Nature Inspired Chemical Engineering (CENG0029)

Description

Aims:
The module aims to grow an understanding of ways to learn from solutions adopted by nature to solve similar issues in (chemical) engineering problems; this is done by distilling the fundamental causes behind desirable features in the model natural system, and applying these to the technological system.

The module aims to stimulate creative thought, and to engage students in coming up with innovative solutions by using the chemical engineering “toolbox” with a fresh pair of eyes.

Learning Outcomes:

On successfully completing the module, the students will:

- look at nature, and the balance between nature and technology, in a different way;
- learn the fundamentals and opportunities of the nature-inspired chemical engineering (NICE) approach;
- apply fundamental principles, borrowed from natural systems to chemical engineering problems;
- recognize situations where a NICE approach might bring up a new, more performing solution;
- employ the NICE toolbox to solve engineering problems

Synopsis:

Nature-inspired chemical engineering (NICE) is introduced as a powerful approach to guide the design of new processes and materials for applications, ranging from energy and energy efficiency to chemical production and therapeutics.

The module will illustrate and empower the student to apply fundamental chemical engineering principles to achieve higher performance (efficiency, scalability, robustness, etc.) and come up with innovative approaches to solve
challenging problems, by taking guidance from natural systems that are ideally structured to achieve this high performance.

Key to the NICE approach is that this is done cognizant of the often-different context of biology and technological applications.
Chemical Engineering

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Key information

Year: 2019/20
Credit value: 15 (150 study hours)
Delivery: UGM L7, Campus-based
Reading List: View on UCL website
Tutor: Prof Marc-Olivier Coppens
Term: Term 1
Timetable: View on UCL website

Assessment

Coursework: 70%
Coursework: 30%

Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Disclaimer: All information correct as of August 2019. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.
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