



## Nature-Based Design Frameworks

**Lecturers:** Gil Penha-Lopes and Hugo Oliveira (CCIAM, cE3c)

**Calendar:** May 11<sup>th</sup>-15<sup>th</sup> 2020

**Duration:** 36 hours

**Schedule:** 9h00-13h00 and 14h30-17h30 Monday to Thursday; 9h00-13h00 and 14h30-18h30 Friday

### Context:

Nature-based approach to Design solutions for a more resilient future aims to support societies address a variety of environmental, social and economic challenges in sustainable ways. This approach relies on actions that are inspired by, supported by or copied from Nature. Nature-based solutions use the features and complex system processes of nature, such as its ability to store carbon and regulate water flow, to achieve desired outcomes, such as reduced disaster risk, improved human well-being and socio-ecological inclusiveness. These nature-based solutions ideally are energy and resource-efficient, and resilient to change, and to be successful they must be adapted to local conditions.

Nature-based Design recognises the importance of Nature and requires a systemic approach to environmental change based on an understanding of the structure and functioning of ecosystems, including human actions, perceptions and their consequences.

Nature-based solutions “sprout” from the premises that some societal challenges stem from human activities that have failed to recognize ecological limitations and the interdependent role of humans as Nature; and that sustainable alternatives to those activities can be found by looking to nature for design inspiration and process knowledge. They therefore involve the innovative application of knowledge about nature, inspired and supported by nature, and they maintain and enhance natural capital and our inter-relationship with the ecosystems we inhabit. They are positive responses to societal challenges, and can have the potential to simultaneously meet environmental, social and economic objectives.

**Objectives:**

This course will introduce all participants to different Nature-based design frameworks such as Biomimicry, Permaculture, Biophilic Design, Regenerative Design and Resilient Design. Providing many examples of how they are applied, from city farms, to rooftopgardens, to river and watershed regeneration, to educational approaches, to food production and ecosystems and landscape regeneration, within rural and urban contexts.

Grounded within an Integral approach, honouring diverse ways of knowing, students will get a good feeling of how these topics see, develop research and implement effective and sustainable solutions targeting a wide variety of societal, ecological and economic challenges. We will also explore theories of Transition and Transformation by actively participating in exercises that wish to tackle Regenerative Societal Change.

Bring your case studies, and research project ideas and we'll be incorporating it within the inquiry, so you can try to integrate Nature-based design within your own projects.

Most of the learning sessions will be given at Museu Botânico so we benefit from natural and nature inspired man-made environments. The course will be a well-balanced distribution between conceptual work, practical experiential exercises, group co-designing in teams and outdoor activities.

**Modules:**

- Nature – Integral Ecology
- Integral Methodological Pluralism
- Transformation / Planetary Limits / Climate Change
- Regenerative Systems Design
- Transition Studies
- Nature-Based Design
- Principles of Nature Based Design Frameworks
- Funding and Projects
- Biophilic design
- Biomimicry
- Permaculture
- Permaculture for sustainable development
- Design Challenge

**This course can have a recognition of 6 ECTS for FCUL PhD students enrolling in it as part of their first doctoral year. For FCUL PhD students only requiring 5 ECTS recognized in their**

**specific PhD programmes, 6 hours of the course are not mandatory and the certificate will be on 'Topics in Nature based-design frameworks'.**

**Location:** Museu Nacional de História Natural e da Ciência (MUHNAC)

**Nº (min, max) students:** 10 – 24

**Minimal formation of students:** “Licenciatura” (bachelor) in Biology, Geography or related areas.

**Directed to:** PhD or MSc students in Biology, Environmental studies, Geography or related areas, and postdocs and other professionals working in related topics.

**Fee:** free for 1st year PhD students in the Doctoral programme in Biology (FCUL), Biodiversity, Genetics and Evolution (UL; UP), Biology and Ecology of Global Changes (UL, UA) and Climate Change and Sustainable Development Policies (UL, Univ. Nova); 50 € for more advanced PhD students of cE3c; 80 € for PhD students of the PEERS network (CFE); 125 € for FCUL Master students and unemployed; 180 € for BTI, BI and other PhD students; 250 € for Professional and postdocs. For members of the Business Council for Sustainable Development - Portugal, there is a 10% discount (225€).

When the maximum number of students is reached 12 vacancies will be available for non-paying 1st year PhD students mentioned above, being, by order of preference: 1) cE3c students; 2) Climate Change and Sustainable Development Policies (not from cE3c); 3) BIODIV students (not from cE3c); 4) FCUL students (not from cE3c); 5) BEAG students (not from FCUL).

**Deadline for applications:** April 17<sup>th</sup>, 2020

To apply send an e-mail to Gil Penha-Lopes (gpenha-lopes@fc.ul.pt ) and Ângela Antunes (amantunes@fc.ul.pt ) with a cv and motivation letter. The cv and letter should be named as *1st-lastNAME-CV.pdf* and *1st-lastNAME-ML.pdf* (that is personalize the name of each file with your first and last name).

**In the email please add the following information:**

Full Name:

E-mail:

Phone:

Professional activity: Professional/Postdoc, BTI, BI (or other non-post-doc research grant), PhD student (with/ without scholarship), Lic. (Bachelor)/Master student

Academic formation:

PhD student of the 1st year of Doctoral programme BIODIV (FCUL/FCUP), Biologia (FCUL) or BEAG (FCUL or UA)?:

If yes to the above question, PhD student doing the Course to count credits for 1st year?:

PhD student of cE3c or CEF (Centro de Ecologia Funcional):?

If PhD student from another programme/centre, which: