

Genetic and Enzymatic engineering

 **ECTS**
4 credits **Component**
INSTITUT
NATIONAL
DES SCIENCES
APPLIQUEES
TOULOUSE **Number of
hours**
72h

In brief

› **Teaching language(s):** Français, Anglais

Presentation

Description

Enzymatic engineering

Overview of protein structures, Computational tools and softwares for DNA and protein sequence analyses sequence analyses / initiation to molecular graphism and molecular modelling / analyses and comparisons of 3D structures/ Case study: a-amylase family.

Genetic engineering

Genetic engineering will be taught through the preparation of literature review reports related to genetic engineering and synthetic biology (genome editing, metabolic engineering, control of gene expression, etc...). This will be completed by the oral presentation and critical analysis of a scientific article in front of the student class.

Organisation:

Lectures, practical courses, literature review, oral presentation.

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):

Enzyme engineering

Understand the bioinformatics methods and computational tools used for i) genome assembly and annotation, ii) genome and protein sequence and structure analysis iii) comprehension of enzyme mechanism and engineering.

Genetic engineering

Understand the main approaches used for genetic engineering and synthetic biology. Understand the methodology used for scientific article search in data bases, for writing a scientific literature review and presenting a critical analysis of scientific articles.

The student will be able to:

Enzymatic engineering

Describe the methods used for bioinformatics analysis of genome and protein structures (sequence alignment and molecular modelling and graphism tools). Apply computational methods to structure-activity relationship studies and enzyme engineering.

Genetic engineering

Use of bibliographic database for scientific article search.

Construct and write a scientific literature review

Know and describe various approaches and methods entering in the field of genetic engineering.

Pre-requisites

Structural biochemistry and molecular biology

Useful info

Place

➤ Toulouse