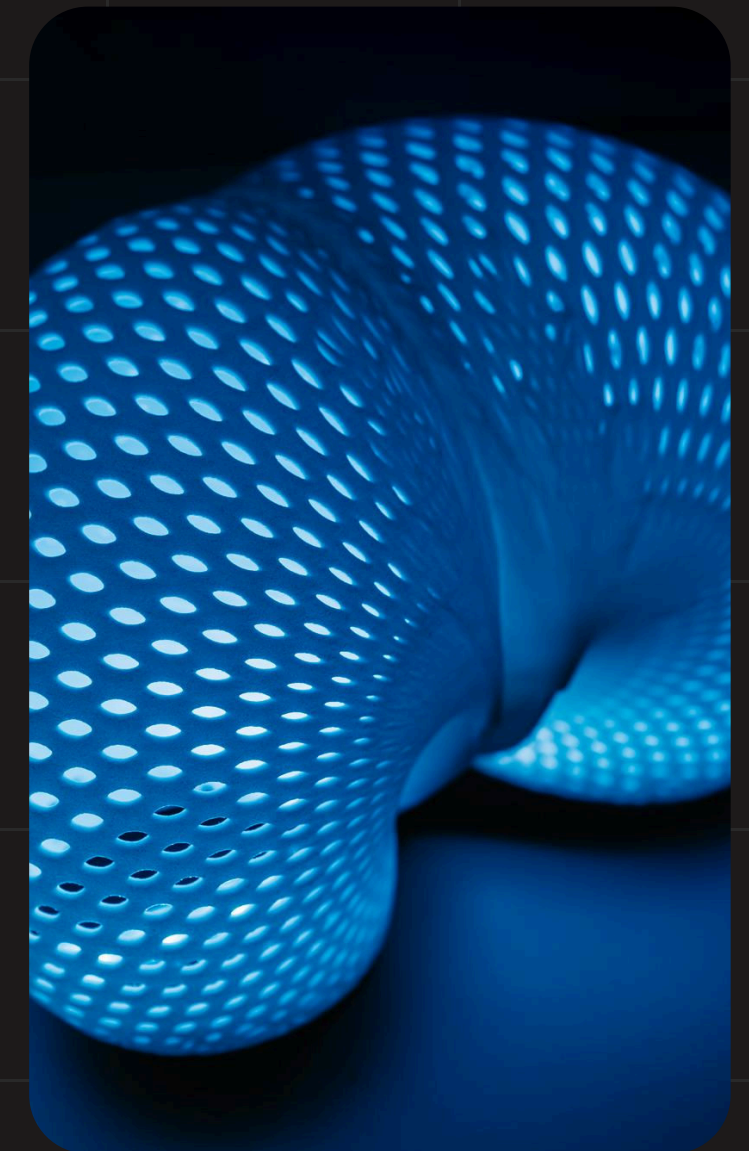
HAPPY STICK
Aurel Richard, 2023



SQUEZE ME
Ximena Amador, 2022



FABLUX
Eva Blsakova, 2019



WHAT OUR ALUMNI SAY



“Fab Academy proved to be an immersive reservoir of knowledge that significantly broadened my perspective on design. It equipped me with a diverse set of tools and innovative approaches for tackling problems from various angles, resulting in the development of intriguing solutions. What made this experience even more enriching was the continuous feedback loop involving a multitude of perspectives. Beyond the guidance from my instructors and fellow students, the local and global reviews provided me with insights from thousands of minds, each with unique experiences and expertise.”

Manuela took Fab Academy in 2023. She is now working on design and art direction for an innovation centre.

“[Fab Academy] helped me to fuse different technologies and get an understanding of prototyping. The practical teaching allows to immediately apply the learned in a professional environment. It gave me the necessary trust to apply for jobs that seemed too far away before the Academy. I gained the confidence to try things, not only in a technical sense but also in terms of job search.”

Martin G. took Fab Academy in 2015. He is now working at a leading EU company developing and setting up a 3D Concrete printing system.

“It felt really good to be back to school for six months. I really love to learn and I liked the rhythm! It’s been really fun. Not so many people have access and know how to work with all these machines. I feel like I’m now part of a niche network with a very strong community where everybody supports each other.”

Susana took Fab Academy in 2023. She is working as an UX/UI designer.



BARCELONA CITY

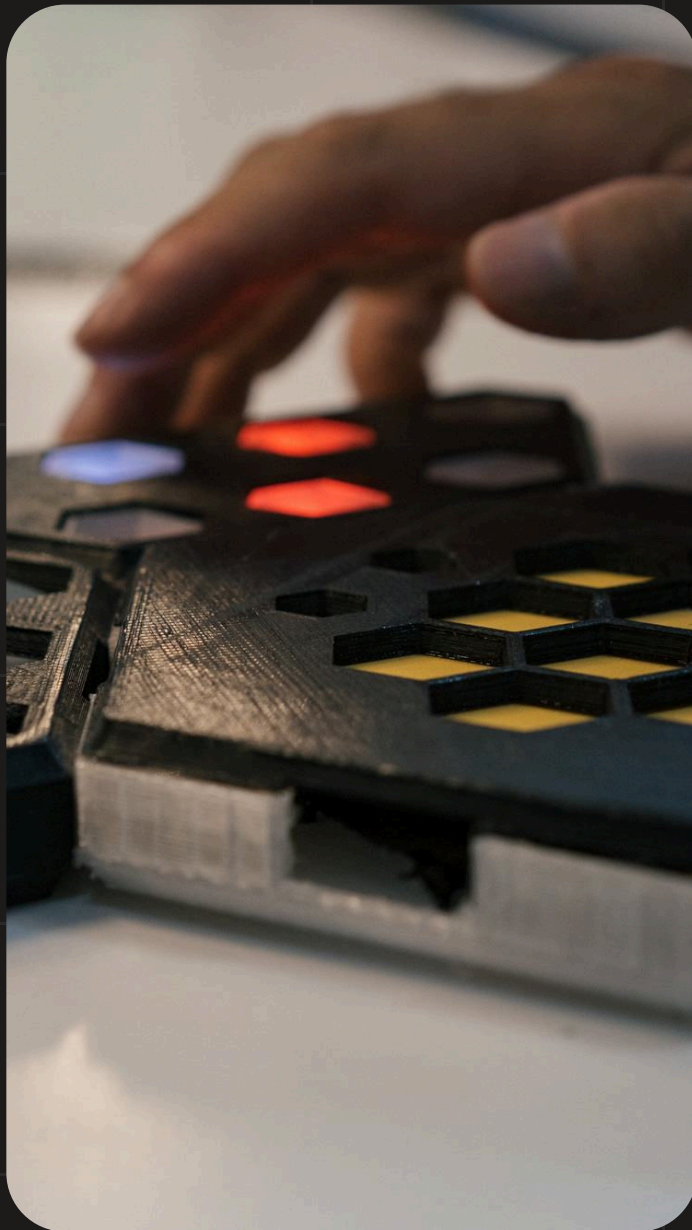
Barcelona is an urban laboratory of research and innovation in digital technologies of communication and interaction. This urban hub supports entrepreneurs and start-ups in the area, creates innovation clusters, looks for talent and serves as a model for developing solutions that could be exported to the world.

The city of Barcelona has historically been recognized as an international benchmark for design, architecture and urbanism. Nowadays, it stands as the world capital of the mobile and technology. Named as the European Capital of Innovation in 2014, Barcelona is creating a multi-disciplinary ecosystem of institutes, companies and entrepreneurs that favors cross-industry collaboration in the development of innovative solutions for the challenges of the 21st century's habitability.

Fab Lab Barcelona is based in the Poblenou 22@ Barcelona district, an international reference of innovation with cutting-edge companies, universities, research, training and transfer of technology centers that constitute the system of city innovation integrated with different agents of promotion that facilitate interaction and communication among them.



WHY FAB LAB BARCELONA?



Fab Lab Barcelona is part of IAAC, the Institute for Advanced Architecture of Catalonia, an academic and research community of extraordinary students and staff from more than 70 different countries. With over more than ten years of experience in teaching the course, Fab Lab Barcelona has become a global benchmark for the Fab Academy experience being a SuperNode of the network.

With specialists in Future of Education and Learning Methodologies leads across all Fab Lab Barcelona, the program is fully supported by multidisciplinary experts in digital fabrication, robotics, machine learning, coding and materials.

Students at Fab Lab Barcelona study in an interdisciplinary professional lab environment subject to multiple interactions between professionals and colleagues, expanding their worldview and professional networks. In addition, the course is delivered in collaboration with students from the IAAC Master of Design for Emergent Futures which provides an opportunity to expand professional and personal experiences.



Prototype (almost) anything:

Learn the different tools, skills and machines needed for hardware  development and their applications and implications. Collaborate  locally with a vibrant  community of teachers and students and connect with peers from all over the world in our  Global Campus.

Scholarships? Deadlines? General Enquiries? Ask Away!

The Educational Programs Lead, Luciana Asinari, Will Answer
All Your Questions: Luciana@Fablabbcn.Org

Fab Lab Barcelona
Institute Of Advanced Architecture Of Catalonia (IAAC)
Pujades 102 - 08005 Barcelona, Spain Fablabbcn.Org/Contact