

Take design one step further and become an agent of change in a context of emerging future scenarios in society and the industry

Master in
**DESIGN
FOR EMERGENT
FUTURES**

Directed by
**TOMAS DIEZ
OSCAR TÓMICO**

Iaac

Institute for
advanced
architecture
of Catalonia

BARCELONA

ELISAVA

Barcelona School of
Design and Engineering

MASTER IN DESIGN FOR EMERGENT FUTURES

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**INNOVATION
IS NOT AN OPTION,
IT IS A
NECESSITY**

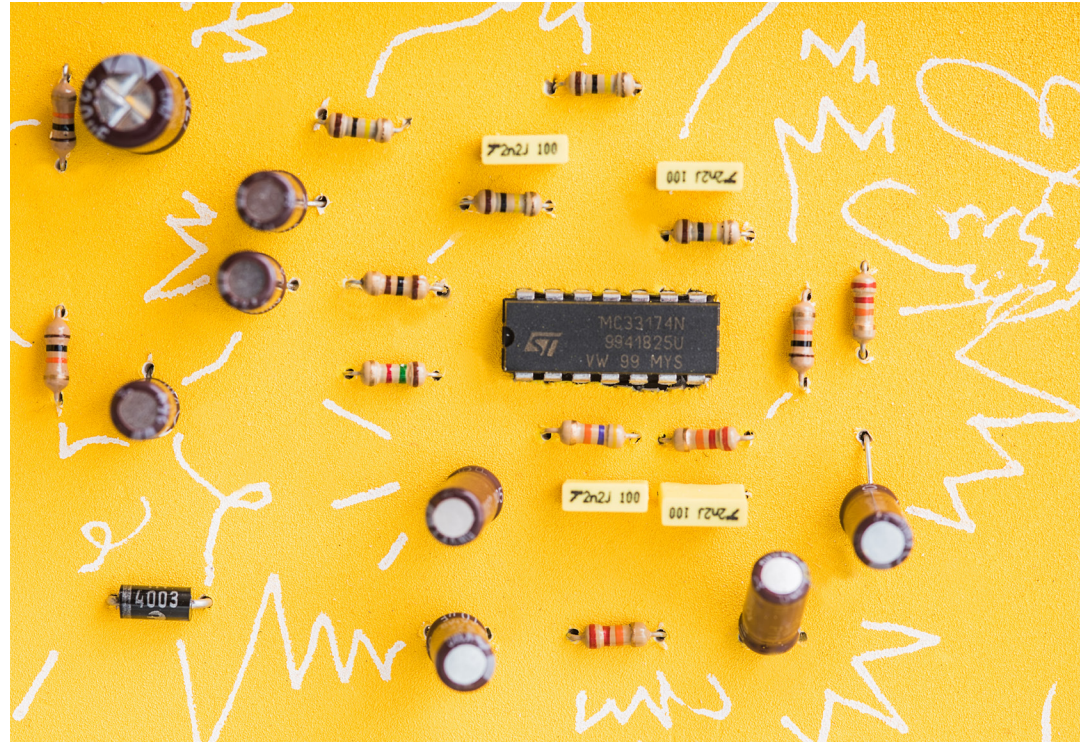
MASTER IN DESIGN FOR EMERGENT

WHAT?

The Master in Design for Emergent Futures (MDEF) is an immersive learning program that focuses on Barcelona city as an experimental playground, in which design can be used to understand, develop, test and speculate interventions that respond to the wicked problems of our time.

The master evolves the practice of design beyond objects, aesthetics, form-finding and pure speculation through an approach of 'designing interventions' and hands-on-learning. The approach enhances the technical capabilities of designers in digital fabrication, artificial intelligence, and synthetic biology in order for them to physically explore their ideas. On the other hand, the approach elevates the critical thinking of designers and provides them with communication tools and philosophical understanding to build new narratives about the possible futures that can be triggered in the urban context of today. MDEF is one of the newest programs at IAAC. It collects the solid design and academic knowledge of Elisava School of Design and Engineering, professional and research experience of Fab Lab Barcelona and the pioneering distributed education model for digital fabrication of the Fab Academy program.

MDEF is a nine-month experience for professionals and graduates who want to expand and calibrate their interests and acquire the skills to turn protests into prototypes, ideas into actions, and code into things. The program is structured into four critical steps: Exploration, Instrumentation, Reflection, and Application. Through these four steps, the master provides designers, sociologists, economists and computer scientists the strategic vision and skills to become leaders of change in many professional environments that deal with design, complexity, innovation, and disruption.



WHY?

It has been suggested that humans have become the most important geologic agents on planet Earth; more profoundly destructive than volcanoes, earthquakes or hurricanes. By controlling certain natural systems, we have changed global interactions, producing unanticipated consequences in climate, ecosystems, and infrastructure. 'Design' can give us the power to shape the environment and the imagination to create the desired reality. We need the support of technology and the skills it can enable. Design is a powerful tool for transformation. But designing emergent futures is not about looking for moonshots or massive solutions to solve all our problems at once. Instead, it proposes the creation of learning environments to experiment and speculate with new narratives around desired futures. It calls for the design of small-scale, sustained interventions to approach large-scale challenges; it looks to scalable approaches to dissolving wicked problems at multiple scales, instead of solving them with single shots.

The biosphere, financial markets, family structures, and business models are being challenged in one of the most important transition periods of human history. While the industrial revolution produced innumerable benefits to society, we are now confronted with a plethora of complex and interconnected problems that challenge our productive model: climate emergency, social inequality and the centralisation of wealth and power. The moment is now for us to formulate new questions for technology and to redefine its role in society, to create promising and viable emergent futures for humanity to thrive, not just survive.

WHO?

MDEF is an intensive program that is aimed for explorers that can consider themselves designers, architects, urbanists, economists, sociologists, artists or technologists, who want to become leaders and agents of change for radical transformation of the current state of affairs. This master program is for individuals who are looking to incorporate emergent technologies as part of their set of skills as designers and agents, as well as to develop the mindset to deal with the extreme complexity of the wicked problems of our time. We are convinced that higher education can offer the opportunity for graduates and professionals to upgrade their set of skills, previously developed in more traditional environments.

MDEF invites students to unlearn first, and to embrace a process of continuous learning during the program, and after graduation. MDEF is about learning how to learn. This master is also for activists, technology enthusiasts, and the misfits that do not want to be part of the 5 to 9 work cycle, and that are convinced about the need for constructive approaches to deal with both the ecological and social crisis of today, in order to make possible a tomorrow for all. We welcome students that are willing to go beyond their comfort zone, and experiment in the city of Barcelona, while interacting with local communities of practice, experts, social leaders, scientists, and professionals in different fields, in order to scout for opportunities to intervene in the real world through design, and to enable a progressive and expiral iteration process for their projects to evolve during the program, and that could open various possibilities to continue beyond MDEF, either within X Futures or with other organizations.

PROFESSIONALS OPPORTUNITIES

The Master in Design for Emergent Futures program is designed for leaders. It does not offer job positions under the current industrial context. MDEF graduates might find employment opportunities such as Chief Complexity Officer, Chief Disruption Officer, and work in collaboration with innovation teams in small, medium and large companies. Graduates can continue their research agenda within more traditional academic institutions, in the format of academic masters or PhDs.

Graduates will also be supported to become entrepreneurs and create job opportunities for themselves and others by turning their ideas into real world projects with selected students offered the opportunity to incubate their projects through the optional second year Impact Incubation Program, X Futures





**MASTER IN
DESIGN FOR
EMERGENT FUTURES
MDEF 01**

Edition: 6st Edition

Credits: 75 ECTS

Direction: Tomás Díez & Oscar Tomico

Duration: 09 months
From October 2023 to June 2024 // Immersive and full time

Language: English

Admission: Bachelor or higher degree in Industrial Design, Product Design, Urban Design, Graphic Design, Interaction Design, Computer Science, Engineering (Mechanical, Chemical, Product, Material), Sociology, Anthropology, Economy, and other related professions.

**MASTER IN
DESIGN FOR
EMERGENT FUTURES
MDEF 01 + MDEF 02**

Edition: 2st Edition

Credits: 120 ECTS

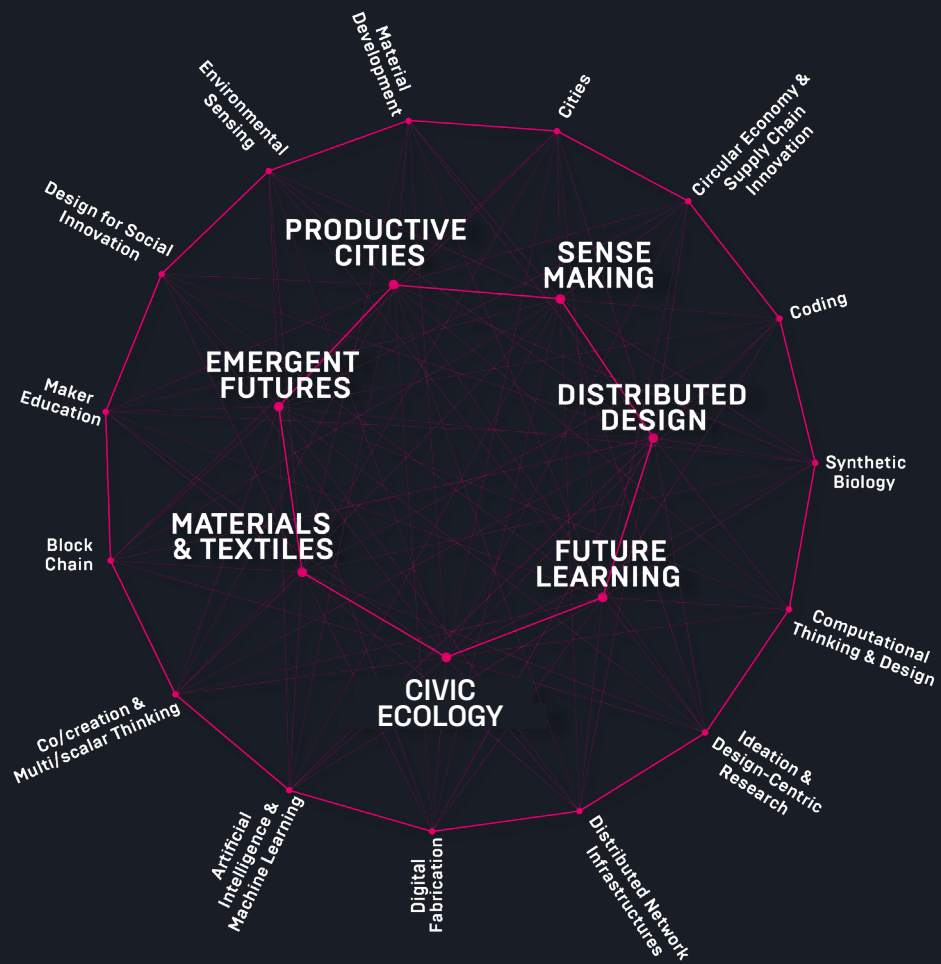
Direction: Tomás Díez & Oscar Tomico

Duration: 9+9 months (18 months)
From October 2023 to June 2025 // Immersive and full time

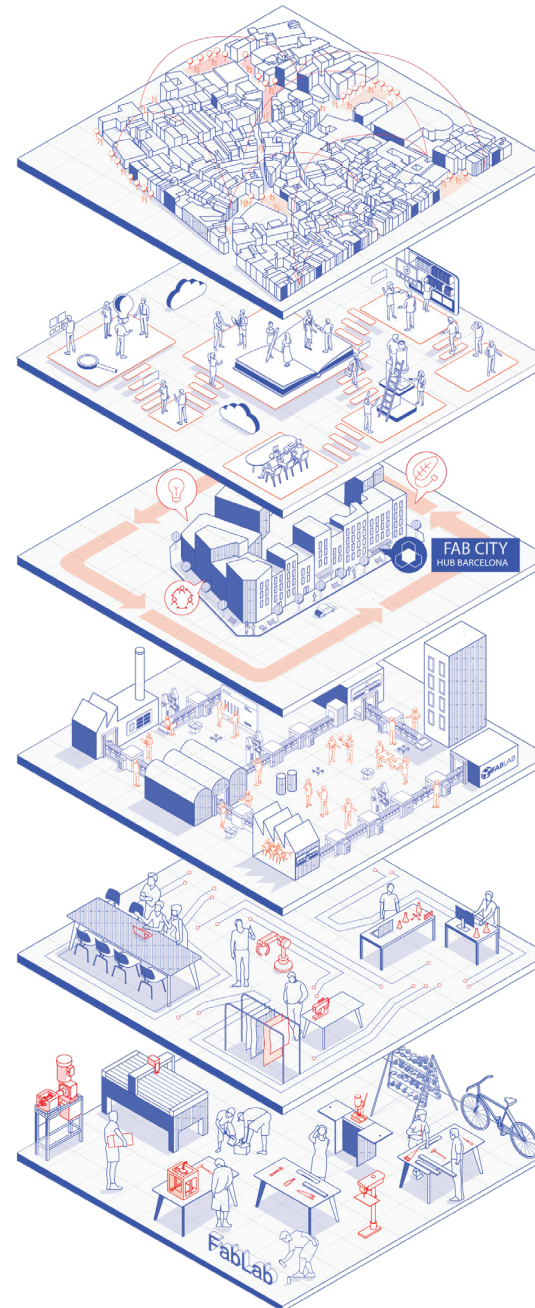
Language: English

Admission: Bachelor or higher degree in Industrial Design, Product Design, Urban Design, Graphic Design, Interaction Design, Computer Science, Engineering (Mechanical, Chemical, Product, Material), Sociology, Anthropology, Economy, and other related professions.





MDEF follows the strategic approach of the Fab City Global Initiative, illustrated in the Full Stack. Through multiple scales and opportunities of intervention, the Master aims to build evidence based knowledge through student's projects, which will be connected with opportunities for collaboration both locally in Barcelona, and through the international Fab Lab and the Fab City Networks.



Cities Network

Shared metrics to evaluate progress towards self-sufficiency in cities. Policy-making, regulation, and planning for regenerative urbanization.

Platform Ecosystem

Project repositories for urban transformation. Distributed and decentralized repositories and value exchange mechanisms for global collaboration. Fab Chain, the blockchain project to enable distributed design and manufacturing.

Shared Strategies

Global programs for urban transformation related to local production and processing of food, energy, water, information, or other production systems. Implementation and deployment strategies by the Fab City Collective.

Distributed Incubation

Engage the power of a distributed network of knowledge to envision, design and create open source technology for urban regeneration. "Grow with Fab" program as a distributed accelerator within the Fab Lab network.

New Forms of Learning

New skills to learn how to learn, learning by doing principles, lifelong learning basis. The Academy of Almost Anything (Fab Academy, Bio Academy, Fabricademy), STEAM education and professional training.

Distributed Infrastructure

People, communities, spaces (Fab Labs, Makerspaces, Hackerspaces), machines, tools. Thousands of spaces and communities already in place in every major and middle city in the world.

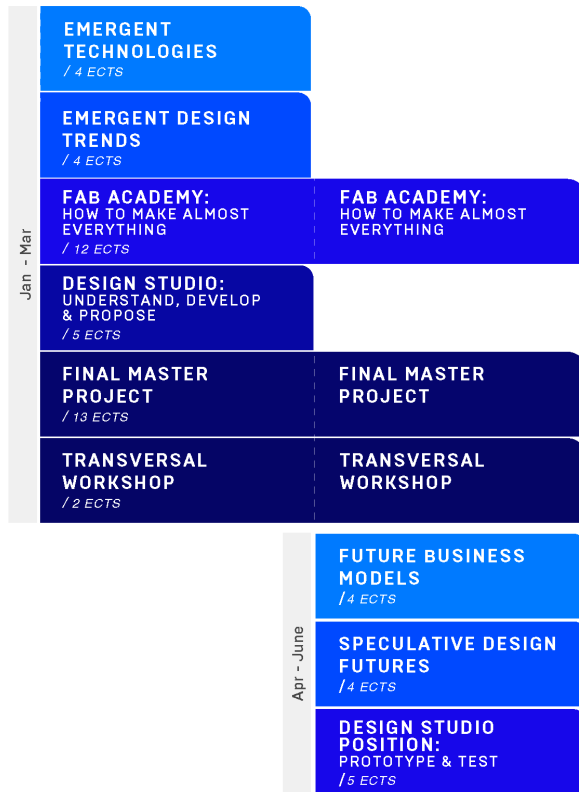
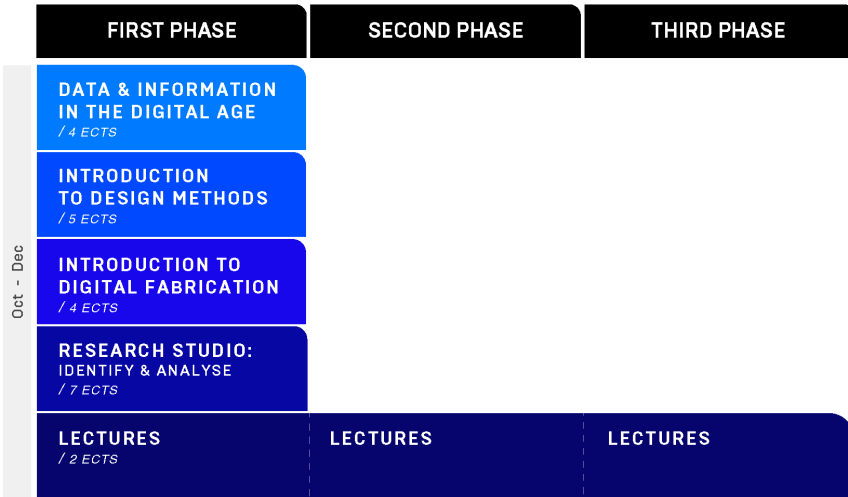


MDEF 01

Our economic, environmental and social paradigms are challenging the status quo of a 250-year-old industrial society. The role of design has changed significantly during this last quarter of a century.

The beginning of the 20th century brought fundamental transformations, which can help to understand how we live today. We saw the birth of wireless communications, oil as a source of energy and raw materials, automation as a production process, and many new forms of organizing our economy and society. Every moment of convergence in technology and socioeconomic systemic change is built out of historical transformations that took place centuries ago. Most recently, these are taking place in even shorter periods of time. Decades become years, years become months; change is happening rapidly, yet operates paradoxically inside the previous layers of transformations.

MDEF approach to “designing interventions” provides the platform for students to work on identifying their purpose as designers, build the skills needed to align that purpose with their design practice, and develop a project during the master that will serve as a starting point for the future professional career. The MDEF master project aims to become an intervention in the real world, and at the same time a catalyst for students to refine their role as designers to produce change.



TOTAL ECTS 75

PROGRAM STRUCTURE

The Master in Design for Emergent Futures is organized in three terms (Oct-Dec | Jan-Mar | Apr-Jun), each including Design Studios, complementary Seminars and experts' masterclasses. In addition, a Research Trip is included in the master.

In this Master, we don't teach students a methodology nor a set of golden rules to be applied in given assignments. Instead, we introduce the MDEF as a journey and exploration on how projects be manifestos to introduce new outputs.

We support students in the development of their identity and vision, and encourage them to grow their unique set of skills, knowledge and attitude in order to navigate through the uncertainty inherent when designing possible futures.

The **Design Studios** are the main part of the program as they focus on real world experimentation and socio-technical development. During the year, students will be developing technical, aesthetic and conceptual skills by working on real-life scenarios.

Seminar sessions are designed to delve into specific domains of knowledge and are delivered by relevant experts, including both practitioners and scholars. Throughout the academic year, international experts in the field of design and emergent technologies will be contributing to the program as guest lecturers.

The Master in Design for Emergent Futures is a journey through time and multiple dimensions, which when intersected, opens a new point of view, understanding and translating ideas into projects.

These four dimensions are:

EXPLORATION

We expose the students to a set of technologies that have the capacity to disrupt our present understanding of society, industry and the economy.

INSTRUMENTATION

We provide a set of skills and tools that will help to translate ideas into prototypes, and prototypes into products, which can then be tested and iterated throughout the design process.

REFLECTION

We support the students in the development of their identity and skill set, knowledge and attitude as designers of possible futures.

APPLICATION

We encourage students to create a culture of making where prototyping acts as a generator of knowledge, and interventions become message carriers of a future that is about to come.

The Master in Design for Emergent Futures is connected with the Exploring Emergent Futures platform at the Royal College of Art, London, which has been developed by James Tooze and Tomas Diez since 2015.

SEMINARS & WORKSHOPS

APPLICATION | TERM 1,2,3

RESEARCH, DESIGN & DEVELOPMENT STUDIOS

Aim to take research areas of interest and initial project ideas into an advanced concretion point, and execution plan. The studio structure in three terms could be understood as follows:

**TERM 1
RESEARCH STUDIO**

Analyzing the past. References, state of the art. Identifying areas of interest.

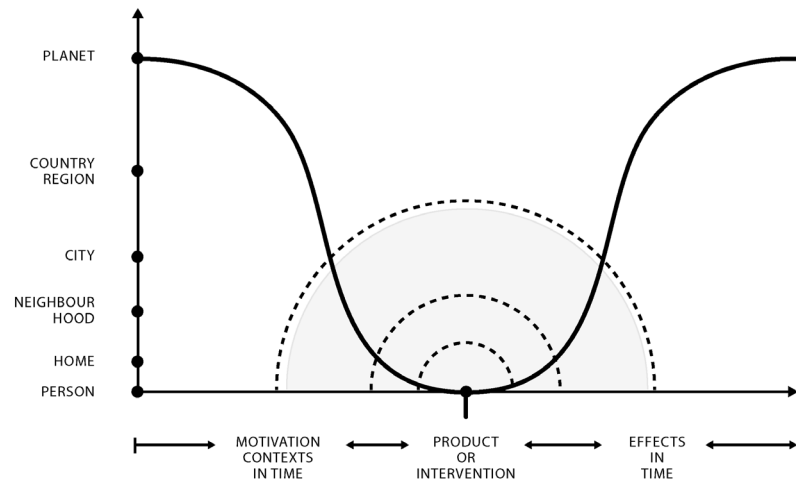
**TERM 2
DESIGN STUDIO**

Forming the present. Building the foundations. Applying knowledge into practice. Prototyping and experimenting.

**TERM 3
DEVELOPMENT STUDIO**

Defining the future. Establishing roadmaps. Forming partnerships. Testing ideas and prototypes in the real world.

MULTISCALAR DESIGN STRATEGY



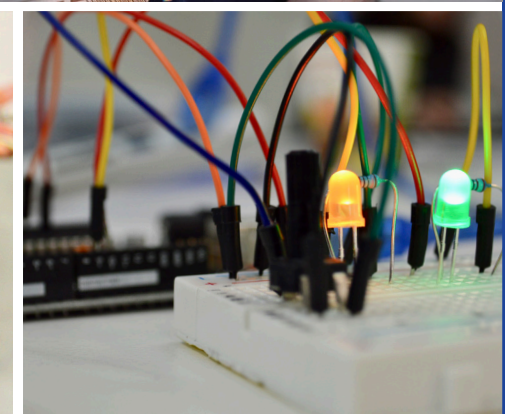
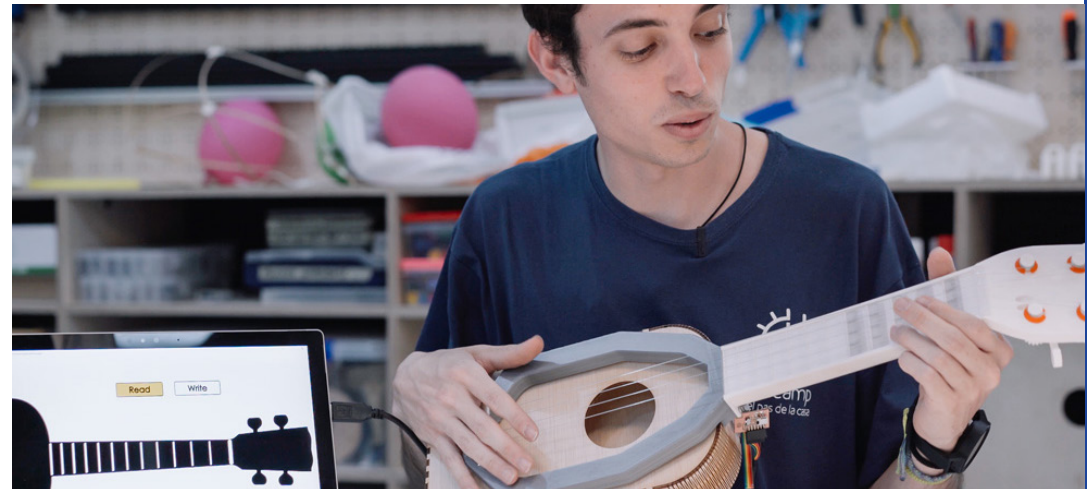
SEMINARS & WORKSHOPS

INSTRUMENTATION | TERM 1,2,3

FAB ACADEMY FOR MDEF

The Fab Academy is a distributed educational model directed by Neil Gershenfeld of MIT's Center For Bits and Atoms and based on MIT's rapid prototyping course, MAS 863: How to Make (Almost) Anything. The Fab Academy began as an outreach project from the CBA, and has since spread to Fab Labs around the world. The program provides advanced digital fabrication instruction for students through an unique, hands-on curriculum and access to technological tools and resources.

During this adapted version of the Fab Academy MDEF students learn how to envision, prototype and document their projects and ideas through many hours of hands-on experience with digital fabrication tools, taking a variety of code formats and turning them into physical objects.





MDEF 01 + MDEF 02

The second academic year of the MDEF allows students to deepen their training and further develop the final Thesis Project presented at the end of the first academic year. It also allows students to continue their research and innovation agendas using a multiscalar, experimental and realistic approach, and turning the final projects developed in the first year of the program into living platforms for academic research, business development or direct impact on open source communities.

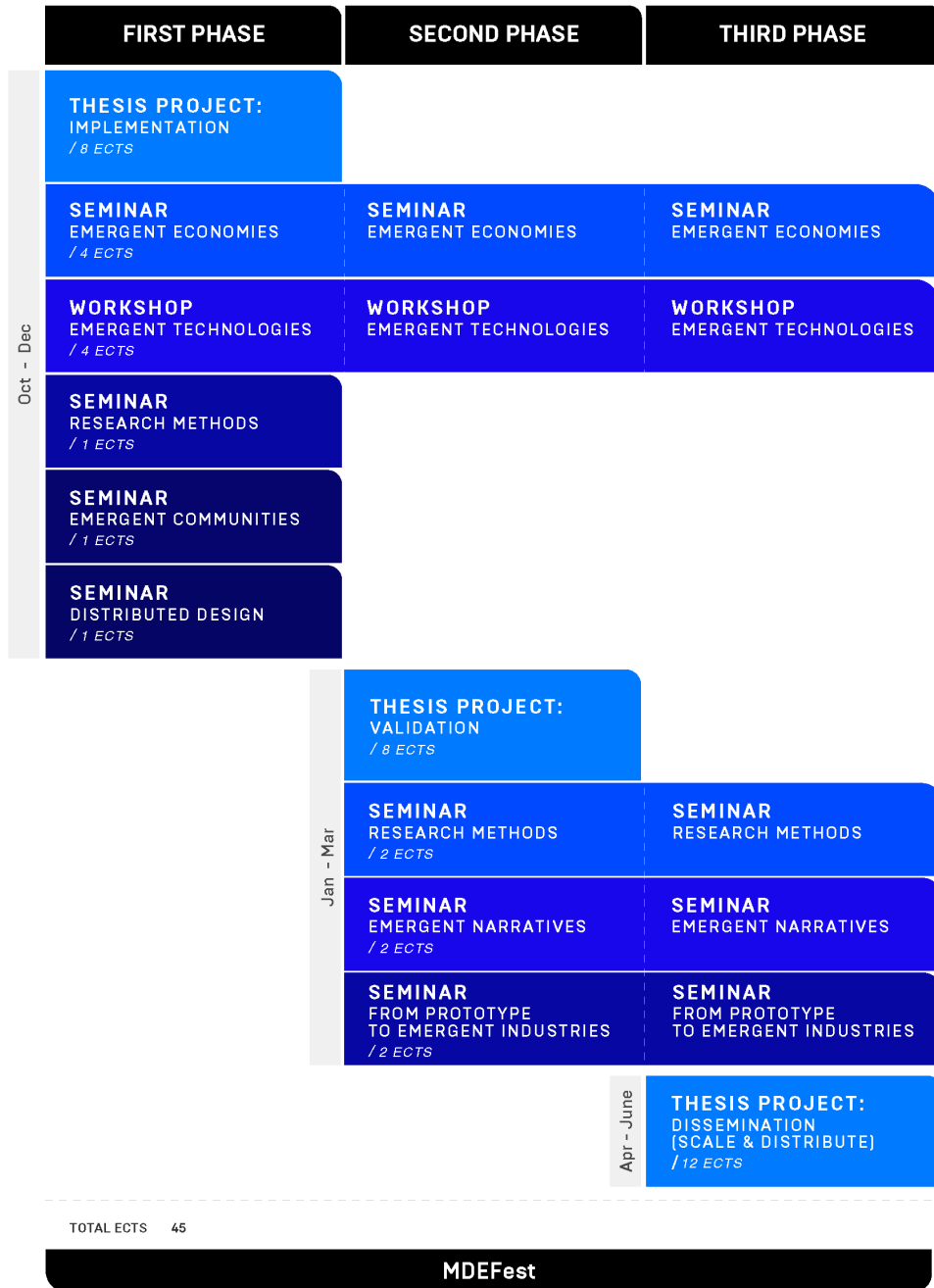
Student agendas during the second year of MDEF have three different focuses and the same number of possible directions after the completion of the program. The results of the projects range from:

The knowledge developed
and its contribution to academia

Establishing a business model plan
and implementing it

Creating an open source community
to allow direct impact in the real world

The MDEF Thesis Project offers a unique approach to develop the best combination of these three dimensions in student projects, contributing to scale and exploring distribution and sustainability strategies through innovative methods.



PROGRAM STRUCTURE

The “Master in Design for Emergent Futures. Project ”(MDEF02) has 3 clear principles:

Thesis

Provide a strategic vision and tools / techniques for designers so that they can develop ideas and be able to translate them into real projects and in context.

Focus on the design of interventions in the form of products and platforms that seek to produce new emerging futures, previously analyzing the current challenges of society and industry.

Work at multiple scales to design and test interventions in the real world.

During the first year of the master’s degree, students will acquire a broad and informed vision of the impact of technology on design and culture. They will make prototypes and test some of these technologies in the different design workshops.

During the second year of the master’s degree, students will continue with their research and innovation agendas using a multiscale, experimental, and realistic approach. They will turn the final projects developed in the first year of the program into living platforms for academic research, business development, or direct impact on open source communities. Thanks to the combination of academic, business, and maker approaches, students will be able to further deepen and develop their hybrid profiles created during the first year, taking their development to a professional level.

At the end of the second year we hope that the students have developed their projects within the framework of the following guidelines:

ACADEMIC ORIENTATION

CTS credits and continuation of the academic career through other Master or Doctorate programs

BUSINESS ORIENTATION

Development of a business structure around a product or service

COLLECTIVE ORIENTATION

Implementation of an accessible technological development for open source communities

THESIS PROJECT

The Thesis Project design workshop is the backbone of the MDEF02 program, since within it the knowledge acquired in year 1, and the complementary seminars and workshops, are applied. That is why we have three types of Thesis Project, related to each quarter of the program, and each with its specific objectives.

THESIS PROJECT - IMPLEMENTATION

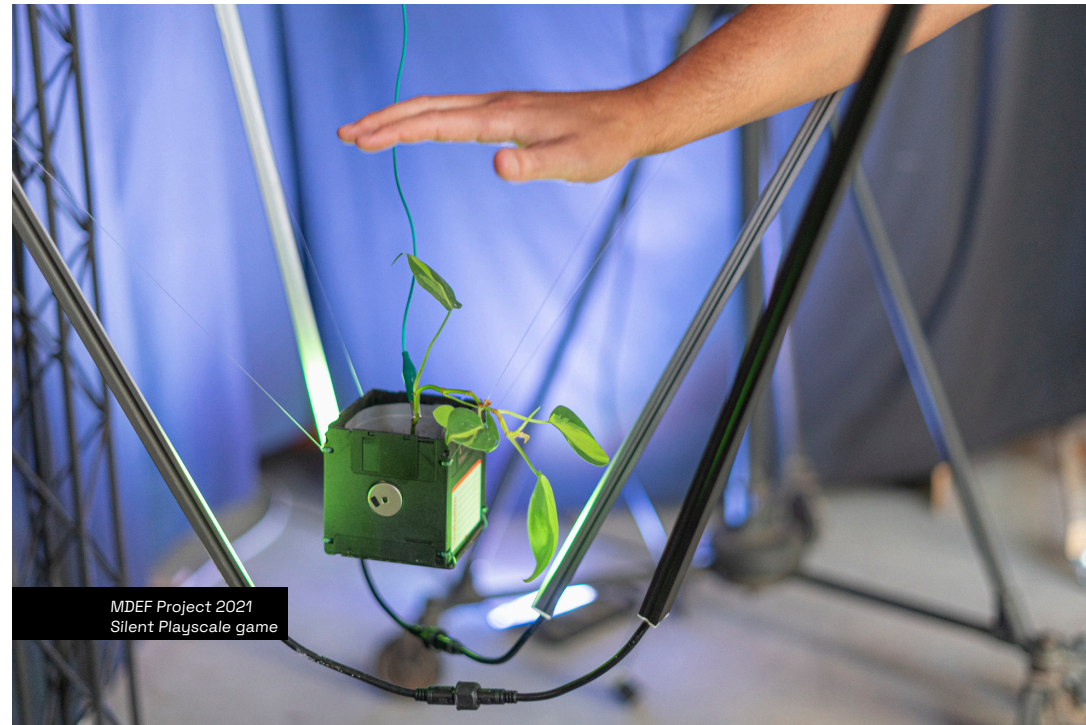
The first Thesis Project design workshop is focused on reinforcing the implementation of the projects that have been developed in the first year of the program. To achieve this objective, tutorials will be carried out with the directors of the master's degree, directors of the study workshop, and invited experts. The tutorials will be focused on reinforcing the ability to articulate innovation projects in the real world, and on being able to incorporate the knowledge acquired during the program.

THESIS PROJECT - VALIDATION

This design workshop is focused on developing a series of strategies during the implementation of the final master's project for its economic, environmental, social, and communicative assessment. Through an iterative design process, and applying impact measurement methodologies, the student will be able to collect and analyze evidence that allows strategic decision-making within the different aspects of the final master's project.

THESIS PROJECT - DISSEMINATION

The third design workshop is focused on developing the communication and dissemination actions of the final master's project. Within these strategies, dissemination in the academic field is contemplated, as well as communication strategies related to traditional and innovative media, both in the digital field, such as print or performative.



MDEF Project 2021
Silent Playscale game



MDEF Project 2021
Sensitive Matter

SEMINARS & WORKSHOPS

EMERGENT ECONOMIES

This seminar is focused on providing the student with knowledge and skills in the field of new technologies applied to the economy. Within the content, emerging economic models such as the collaborative economy or the distributed economy are studied. In the seminar, special emphasis will be placed on distributed ledger technologies (DLT), and applications built on the basis of blockchain that allow the exchange of assets, and the development of smart contracts. The knowledge acquired will be applied in the master's projects, allowing the exploration of new ways to achieve economic sustainability, financing based on digital tools, and the exploration of new emerging economic models.

EMERGENT TECHNOLOGIES

This seminar focuses on deepening the knowledge explored within the first year of the master in the technological areas of digital manufacturing and robotics, artificial intelligence and machine learning, and finally synthetic biology and biomaterials. During the seminar, the theoretical and practical content on the implementation of these technologies within the final master's projects will be taught. The emerging technologies seminar considers the ethical implications of their use in relation to their environmental and social impact.

RESEARCH METHODS

This seminar provides the necessary knowledge to develop and communicate a design research project. The seminar offers students the methodologies and tools necessary to establish a design project as a continuous research process, from which opportunities for experimentation in the real world are generated.



MDEF Project 2021
Autonomous tree



- Please populate your Padlet wall to create a virtual exhibition of your key stages in your development process
- Populate sections with key text and images...

Erasmus+ ual: university of the arts london POLITECNICO ELISAVA

FAB LAB BARCELONA & ELISAVA JOINT RESEARCH RESIDENCY PROGRAM

FLB and Elisava offer the possibility to participate in the FLB Residency Program, for junior researchers all around the world to work on a top research project at Fab Lab Barcelona and Elisava.

Applicants will be selected based on the suitability of their research proposal towards the proposed projects.

Participants will become full juniors researchers at the hosting institution, working hand in hand with project teams. Each participant will have a research mentor that will define the specific tasks and objectives and will guide them during the whole program.



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CENTRINNO

HOSTING INSTITUTIONS

FAB LAB BARCELONA & ELISAVA

JOINT RESEARCH RESIDENCY PROGRAM

EXPECTED OUTCOMES

Ability to implement their research background in the complexity of a real project

Ability to manage information in research teams

Ability to communicate from a scientific point of view

Ability to implement their design and prototyping skills in a real project

CAREER DEVELOPMENT

Take part in professional research teams in companies with R&D departments

Complete the academic curriculum of higher studies by publishing a publication on a real research project

REQUIRED COMMITMENTS

20h/week dedication from October 2023 till June 2024

Actively follow the agreed work plan

As part of their work participants will need to write an academic publication reflecting their learning outcomes that will also work as their program report.



arts.ac.uk
FUEL4Design



foodshift2030.eu
FOODSHIFT 2030

ELISAVA RESEARCH

VIBE

VIBE

The cultural sector is in complete upheaval. New socio-cultural behaviours and new technological advances and also recent health restrictions are forcing museums and cultural institutions to transform their activities, challenging them to unlearn and rebuild through new systems and new mediums. Vibe is an experimental platform for cultural content, community exchange and hybrid experiences that explores new ways of consuming culture. Anchored on megatrends such as mixed realities, gaming and participatory entertainment, Vibe is phygitaly deployed through the interactions between body, space and audio-visual.

FUEL 4 DESIGN

FUEL 4 DESIGN

Fuel4Design is a 3-year project jointly delivered by a consortium of leading design-educator-researchers from the Oslo School of Architecture and Design, Politecnico di Milano, University of the Arts London, and ELISAVA. 21st-century design pedagogy needs to be urgently reframed in an approach that we call 'Design Futures Literacy'. This is a literacy that connects teaching and learning to provide an education for young designers for designing for complex tomorrows. This is a matter of Design taking on a far more proactive role in working to anticipate these tomorrows through acts of situated making that understands use and users and Design as working prospectively to look ahead of the immediate or short term (Celi & Morrison, 2018). FUEL4Design supports the discipline of Design and its MA/PhD students and teachers in Higher Education Institutions (HEIs) to productively anticipate critical future learning needs and change processes through sustained future making.

FAB LAB BARCELONA RESEARCH

CENTRINNO



The EU-funded CENTRINNO project aims to develop and demonstrate strategies, approaches and solutions for the regeneration of industrial historic sites and areas as creative production and manufacturing hubs that stay true to the ecological challenges of our time. CENTRINNO aims to boost a diverse, inclusive and innovative urban economy that uses heritage as a catalyst for innovation and social inclusion and fosters circular management of resources. The CENTRINNO pilot will engage with the local community and territory. Learn more about Fab Lab Barcelona's role in the project [here](#).

FOODSHIFT



FoodSHIFT 2030 aims to explore pathways of innovative and citizen-driven food system approaches in cities, and launch an ambitious citizen-driven transition of the European food system towards a low carbon circular future, including a shift to less meat and more plant based diets. FOODSHIFT combines improving social and technological readiness levels with new circular business models based on the idea of food citizenship. In Barcelona, the Food Tech 3.0 lab is combining food, innovative tech, and new circular business models to accelerate 10 local initiatives. Learn more about Fab Lab Barcelona's role in the project [here](#).

DISTRIBUTED DESIGN PLATFORM



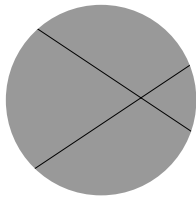
Distributed Design is a phenomenon that integrates design skills and the 'making' approach to enable new entrepreneurial types of professional producers. On one hand, designers acquire more technological and practical skills. On the other hand, makers evolve their design attitude and capabilities. The concept builds upon the practice of the global Fab Lab Network. The Distributed Design Platform (DDMP), co-funded by the Creative Europe Program of the European Union, is a practice-based advocacy platform for Distributed Design coordinated by Fab Lab Barcelona. Comprising 15 members from across Europe the Platform presents an annual program built around open source, public-facing tools and methodologies with the aim to educate, train and upskill designers and citizen-designers in the field and potential of distributed design.

RESERVIST



Repurposing manufacturing lines for providing medical products and services in case of spiking demand times. RESERVIST calls for the creation of resilient networks of suppliers, manufacturers, notified certification bodies and distributors in response to the current COVID-19 pandemic. It taps on the distributed manufacturing capacity of the Fab Lab Network, the rapid prototyping for the development of real need solutions and the generation of blueprints for replicable solutions. It also ideates on different pandemic scenarios and creates a manual for emergencies with the scope to enable (SME) companies and increase society's response resilience. Learn more about Fab Lab Barcelona's role in the project [here](#).

DIRECTED BY



Tomás Diez

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Tomas Diez is a Venezuela-born Urbanist who specializes in Digital Fabrication and its implications for the future of cities and society. He is the Director of Fab Lab Barcelona at the Institute for Advanced Architecture of Catalonia, where he also leads the Master in Design for Emergent Futures. He is the European Project Manager of the Fab Foundation, and the Executive Director and founding partner of the Fab City Foundation. Tomas holds bachelor degree in Urban Planning from the Universidad Simon Bolivar (Caracas – Venezuela), a Diploma in Social Work at the University of Havana (Cuba), a Master in Advanced Architecture by IAAC (Barcelona), and a Diploma on Digital Fabrication in a pilot program on the class “How to Make Almost Anything”, offered by Massachusetts Institute of Technology’s Center for Bits and Atoms (CBA) in 2008 as the year zero of the Fab Academy. He has been a close collaborator in the development of the Fab Lab Network together with MIT’s CBA and the Fab Foundation since 2007.

Head of Studies:
Mathilde Marengo

FabLab Barcelona Coordinator:
Luciana Asinari



Oscar Tomico

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Oscar Tomico holds an MSc degree in Industrial Engineering from Polytechnic University of Catalonia (Spain) and a PhD from the same institution, awarded in 2007 with Cum Laude. During his research into Innovation Processes in Product Design, he investigated subjective experience-gathering techniques based on constructivist psychology. After finishing his PhD he worked as a consultant for Telefonica R&D (Barcelona). Tomico joined Eindhoven University of Technology (TU/e) in 2007 as Assistant Professor. He has been a guest researcher and lecturer at AUT Creative technologies (New Zealand), at TaiwanTech (Taiwan), Swedish School of Textiles (Sweden), Institute of Advanced Architecture (Spain), University of Tsukuba, Aalto (Finland) to name a few. During his sabbatical in 2015 he worked as a consultant for the functional textiles department at EURECAT (Spain). He recently (2017) became the head of the Industrial Design Bachelor’s degree program at ELISAVA.

Coordinated by:
Chiara Dall’Olio

Emergent Futures Strategic Advisor:
Mariana Quintero

FACULTY

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 Computer Science, Tools and Platforms
 (Executive director at FLB)

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 (Hardware and Software Expert at FLB)

Oscar Gonzalez
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 (Sense Making Expert at FLB)

Anastasia Pistofidou
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 (Materials and Textiles Strategic Advisor at FLB)

Jonathan Minchin
 Design and Sustainability (Civic Ecology
 Strategic Advisor at FLB)

Nuria Conde Pueyo
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 (Universitat Pompeu Fabra at PRBB)

Lara Campos
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Laura Freixas
 Biomaterials and Circular Economy
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Milena Juarez
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 FLB)
Santi Fuentemilla
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Daniel Charny
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 CRNS – France

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 Royal College of Arts and Design

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 Institute of Making, UCL

Efraín Foglia
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Eduardo Chamorro
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 Expert at FLB)

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 Materials and generative design (Thomas
 Duggan Studio)

Mara Balestrini
 New business models, user engagement, HCI
 (Ideas for Change)

Jose Luis de Vicente
 Digital Culture, Innovation and New Media Art
 (Sonar+D)

Mercé Rua, Markel Cormenzana
 Transition Design (Holon)

Andrés Colmenares
 Speculative Research, Internet Post-
 technological Future (IAM)

Lucas Peña
 Artificial Intelligence and Machine Learning BCN)

Ramón Sangüesa
 Artificial Intelligence and Machine Learning

Ariel Guersenzvaig
 Design Research and Ethics (Elisava)

Taller Estampa
 Artificial Intelligence and Machine Learning

Ron Wakkary, Kristina Andersen, Angella Mackey, David McCallum
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 Fashion, Media Art and Design Research
 (Eindhoven University of Technology)

Heather Corcoran
 Kickstarter

Usman Haque
 Umbrellium

Mette Bak Andersen
 Material Design (Material Design Lab at KEA)

Saúl Baeza
 DOES Work – Elisava

Lorenzo Patuzzo
 Blockchain and Collective Intelligence
 (AKASHA Foundation)

Sara González de Ubieta
 Design, Material Experimentation / deubieta.com

Laura Cléries
 Materials Innovation, Research Methodologies
 (Elisava)

MDEF

ALUMNI PROJECTS



JAKTO LAB

MDEF ALUMNI PROJECT

Implementing biodesign in children's education.

The project starts from something as simple as it is complex - how children perceive and explore the world around them and it follows by their ability and stubbornness in asking the ground question: why. By using the build-in curiosity and creativity we can implement learning methods that instead of preparing children to memorize things will teach them to produce their own ideas and in the long run, problem-solving and answering approach.

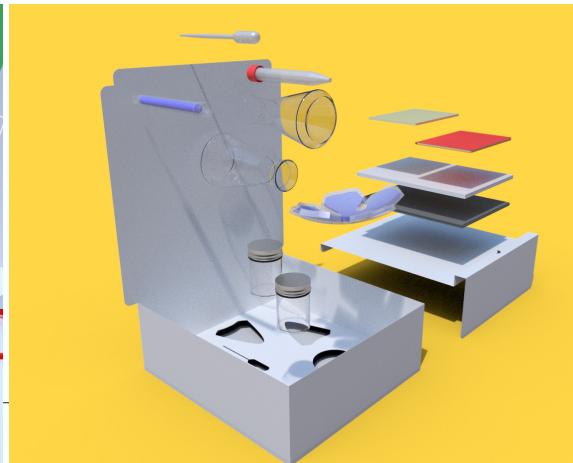
My intervention aims at the gap between today's tools and the skills of the future. By including biodesign in children's education, I want to introduce cross-curricular possibilities. JAKTO LAB is focused on the implementation of topics such as biomimicry and bionics, biofabrication methods, biology hacking and more into the educational process and providing tools and resources to make it accessible.

COLLECTIVE EDIBLES

MDEF ALUMNI PROJECT

An exploration into what we define as edible and the viability of context-based agriculture. This project uses food, to talk about food.

How are we going to feed generations to come, and how we will feed ourselves in the coming decade? Across the media, in politics and around the dinner table, we are accommodating polar varieties of diets, all intrinsically related to how we construct our cultural narratives which reflect who we are, how we eat and what we eat. This project looks at methodologies for urban food production, including that of insect farming. It extends further to relate to the space of food consumption, addressing hot the two need to be relinked to change negative-impact behaviours.



THE PUERTA PROJECT

MDEF ALUMNI PROJECT

An intervention bringing machine learning, design and other emergent technologies into the learning environment

The Puerta Project provides everything required to bring machine learning and artificial intelligence principles to the learning environment. The project applies design-based research methodologies to create bespoke, fun and engaging STEAM activities for children between the ages of 8-15, framing itself within the growing field of 'AI literacy'. The realisation of the project consists of a series of workshops that not only make children aware of the presence of machine learning in their lives but present it as a tool to further and extend their practice, creativity and curiosity.

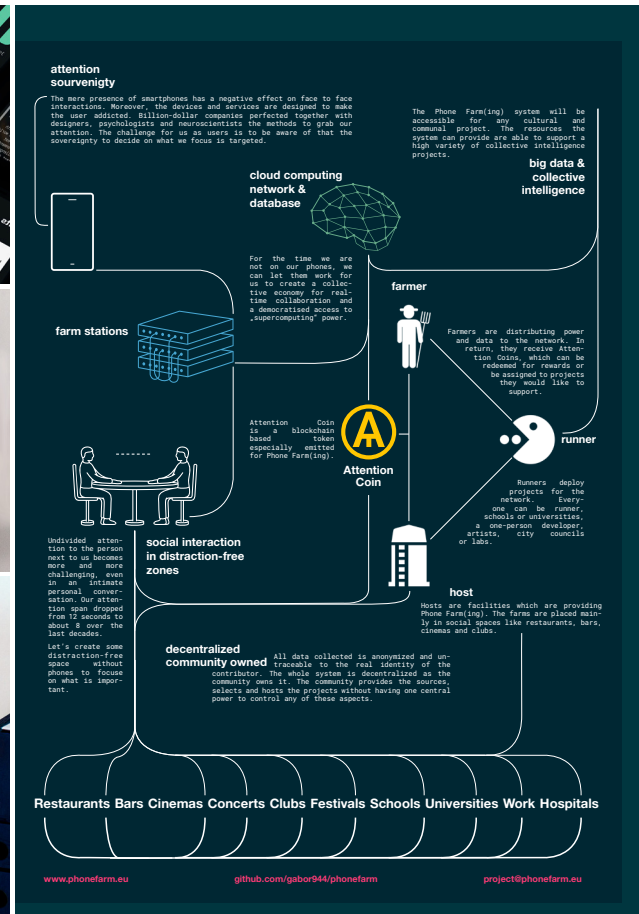
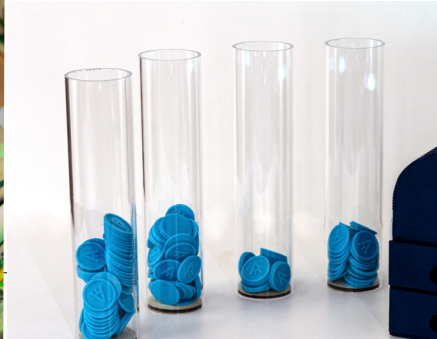
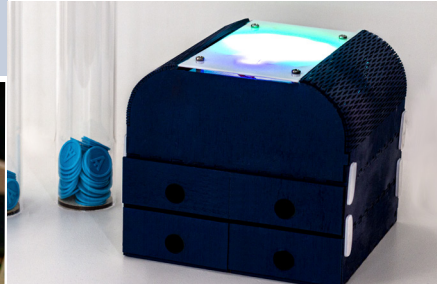
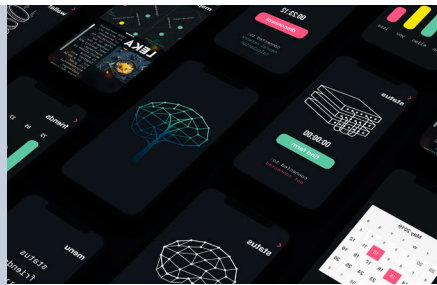
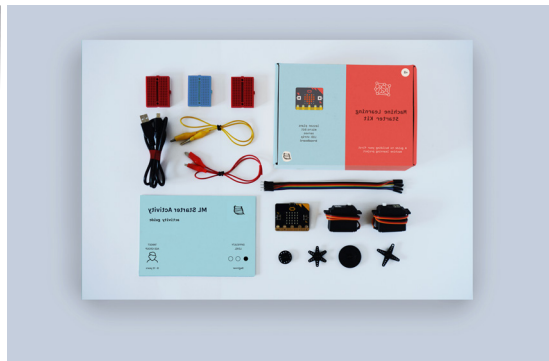
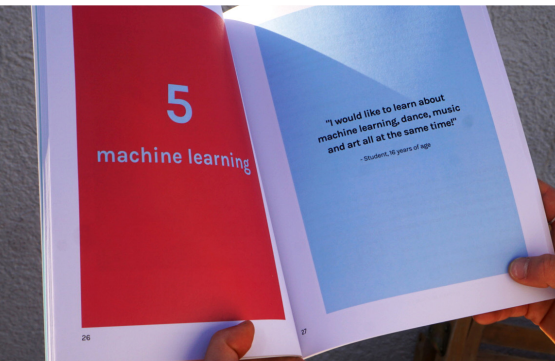
PHONE FARM(ING)

MDEF ALUMNI PROJECT

An intervention to reduce the negative effect of our phones on social interaction while utilising idle sensor data and processor capacity.

Phone Farm(ing) utilises idle sensor data and processor capacity of our phones while reducing their negative effect on social interaction. The network of farm-stations will provide safe storage and charging for phones whilst harvesting sensor data and processing power. These sources work towards an open source cloud database and blockchain computing network.

Stations will be placed in social spaces like clubs, bars and restaurants. In return for leaving your phone in the phone farm, you will be rewarded with the undivided attention, interesting conversations with friends and Attention Coins. The cloud network can be used for educational, scientific and art projects.



SMART CITIZEN

Smart Citizen is a platform to generate participatory processes of people in the cities. Connecting data, people and knowledge, the objective of the platform is to serve as a node for building productive and open indicators, and distributed tools, and thereafter the collective construction of the city for its own inhabitants.

The Smart Citizen project is based on geolocation, the Internet and free hardware and software for data collection and sharing. It connects people with their environment and their city to create more effective and optimized relationships between resources, technology, communities, services and events in the urban environment.

The project is born within Fab Lab Barcelona at the Institute for Advanced Architecture of Catalonia, both focused centres on the impact of new technologies at different scales of human habitat, from the bits to geography. The project was made possible thanks to the collaboration and active support of MID.



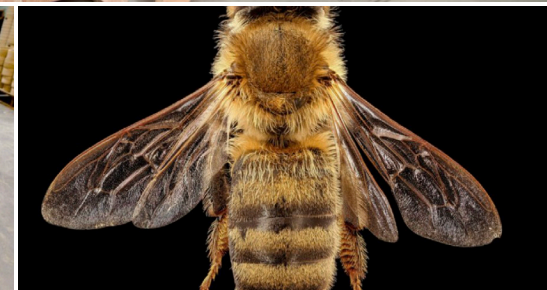
OPEN SOURCE BEEHIVES

The Open Source Beehives project is a network of citizen scientists tracking bee decline. We use sensor enhanced beehives and data science to study honeybee colonies throughout the world. All of our technology and methods, from the hive and sensor kit designs to the data, are documented and made openly available for anyone to use.

The primary goal is to determine the cause(s) of bee decline, to identify potential solutions, and to encourage networks of concerned citizens to study and redress the issue through the use of digital technologies in fabrication and information. The project is founded on the belief that open source innovation is the most direct way to address our global problems, and therefore, the software, hardware, data, and methodologies used by it are the perpetual property of the public domain.



OPEN SOURCE BEEHIVES





ROMI ROBOTICS FOR MICROFARMS

The Institute for Advanced Architecture of Catalonia coordinates the EU project Robotics for Microfarms (ROMI) under the framework H2020. IAAC is part of a consortium formed by a team of interdisciplinary experts in computer science (Inria, Sony), robotics and electronics (UBER, Sony, IAAC), plant modelling and agronomy (CNRS, Inria), as well as microfarming (Châtelain) which will be in charge of developing ROMI initiative, an open a lightweight robotics platform for small farming land areas.

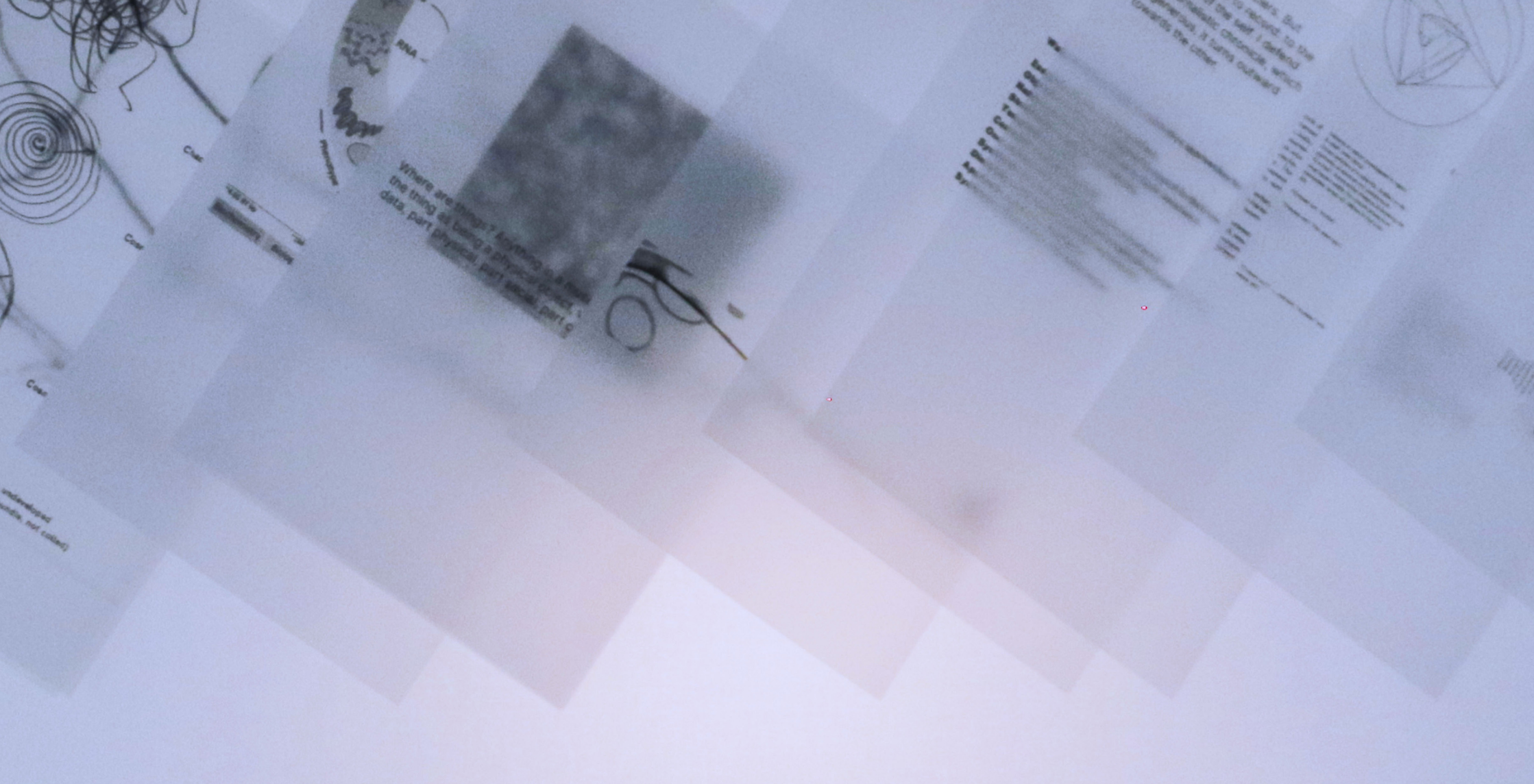
By implementing robotics in farmlands, ROMI will assist in weed reduction and crop monitoring and it also will help in reducing manual labour, saving farmers a 25% of their time. The technology applied in this project will acquire detailed information on sample plants and will be coupled with a drone, developed by Noumena, that acquires more global information at crop level.

Robotics for Microfarms will produce an integrated, multi-scale picture of the crop development that will help the farmer monitor the crops to increase efficient harvesting. This project aims to adapt and extend state-of-the-art land-based and air-borne monitoring tools to handle small fields with complex layouts and mixed crops. IAAC in collaboration with an international consortium will develop and bring to the market and affordable, multi-purpose, land-based robot, integrated 3D plant analysis in the robot for detailed plant monitoring, an aerial NERO drone for multi-scale crop monitoring and test the effectiveness of this solution in real-world field conditions.

TEXTILE, CLOTHING & BUSINESS LABS

The current fashion ecosystem creates colossal amounts of waste from the initial product manufacturing to product disposal. The Textiles, Clothing and Business Labs (TCBL) is investigating new ways of designing and making in the fashion industry, creating a diverse contemporary industry consisting of sector enterprises, innovation labs, service providers, and business advisors. The objective of the TCBL is to build alternative paths to over-production and reductive value, whilst returning 5% of production capacity and reducing environmental footprint by 20% within 2025.

Fab Lab Barcelona is contributing the space and expertise for project development with its own experimental textile and bio lab. The Fab Textiles lab established the Fabricademy course - an educational program which trains creative individuals to work at the intersection of textiles, biology, digital fabrication and innovation. Fabricademy was a program co-founded by Fab Lab Barcelona's Anastasia Pistofigidou, Cecilia Raspanti and Fiore Basile in 2017. The Fab Textiles Lab is an extensive space for imagination, generating projects ranging from bioplastics, digital wearables, bacteria dying and more.



MDEF

CO-ORGANISERS

The Institute for Advanced Architecture of Catalonia (IAAC) is an international centre for research, education, production and outreach, with the mission of envisioning the future habitat of our society and building it in the present.

Based in Barcelona, the Institute offers multidisciplinary programs that explore international urban and territorial phenomena, with an emphasis on the opportunities that arise from the emergent territories, and the cultural, economic and social values that architecture can contribute to today's society.



WELCOME TO THE INSTITUTE FOR ADVANCED ARCHITECTURE OF CATALONIA



IAAC THE INSTITUTE FOR ADVANCED ARCHITECTURE OF CATALONIA

IAAC sets out to take **Research and Development to architecture and urbanism, and create multidisciplinary knowledge networks.** To this end, the Institute works in collaboration with several cities and regions, industrial groups, research centres, including the City Council of Barcelona, the Collserola Natural Park, the Massachusetts Institute of Technology (MIT), the City Intelligence Lab of AIT, as well as diverse companies among which CISCO, Endesa, BuroHappold Engineering, Carlo Ratti Associati, MVRDV and many others.

In collaboration with these entities, the Institute develops various research programs that bring together experts in different disciplines such as architecture, engineering, biology, sociology, anthropology and other fields of investigation.

IAAC has made a name for itself as a centre of international reference, welcoming students and researchers from over 60 different countries.



IAAC IS EDUCATION

With a wide range of pioneering master programs, giving the next generation of architects and changemakers the space to imagine, test and shape the future of cities, architecture and technology.



IAAC IS HERITAGE

With the Valldaura Labs, a self-sufficient research centre located in the Collserola Metropolitan park, 20 minutes from the centre of Barcelona and surrounded by 140 hectares of forest, where a series of laboratories are implemented for the production and testing of Energy, Food and Things.



IAAC IS RESEARCH

Thanks to a series of projects with industry as well as projects funded by the European Union and developed in collaboration with public and private European partners, oriented to explore the role of technology in our society and cities.



IAAC IS COMMUNITY

Beyond its educational and pro-research work, seeks permanent contact and cooperation among the hundreds of teachers, researchers, institutions and companies that have worked with us or that pursue the objective of providing solutions to the great challenges of humanity.



IAAC IS OUTREACH

Through lectures, publications, exhibitions and competitions. Thanks to initiatives such as the IAAC Lecture Series, the Advanced Architecture Contest or the Responsive Cities Symposium, IAAC promotes its values in the discussion about architecture, cities, society and technology, facing the nowadays worldwide challenges.



IAAC IS INNOVATION

With the Fab Lab Barcelona, the first and most advanced digital production laboratory in EU, and the Green Fab Lab, the first digital fabrication laboratory oriented to self-sufficiency: two places where you can build almost anything.

Fab Lab Barcelona has consolidated its role within the Fab Lab Network as one of the worldwide leaders of the Digital Fabrication Revolution as well as the Coordinator of the Fab Academy Program.

Iaac
Institute for
advanced
architecture
of Catalonia

IAAC is located in the Poblenou neighbourhood of Barcelona, in the recently created district known as 22@, an international reference for companies and institutions oriented toward the knowledge society. In the 22@, cutting-edge firms, universities, research and training centres are integrated with different agents of promotion that facilitate interaction and communication among them.

The neighbourhood is close to the historic centre and the seafront, and features some of the most iconic landmarks of the city such as the Agbar Tower and the Design Hub building. The ongoing projects of the Plaça de les Glòries and the Sagrera APT station are also making it one of the most dynamic enclaves in the city.



PUJADES CAMPUS

IAAC is housed in two old factory buildings, with 4.000 m² of space for research, production and dissemination of architecture.

The space itself is a declaration of principles, embodying an experimental and productive approach to architecture.

The IAAC Pujades Campus premises include the Fab Lab Barcelona, an architecture and design-oriented digital fabrication laboratory, and a second Fabrication Laboratory, entirely dedicated to the development of IAAC students projects.



VALLDAURA CAMPUS

Valldaura Labs is IAAC's second campus located in the Collserola Park, the green heart of Barcelona's Metropolitan Area.

The campus is a 140 hectares park and testing ground for innovation, that features the latest technologies in the fields of energy, information and fabrication.

The core of this innovative project developed by IAAC is a series of laboratories that work to set a new benchmark for self-sufficiency.

The Valldaura Labs premises include the Green Fab Lab, a fabrication laboratory oriented towards self-sufficient and productive solutions. The Food Lab and the Energy Lab, allowing students to research the specifics of the production of key elements involved in self-sufficiency.

ELISAVA Barcelona School of Design and Engineering is the pioneer academy in this field in Spain, with more than half a century of experience. Founded in 1961, it promotes education, knowledge, research, development and innovation on design.

Associated with the Universitat Pompeu Fabra (UPF), ELISAVA offers a Degree in Design, a Degree in Engineering in Industrial Design and a wide range of Master and Postgraduate programs in the areas of Space Design and Architecture; Graphic Design and Communication; Product Design; Design, Strategy and Management; and Interaction Design; to which must be added the MUDIC, first official Master in Design and Communication in Spain, and the innovative Master in Creative Process, to be taught from 2018.

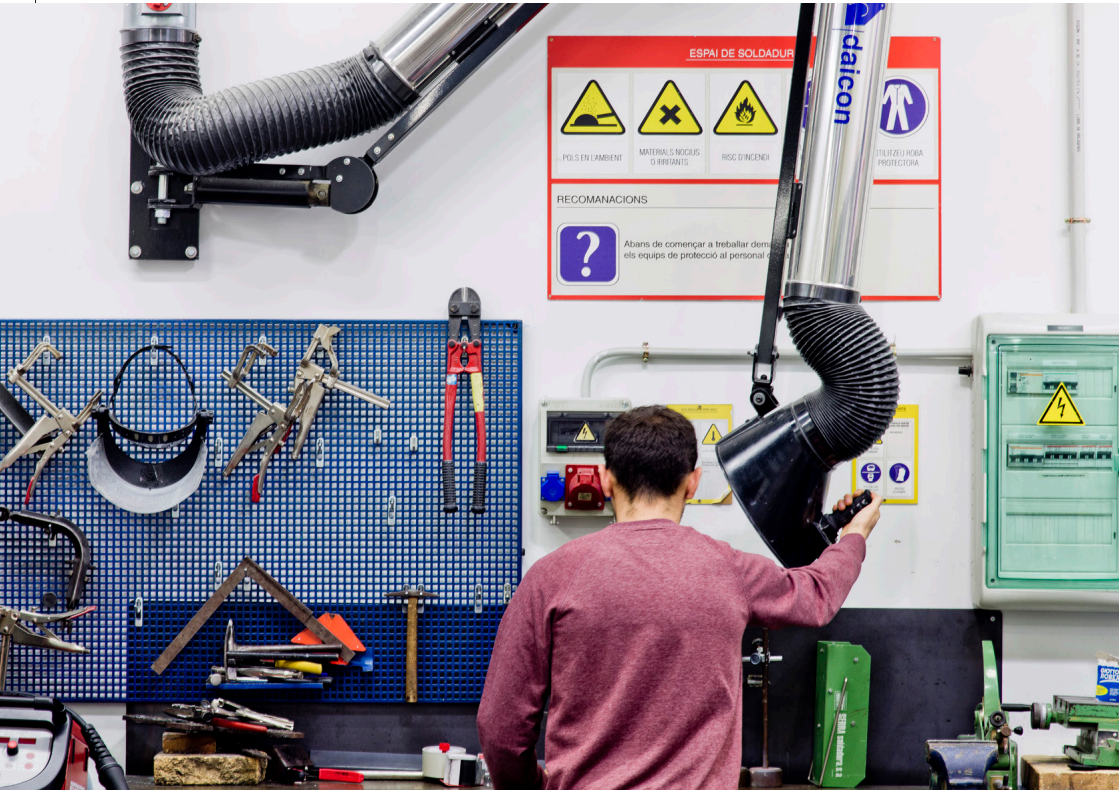
Through the relationship with businesses, institutions and society, ELISAVA trains its students to encompass professional challenges in an international context and it also delves into practical work and stimulates critical reflection among them, so they finish their studies with the ability to answer the needs of an evolving society.

Inspiring, multidisciplinary, knowledge-generator and trendsetter, our centre trains professionals who will challenge the future.

ELISAVA Barcelona School of Design and Engineering



ELISAVA BARCELONA SCHOOL OF DESIGN & ENGINEERING



MDEF

PARTNER ORGANISATIONS

FAB ACADEMY



Fab Academy is a distributed educational program that offers a unique and collaborative learning experience. Each participating Fab Lab provides the space, inventory and machines for students to pursue their own project goals while interacting in a global classroom where they can share their progress, ideas, problems and solutions. Fab Academy teaches a “learning to learn” approach, where students share methods and practices in an open-source and collaborative environment. During this 5-months program, students are supported by local instructors, who guide them in the various assignments and topics covered each week. Every week is introduced via an interactive video stream guided by Neil Gershenfeld, Director of the MIT’s CBA. At its core, Fab Academy empowers students to learn by doing, inspires them to make stuff locally, and to become active participants in sustainable cities and communities.

SPACE 10

SPACE10

Space 10 in Copenhagen is a research hub and exhibition space initiated by the Swedish furniture company IKEA. The innovation lab explores how different approaches and trends might influence home design and the future of living. Focused on sustainability and responsible business models the hub has been operating since 2015. SPACE10 integrates four different labs that conduct research on important topics that might change the way people live in the future: “The Farm”, “Do you speak human?”, “Possible Cities” and “Build with Spaces”.

SEED STUDIO



Seeed Studio is a platform for global creative technologists to turn ideas into products, by providing open technology and agile manufacturing. Seeed’s IoT Hardware Innovation Lab (x.factory), situated in the heart of Shenzhen, China, serves as an IoT hardware lab for developers with prototyping tools and equipment, as well as a community of tech partners. The x.factory is operated by Chaihuo Maker Space, Shenzhen’s first and leading maker space since 2011, and it is the headquarter of Seeed Studio. It’s an “open factory” with production-level equipment for in-house prototyping and small-batch production services, as well as co-working spaces to make projects. The x.factory helps members to connect to Shenzhen’s vast resources in supply chain, as well as industry and market opportunities in China.

THE ACADEMANY



The Academany - The Academy of (almost) Anything. With the increasing availability and ease of use of digital tools and systems, both in the world of fabrication, biology and design, the possibility to solve problems locally is becoming greater every day. But, often overlooked, the tools and means to build objects destined for everyday use, or to safely use synthetic biology to locally produce energy or medicine, is not at all easy or trivial. The Academany is a new global educational structure that offers high level education all over the globe at connected sites, offering the same infrastructure to all students.

KICKSTARTER

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