

PROJET SYMBIOTIC- F.Marye, AD Bouillé, & A. Orhant,  
Direction Guillian Graves



# NATURE INSPIRED DESIGN

BIOMIMICRY AND DESIGN PROJECT MANAGER

V1\_2022\_2023

\_FORMATION TOUT AU LONG DE LA VIE  
\_POST-DIPLÔMES  
\_FORMATIONS SPÉCIFIQUES

**ENSci**  
LES ATELIERS



# L'ENSCI-LES ATELIERS

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L'hébergement et la restauration ne sont pas compris dans nos formations

## **ACCESSIBILITY/WELCOME EVERYBODY**

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# L'ÉCOLE

Born of a political will in 1982, the École Nationale Supérieure de Création Industrielle (ENSCI - Les Ateliers) is the only national school exclusively devoted to industrial creation and design.

ENSCI is the acronym of “Ecole nationale supérieure de création industrielle”, which we translate as the “French national institute for advanced studies in industrial design”.

Within the French education system, ENS in the name signifies that the School is a state run, highly selective institution, mainly providing master and research-level studies.

« Les Ateliers » is the school's nickname, principally used outside France.

This nickname represents the space rather than the institution, an 11,000 sqm loft space in central Paris, previously made up of specialist crafts workshops working for Jansen, the decorative arts company. “Les Ateliers” echoes the traditional values of skill exchange and complementarity necessary for project teamwork, in both creative making and creative thinking. The school was opened in 1982 under the auspices of the Mitterrand government.

As distinct from existing design programmes in France at the time, Les Ateliers was created as an independent institute. Seeking to broaden the traditional art & design school model, the education system was custom-designed. The objective was to create a platform of learning for what was seen to be an emerging profile of creative professional. It was hoped that broadening vision, experience and skills and developing the capacity to deal with complexity would extend the role of design and stimulate creative thinking within French industry and infrastructure.

The project was a courageous one and well ahead of its time. Initially considered to be an experimental project, Les Ateliers quickly received recognition and acclaim within the international design community. Today the innovative programme structure - based on diversity of student profiles, personalised study pathways, project-based learning and the interplay between creative, academic and professional input - remains fully adapted to the needs of contemporary design education

The School is a member of the prestigious Conférence des Grandes Ecoles network.

The French system of higher education is characterised by the distinction made between large universities and small, highly selective “Grandes écoles” (ENS...). In contrast to the university system, entry to these “schools” is via a competitive selection process and often for integrated master studies (5 years). In France these are considered as the élite schools. However, any student wishing to pursue doctoral studies after his / her Grande Ecole master “diplôme” must also be enrolled in a university research lab (“école doctorale”).

The School has close links with business and industry and students benefit from numerous opportunities to experience real-life professional demands, both in France and abroad. Most project studios run partner projects, for example – CEA (Technological Research), EDF (French electricity), The Pompidou Centre, French Telecom, Hermès, Legrand, Orange, Leroy Merlin, the RATP (Paris public transport), Renault, SFR, Dassault Aviation, and the SNCF (French rail). In addition, several international workshops are programmed each year (Sony, Kenwood Design (Japan), STBY, IDEO etc).

All students are required to gain hands-on internship experience in France and abroad.



# PROGRAMMES DIPLÔMANTS & CERTIFIANTS

— FR-INNOVATION BY DESIGN  
—Specialized master degree, post diploma

— FR-CREATION AND TECHNOLOGY IN THE MODERN  
WORLD  
—Specialized master degree, post diploma

— FR-HOPE-CORPORATE HACKING BY DESIGN  
—Certificate  
With Ecole Polytechnique Executive Education

— ENG- NATURE INSPIRED DESIGN  
—MASTER OF SCIENCE

*A Master of Science is an international title  
It is partly taught in a foreign language, and corresponds to a level of M2*

*The Master of Science Nature Inspired Design is a Diploma of Establishment, accredited (promos from the beginning of January 2022) by the Conference of Grandes Ecoles*



INFORMATIONS @ :  
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# NATURE-INSPIRED DESIGN (N.I.D)

MASTER OF SCIENCE IN BIOMIMICRY TO ADDRESS A CHANGING WORLD

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Nature efficiently manages / processes / optimizes / transforms / builds / manufactures matter, energy or information at different levels - micro, macro and ecosystem scale - thanks to efficient mechanisms, strategies and behaviours. Therein, Nature could prove to be an inspiring and powerful model of inventiveness as well as a mature technology we could use to build more sustainable and desirable futures.

To do so, modern knowledge in life science, when associated with new / emerging techniques, technologies and practices, will help students address contemporary issues in such fields as environment, materials, energy, health, habitat, consumer products, etc. through design and biology. The aim of the MS Nature Inspired Design is to give students deep knowledge, efficient tools and innovative methodologies to explore and to use multiscale Nature's incredible principles / mechanisms / strategies in their own practice. Through an immersive learning experience, hands-on and practical training over the course of 18 months, including a 4 month mission in a company, students will learn how to develop ground-breaking bio-inspired / bio-based innovative solutions in the fields of science, technology, engineering, design, arts, architecture and society.

In short, MS Nature Inspired Design students will be involved in designing innovative bio-inspired / bio-based solutions in order to face contemporary issues ; reinventing their own professional practice by using Nature as an inspiration, material or process. Highly motivated, open-minded professionals who are fascinated by Nature professionals from all around the world, this course is meant for you.



*Photo, Joanne Jones*







*Photo, Joanne Jones*

## LEARNING OBJECTIVES

The diploma programme aims to train project managers in biomimicry and design, who will be able to apply the following skills:

- 1-Analyze an environmental context at various scales/granularities: identify actors, constraints, economic, human and nature issues
- 2-Establish a state-of-the-art of scientific and technical possibilities inspired by the living according to the issues identified- Cross-reference them with a functional specifications.
- 3-Organize the project: build the overall specifications, define steps, build the project team/ bring together and articulate the required skills, establish a transversal action plan.
- 4-Implement and apply biomimicry design methodologies
- 5-Manage multidisciplinary science and design teams, including biology, ecology, natural science specialists and design
- 6- Design/implement circular economic models with respect for life, using renewable, ethical resources, in a life cycle logic.
- 7- Implement simulations: prototypes, installations, virtual and real ecosystems
- 6- Adopt an ethical approach, with the legal framework adapted to the living

## EDUCATIONAL LEADER



### Guillian Graves

He is an industrial designer and a biodesigner. He heads the Big Bang Project, a Parisian studio at the cutting edge of socially-responsible design, science, and technology. Working closely with an interdisciplinary community of researchers and engineers, BBP specializes in the design of the products and services of tomorrow, research and teaching.

Graves also gives talks and leads workshops for industrial and academic audiences. In addition, he teaches at the ENSCI-Les Ateliers, where he directs the Design and Biology research program, he is board member of the biohacker space La Paillasse and is design instructor of the Institut Pasteur's iGEM team. Additional information can be found at [www.bigbang-project.com](http://www.bigbang-project.com)



### Simon d'Hénin

Designer and instructor at ENSCI-Les Ateliers, Simon d'Henin directs the design atelier "Fabflex," and teaches new technologies courses in the Continuing Education program "CTC."

An expert in materials and processes, Simon d'Henin also leads interdisciplinary projects at the Michel Serre Center for innovation. In addition to conducting design research, Simon d'Henin's design firm, Metis , proposes strategic design consulting.

## PUBLIC

Engineers, designers, architects, scientists, project managers and entrepreneurs

Required level : Bachelor or M1

## LANGUAGE

Language of instruction is English and french (50%)

## OPENING TIME

January 23- Registration starts in march 2022

## DURATION

18 months, block release training/ - one week training per month  
- internship  
- partnerships, hands on training  
Approximatively 1400 hours, of which 60% internship

## PLACE

ENSCI-Les Ateliers (French National Institute for Advanced Studies in Industrial Design)  
48 rue Saint Sabin, 75011 Paris, France, EU

## COST

For individuals, very small sized businesses and associations:  
14 500 euros net / For companies : 18 000 euros net /  
Unemployed: 12 000 euros net  
Price may be subject to change

## CONTACT

**Anthony Pierlot, in charge of candidates registrations**  
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## INFORMATIONS CERTIFICATION

ENSCI-LES ATELIERS // FORMATION CONTINUE// MASTER OF SCIENCE NATURE INSPIRED DESIGN

### EFFECTIFS, INSERTION PROFESSIONNELLE, SALAIRES MOYENS

Le Master of science Nature Inspired design a ouvert en janvier 2020  
Ses premiers diplômés sortiront, avec les décalages entraînés par la situation sanitaire, en septembre 2021

La première promotion comprenait un effectif de 13 personnes (2020/2021)  
La seconde promotion comprend un effectif de 12 personnes (2021/2022)  
La troisième promotion comprend un effectif de 10 personnes (2022/23)

### WHAT KIND OF PROFESSIONAL OPPORTUNITIES DOES IT LEAD TO ?

The profession to which we wish to train our candidates does not yet exist , not really, in the sense that biomimicry is still poorly known , little identified in companies and activities, whether public or private.

Here is a list of the closest professions that could integrate this new discipline coupled with design:

- Programming Manager/ Sustainable Development Strategy Project Manager (Design/Communication/Production/Logistics/Service/Marketing) Sustainable Development
- Consultant. Project management/ change management/ business organisation in particular in ecological transition and sustainable development
- BU Manager, Head of Company
- Ecological Transition/Sustainable Development Lead
- Industrial Designer- Designer
- Biodiversity programme manager, sustainable development, ecological transition
- Director of Sustainable Development/Economic Development/Development



# PROGRAM ACCESS AND ORGANIZATION

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## PUBLICS

This degree leads people to the job and title of project manager in biomimicry and design

French and foreign candidates coming from higher education schools of engineers, management, human resources, marketing..., justifying a degree at master level (bac+4 validated) can apply.

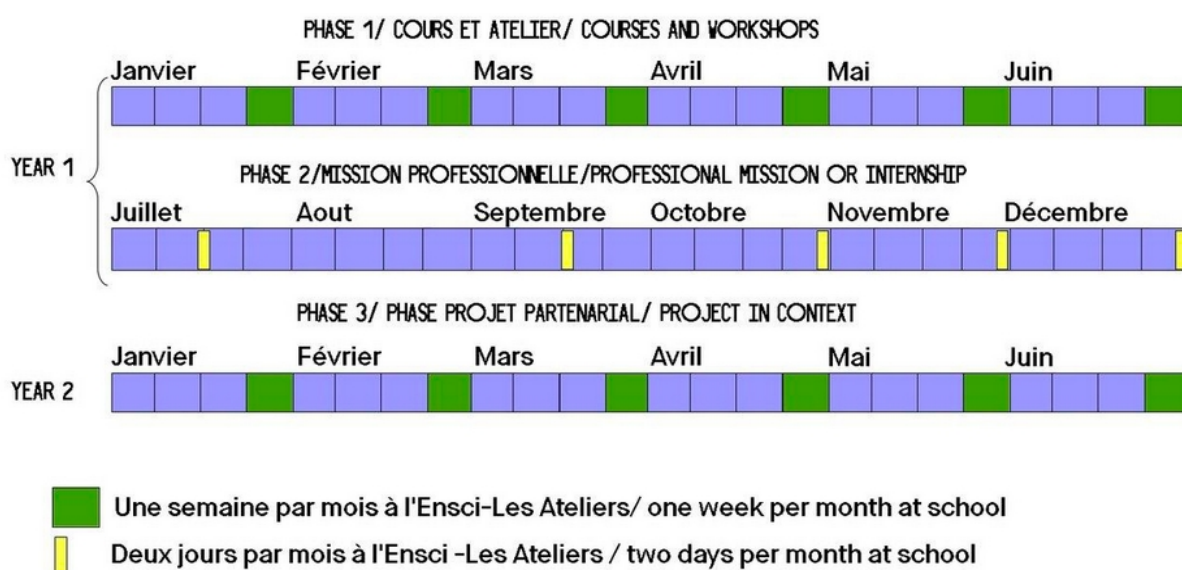
Access to this diploma is possible through VAE for candidates who wish to value their expertise in three years. (validation of experience acquired)

## ORGANISATION PÉDAGOGIQUE

The Nature Inspired Design diploma is a three phases programme:

- Phase 1 : methodological, technical knowledge, ethical, legal and PR theory of the intended function (Project Manager in Biomimicry and Design)
- Phase 2 : internship/professional mission
- Phase 3 : industrial partnership project, balanced synthesis of times 1 and 2 in a group project

### RYTHME DU MSC NATURE-INSPIRED DESIGN



# — WHAT YOU WILL LEARN IN THE MASTER OF SCIENCE NATURE INSPIRED DESIGN

## PEDAGOGY AND LEARNINGS

The courses are taught in short formats (0.5 to 2 days per speaker), on the different topics that make up the master's programme. This corresponds to :

- the fact that the Master's degree is an exploration course of subjects (theories, practices) often emerging, linked to ongoing transformations, for which there is not yet a stable teaching corpus – it is a matter of exploring a world of new approaches and practices
- the desire to give priority, in this changing world, to an approach in a mode of “intersecting views” (pluralities of interventions, from different points of view, on the same subject), to induce active (critical, and reflexive) posture in students, rather than the dispensation of an unequivocal doctrine.

Biodiversity, life sciences- Biomaterials, definition- Observation cycles- Environmental and climatic issues- Environment philosophy-Anthropology and ethnobiology- Low tech- Natural history and biomimetism- Semantics- Product, service, bio-inspired space- Database- Workshops- Law-Ethics- Ethics- Business models- Communicating biomimicry- Writing thesis workshop

Photo Gsengissen, workshop 2019 à l'Ensci



# — MASTER OF SCIENCE NATURE INSPIRED DESIGN

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## STUDIES DAYS

As a prelude to intensive weeks, each new year begins with a meeting of promotions on a subject that may bring together one or more specialists

## INAUGURAL CONFERENCE

Each beginning of training starts with an inaugural conference, welcoming a great expert in the field of life science and biomimicry.

In 2020 we welcomed Carole Collet textile designer , Director of Innovation, Director of MSC Biomimicry at Central St Martins,

2021 Michael Pawlyn, bio inspired architect

## IMMERSION WEEK IN CONCARNEAU

The first intensive week takes place in total immersion at the scientific marine station of Concarneau, French Brittany. Thanks to the partnership with the MNHN, it is a time of intense encounter with the scientific world, its methods, its challenges, and the students of other environmental training developed by the MNHN. It is also an important time for team building.

INFORMATION [formation-continue@ensci.com](mailto:formation-continue@ensci.com)

Photo : extraite du site du Marinarium





# — MASTER OF SCIENCE NATURE INSPIRED DESIGN

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## WORKSHOPS

The workshops are for the students opportunities of knowledge and know-how acquisitions on practical subjects

## PROJECT WITH PARTNERS

It aims to prepare students for their mission and their professional thesis;

They learn by project in a collective mode with a professional situation of piloting a biomimicry and design approach. The project is an opportunity to test what they have learned, in synergy and articulation with his comrades skills and expertise.

## PROFESSIONAL MISSION

Students must carry out a 6-month professional assignment (conducting a biomimicry and design project) in a company/NGO/industry institution of their choice

After analyzing environmental and related human and economic issues, they propose work hypothesis linking bio-inspiration and design to design products/spaces/information/bio-inspired organisations, with sustainable benefits for the environment, human societies and the living.

## THESIS

Students must write a professional dissertation (preferably) based on the experiments they carried out. They benefit from the direction of a thesis director and a methodologic support through writing studio classes. This work, rendered in the form of a written or video document (or in any format deemed appropriate), gives rise to a defence before a jury, which marks the end of the training.

# — MASTER OF SCIENCE NATURE INSPIRED DESIGN

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## EXTRAIT DE LA CERTIFICATION : REFERENTIEL

### **Block 1/Identification and definition of the environmental context of the project**

How to

Map and identify a complex ecosystem

Identify and define the “opportunity points” of a complex ecosystem

Define the project area

Build a reasoned and critical watch

Plan and organize a work method

### **Block 2/ Definition of the sociological, economic and philosophical context of the project**

How to

Identify an environment and its context: habitat, urban space, domestic, private or public

Examine and analyze situations, uses, lifestyles and cultures associated with these places/environments

Review and assess the needs of the user and the system in which the project is taking place, their evolution

Integrating a plurality of actors, human and non-human

Examine and evaluate the evolution of the ethical dimensions related to this context

### **Block 3/ Definition of the project within a design and bio-inspiration approach**

How to

Define issues and purposes related to sociological, cultural, economic and environmental contexts

Organize and find relevant sources and experts to assess issues. How to prioritize them

Define system, form and function assumptions

Situate the project in a market, economic, cultural and environmental context

Define formal, technical, technological, systemic, cultural, environmental and economic specifications.

Prepare a project presentation package

### **Block 4/ Design of a bio-inspired product/ or service /or organization**

How to

Carry out an inventory of possible techniques, organization systems technologies and processes, evaluate and analyse them considering their human, environmental and economic impact

Develop an iterative experimental approach to isolate key functional principles

Implement and change the specifications through iteration

Transfer life-inspired technologies/processes/organizations to seek innovative and cost-effective solutions in terms of environmental resources and impact

Organize the test protocol and validation of the proposal, based on multidisciplinary knowledge and know-how

Synthesize the different elements in a global proposal

### **Block 5/ Promotion of the product, service, or organic organization inspired**

How to

Benchmark modes of communication of competitors

Define the visual identity of the product/service and write editorial content

Stage your product/service

Identify its audience and the product/service distribution media in relation to its objects

## ACCÈS EN VAE

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### THE FRENCH SYSTEM FOR « VALIDATION OF PRIOR EXPERIENCE » ACCESS TO MSc NATURE INSPIRED DESIGN

Ensci will propose an access the MSc Nature Inspired Design in VAE from 2023\*  
Due to the CGE regulation on Msc labels, the VAP is not possible at the time this document is produced.

What is validation of prior experience?

Any person who has pursued a professional activity may, subject to conditions, benefit from the validation of prior experience (VAE). His experience allows him to claim and obtain a certification (which can be a diploma, a title or a certificate of qualification) without taking the training. This professional certification must be registered in the National Directory of Professional Certifications (RNCP-EU certification).

Example:

You want to graduate from the MSc Nature Inspired design without taking the training.

This title could allow you to get into a salary grid, change positions or enroll in a PhD.

With training and/or proven professional experience in the creative/innovation and design sector and in ecological transition and bioinspiration, a validation process may allow you to obtain the diploma partially or fully.

You can benefit from pedagogical support for the implementation of this approach.

Information and VAE file with our training team.

*\*Nota bene: the MSc NID is a newly created diploma to meet the challenges of ecological transition and new industrial worlds. To be registered with the RNCP, a program must graduate at least two promotions. The MSc will therefore be presented at the RNCP in 2023.*



# L'ENSCI-LES ATELIERS



THE SCHOOL THANKS ITS ACADEMIC AND SCIENTIFIC PARTNERS

CEEBIOS ([ceebios.com](http://ceebios.com)),  
Musée d'Histoire Naturelle  
(<https://www.mnhn.fr/>) et  
And especially  
Concarneau scientific team  
& Institut des Futurs Souhaitables people  
([futurs-souhaitables.org](http://futurs-souhaitables.org))



**MUSÉUM**  
NATIONAL D'HISTOIRE NATURELLE



THE SCHOOL THANKS HER COMPANY PARTNERS:

L'Oréal pour sa dotation d'équipement  
du laboratoire du MSC

RTE, WDO, GE Healthcare, Big Bang  
Project pour leur soutien professionnel  
dans la création de ce nouveau métier

Le CNES, la ville de Caen, le groupe  
NEHS pour leur confiance et leur  
collaboration partenariale.

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