Biotechnologies and Chemical Therapies

ECTS credits
4 credits

Semester
Spring

In brief

Course langage: English

Presentation

Prerequisites

First year Common Core courses and first semester of the second year at École Centrale Méditerranée

Learning objectives

The development of a drug is a multi-parameter project that includes regulatory, time and societal constraints and an innovation component. In addition, there are complex specifications to integrate (efficacy, availability, safety, etc.). It is therefore a field par excellence where solutions emerge from the ability to mobilize complementary skills and to address a multi-parameter problem. The study of the development and life cycle of a pharmaceutical compound illustrates the multidisciplinarity required in the sector and shows the value of a generalist education for the new scientific, technological and societal challenges.

Description of the programme

The core of this Teaching Unit concerns the creation and marketing of new active ingredients and biotechnological devices. The aim is to stimulate the ability to invent creative, ingenious and original solutions through what has been produced in the past and is being developed today. This teaching unit is divided into 3 parts:
"Molecular therapeutic strategy";
"Introduction to bioprocesses"; and
"Inorganic biochemistry and bio-inspired chemistry".

Detailed content of the courses in the online documentation on the school's website (in French and English).

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Generic central skills and knowledge targeted in the discipline

This Teaching Unit mobilizes knowledge in process engineering and chemistry for pharmaceutical aspects and for the bio-organic study of living systems leading to biomimetic chemistry. . The knowledge provided complements that already acquired in these disciplines, and is useful in itself. The field itself is conducive to stimulating the imagination since it is in direct contact with the living world, which, thanks to its creativity over millions of years of evolution, is the richest source of inspiration for humans.

How knowledge is tested

CC in each part, contributing 35%, 30% and 35% respectively

Bibliography

Ng. Rick, Drugs: from discovery to approval, Wiley-Liss, 2004.
J. W. Mullin, Crystallization, Butterworth Heineman, 2001.
O. Papini, H. Prade, L'intelligence artificielle : frontières et applications, Cépaduès, 2014.
J. E. Huhey, E. A. Keiter, R. L. Keiter, Inorganique Chemistry, De Boeck, 2004.

Teaching team

- Karine ALVAREZ
- Mikael FERACCI
- Stéphane BETZI
- Stéphane CANAAN
- Philippe ROCHE
- Pascal DENIS
- Jalila SIMAAN

Sustainable Development Goal


Access to health


Quality education


Clean water and sanitation


Life on land


Life below water

Total des heures **54h**

CM	Master class	42h
TP	Practical work	12h

Useful info

Name responsible for EU

Lead Instructor
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