



Introduction to Biomimicry

Lecturer: Luísa Ferreira Nunes (Escola Superior Agrária de Castelo Branco -IPCB, CEABN)

Calendar: 15-20 June 2015

Duration: 36 hours

Schedule: 9h-12h and 14h-17h, everyday

Objectives:

For those who wish to make sustainability an integral part of their work need inspiring examples of how it can be done. This course engages participants in how we can learn from natural processes to create products, systems and structures that can be models of resource efficiency. Participants will explore the principles of biomimicry in depth and look at a number of different applications that have used this discipline to achieve radical improvements in resource efficiency. The course will examine this quickly evolving practice, review what it is, how it is being applied and its powerful potential for the future.

Overview: Biomimicry (from bios, meaning life, and mimesis, meaning to imitate) is a new discipline that studies nature's best ideas and then imitates these designs and processes to solve human problems like studying a leaf to invent a better solar cell is an example.

Biomimicry, is the practice of learning from nature to solve human problems and is emerging as a powerful tool for creating sustainable design and systemic transformation. Applied at a variety of scales, from individual products to buildings and organizations, biomimicry bring nature's 3.8 billion years of innovation experience to the table. The study of Biomimicry objective is to train, equip, and connect engineers, educators, architects, designers, business leaders, and other innovators to sustainably emulate nature's 3.8 billion years of brilliant designs and strategies. The core idea is that nature, imaginative by necessity, has already solved many of the problems we are grappling with. Animals, plants, and microbes are the consummate engineers. They have found what works, what is appropriate, and most important, what lasts here on Earth.

Like the viceroy butterfly imitating the monarch, we humans are imitating the best adapted organisms in our habitat. We are learning, for instance, how to harness energy like a leaf, grow food like a prairie, build ceramics like an abalone, self-medicate like a chimp, create colour like a peacock, compute like a cell, and run a business like a hickory forest.

The conscious emulation of life's genius is a survival strategy for the human race, a path to a sustainable future.

General Plan:

1. What biomimicry is and how it differs from other bio-inspired approaches
2. The practical application of biomimicry, including Life's Principles, as a design and sustainability tool
3. Communication strategies and interpretive approaches for disseminating biomimicry knowledge to formal students and the general public
4. Core skills for fostering collaborative design work
5. Biological and ecological principles relevant to design
6. Detailed examples of the latest biomimetic case studies
7. Practical approach with biomimicry exercises and a challenge design project

This course can have a recognition of 6 ECTS for FCUL PhD students enrolling in it as part of their first doctoral year. For students only requiring 5 ECTS recognized in their specific PhD programmes the last 6 hours of the course are not mandatory and the certificate will be on 'Topics in Introduction to Biomimicry'.

Location: Departamento de Biología Animal (FCUL)

Nº (min, max) students: 10 – 20

Directed to: PhD or MSc students in **biology**, architecture, design, agronomy, or related areas, and postdocs working in related topics

Fee: free for 1st year PhD students in the Doctoral programme in Biology (FCUL), Biodiversity, Genetics and Evolution (UL; UP) and Biology and Ecology of Global Changes (UL, UA); 20 € for PhD students from institutions of the PEERS network (Ce3C, CFE); 100 € for FCUL Master students and unemployed; 150 € for BTI, BI and other PhD students; 200 € for Professional and postdocs.

Deadline for applications: May 22nd, 2015

Candidates should send a short CV and a motivation letter to Luísa Ferreira Nunes at the following email address: nunani@gmail.com