

INTENSIVE SUMMER COURSE: 3 ECTS

BIO-INSPIRED INNOVATION

August 12-17, 2024, Karlskrona, Sweden

With pre-work on distance



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EVOLVE TO SURVIVE

ADAPT TO CHANGING
CONDITIONS

BE LOCALLY ATTUNE
AND RESPONSIVE

INTEGRATE
DEVELOPMENT WITH
GROWTH

BE RESOURCE EFFICIENT
(MATERIAL AND ENERGY)

USE LIFE-FRIENDLY
CHEMISTRY

Continually incorporate
and embody information
to ensure enduring
performance.

Appropriately re-
dynamic contexts

Fit into and integrate
with the surrounding
environment.

Invest optimally in
strategies that promote
both development and
growth.

Skillfully and
conservatively take
advantage of resources
and opportunities.

Use chemistry that
supports life processes.

Replicate Strategies
that Work
Repeat successful
approaches.

Incorporate Diversity
Include multiple forms,
processes, or systems to
meet a functional need.

Leverage Cyclic
Processes
Take advantage of
phenomena that re-
cycle resources.

Self-Organize
Create conditions to allow
components to interact
concert to move toward
an enriched system.

Use Low Energy
Processes
Minimize energy
consumption by re-
ducing temperatures,
pressures, or time
for reactions.

Break Down Products
into Benign Constituents
Use chemistry in which
decomposition results in
no harmful by-products.

Integrate the

Maintain Integrity
through Self-Renewal

Use Readily Available

Build from the
Bottom Up

Build Selectively with a
Small Subset of Elements

OVERVIEW

The purpose of the course is to introduce and train participants in bio-inspired innovation for sustainability.

Participants are introduced to Biomimicry - an innovation practice inspired by nature - and will then address a particular design challenge in form, process, service, or whole system by developing potential solutions through the four phases of Biomimicry Thinking: scoping the project, discovering models in nature, creating concepts and prototypes, and evaluating the proposed innovation against the sustainability benchmark, the 26 Biomimicry Life Principles (patterns of nature). The practice includes deep scientific research into biology and ecology to discover the strategies nature uses for surviving and thriving on planet Earth.

The course is an intensive summer course with pre-work, where participants will learn about bio-inspired innovation through hands-on application.

The course runs from June 25 through August 17, 2024.

There will be four 2-hour evening online sessions on June 25, July 2, 8, 9, 2024.

The immersion week takes place in Karlskrona, Sweden, August 12-17, 2024.

The Blekinge Institute of Technology (BTH) is located in the city of Karlskrona, in the south of Sweden. The city is situated on an archipelago and has been designated a *UNESCO World Heritage Site* due to its unique naval heritage.

The Alliance for Global Sustainability has ranked BTH first in Sweden and third in Europe for sustainable development. At the Department for Strategic Sustainable Development, our research focuses on leadership and innovation for sustainability. We offer support to businesses, municipalities and other organizations that want to work strategically with sustainability, i.e., contribute to society's transition to sustainability in a way that strengthens their own organization.



COURSE PROGRAMME

Online Engagement

1 ECTS



Prior to the first online meeting

- o Individual Assignment: Fill in: MIRO Board online
Read | View: SOAK Biomimicry 2023 Review (PDF Document) | Video

- June 25, 18:30 ~ 20:30 -

- o Online Session: Online Lecture: Consequences of the Anthropocene (Planetary Boundaries, Climate Change, Biodiversity Loss), Biomimicry as "Positive" Approach to Addressing Challenges
- o Assignments: Various small activities for credit as listed in canvas

- July 2, 18:30 ~ 20:30 -

- o Online Session: Online Lecture: Biomimicry Philosophy and Framework
- o Assignments: Various small activities for credit as listed in canvas

July 8, 18:30 ~ 20:30 -

- o Online Session: Online Lecture: Biomimicry Life Principles
- o Assignments: Various small activities for credit as listed in canvas

- July 9, 18:30 ~ 20:30 -

- o Online Session: Online Lecture: Biomimicry Scoping Phase & Scoping Document
- o Assignments: Various small activities for credit as listed in canvas

COURSE PROGRAMME

Face-to-face Immersion Week

2 ECTS



- MONDAY -

- o Morning: (Re-)Connecting to Nature (26 Biomimicry Life Principles, outdoors)
- o Afternoon: Scoping Phase: Refining and/or confirming project scope (indoors)

- TUESDAY -

- o All-Day: Discovering Phase: Excursion (exploring local evidence of climate change and biodiversity crises, steps of discovering practice, outdoors)

- WEDNESDAY -

- o Morning: Discovering Phase: Biologizing research question, searching for champions (outdoors)
- o Afternoon: Developing function cards, abstracting Nature's strategies (indoors)
- o Evening: Continuing / completing function posters (indoors)

- THURSDAY -

- o Morning: Creating Phase: From ideas to concepts (brainstorming activities)
- o Afternoon: Developing design concepts further
- o Evening: Continuing / completing design concepts

- FRIDAY -

- o Morning: Creating Phase: From concepts to prototype
- o Afternoon: Evaluating Phase: Benchmarking against the Biomimicry sustainability mandate
- o Evening: Continuing / completing evaluation

- SATURDAY -

- o Morning: Completing prototype
- o Afternoon: Presentation: Showcasing outcomes to invited guests

BIOMIMICRY LEAD



Designed and facilitated by visiting
Biomimicry Team Regina & Daniel

Regina Rowland identifies as a transdisciplinary scholar-practitioner in the nexus of design, business, and technology — for co-creating sustainable futures. Within this genre, her focus is on innovation inspired by nature. She has been working with the sustainability agenda for 15+ years as a professor of innovation and business consultant in the USA, in South America, and in Europe. Her academic experience includes graduate degrees in Design from North Carolina State University, in Sustainable Enterprises from Willamette University in Oregon, and in Biomimicry from Arizona State University, as well as a doctorate in Transdisciplinarity from the California Institute of Integral Studies and a post-doc research degree (habilitation) in Sustainability Innovation Management from the Grenoble École de Management in France. She currently lives, consults, researches and teaches sustainability-oriented courses to managers, engineers, and eco-designers in Austria where she also holds the position of Sustainability Officer at the University of Applied Sciences Burgenland. Her experience includes the development and practice of visual collaboration and her heart beats for integrating thinking, sensing, and doing for the enrichment of the common good.

BIOMIMICRY Scientist at the Design Table



Daniel Bayer is a passionate transdisciplinary educator and guide in the fields of biology, ecology, climate science, sustainability and biomimicry. Growing up in Vienna, his interest in the natural sciences and agriculture led him to the University of Natural Resources and Life Sciences Vienna. He could fully live into his fascination with biology and education at the National Park “Neusiedler See–Seewinkel” where he completed his training as a National Park Ranger and Guide in 2015. Through this work he became familiar with the biodiversity and special features of the area and discovered new interests, such as nature conservation and ornithology. Since then, his knowledge keeps expanding through being outdoors with students, schoolchildren and visitors in the National Park and beyond. In 2020, he learned about Biomimicry through working and co-teaching with Regina in the role of Scientist at the Design Table. He currently works in the National Park Department for Education where he developed and manages climate change and biodiversity education projects, and he continues to teach Biomimicry at several universities in Austria. His passions are communication with and learning from other people; discovering, observing and learning from Nature and reflecting upon how human & natural systems function and interact.



LOGISTICS

- The course is worth 3 ECTS, which entails 75+ hours of workload.
- The intensive, on-campus part will take place August 12-17, 2024, at Blekinge Institute of Technology in Karlskrona, Sweden. About 50 hours are allocated to this part of the course, and the group will work all day Monday through Saturday (with ample breaks in between).
- The pre-work is expected to be done during online sessions June 25-July 9, 2024, with individual assignments to be completed before August 12, 2024. About 25 hours are allocated to this part of the course.
- The course is free of charge for European students. Non-European students pay a fee in Sweden, a total of 5000 SEK (Approx. 500 Euro) for this course.
- Please note that there is a limited number of seats for the course and applicants will be admitted on a first come, first serve basis.
- Applicants require 120 ECTS credits and English 6 as a pre-requisite.

To Apply – Deadline Round 1: March 15, 2024

<https://www.bth.se/eng/education/courses/20241/S5567/>

Required Course Literature:

Biomimicry Resource Handbook (digital):
<https://biomimicry.net/product/digital-handbook/>

iSites: Nature Journaling for Biomimicry