

IDENTIFICATION

Course code : E2CP3A6
ECTS : 2

DURATION

Lectures : 10
Tutorial classes : 10
Labs : 12
Total : 32

Project :
Personnal work :

ASSESSMENT

2 Written exams (2h/2h) + 1 Lab report

TEACHING MATERIALS

LANGUAGE

English

CONTACT

Didier LUCAS
didier.lucas@univ-reunion.fr

Modifié le : 14 juillet 2026

UE : AGROALIMENTAIRE

COURSE : Organic Chemistry II

SCOPE OF THE COURSE

OBJECTIVES

The course aims to enable students to understand the mechanisms involved in the transformation of organic molecules. Which reactions can occur, under what conditions, and with what outcomes.

COMPETENCE AND SKILLS

- Know how to define a nucleophilic center and provide examples
- Know how to rank the strength of nucleophiles
- Know how to define an electrophilic center and provide examples
- Know how to define a nucleofuge (leaving group) and provide examples
- Know how to compare two nucleofuges
- Know how to define the term substrate
- Know how to correctly use curved-arrow formalism
- Know how to define nucleophilic substitution
- Know the characteristics of SN2
- Know the reaction mechanism of SN2
- Know the reaction profile of SN2
- Know how to explain the stereospecificity of SN2
- Know how to define the terms stereoselective, stereospecific, regioselective, regiospecific
- Know the characteristics of SN1
- Know the reaction mechanism of SN1
- Know the reaction profile of SN1
- Know how to explain the non-stereospecificity of SN1
- Know how to present the Wagner–Meerwein rearrangement
- Know that both mechanisms (SN1 and SN2) are in competition
- Know how to discuss the influence of substrate class
- Know how to discuss the influence of steric hindrance
- Know how to discuss the influence of nucleophile strength
- Know how to discuss the influence of solvent polarity
- Know how to discuss the influence of solvent proticity
- Know how to define the β -elimination reaction
- Know how to present the E1 mechanism
- Know how to present the E2 mechanism
- Know how to explain the regioselectivity of elimination
- Know how to state Zaitsev's rule
- Know how to state Hoffmann's rule and the cases in which it applies
- Know how to explain the stereospecificity of the E2 mechanism
- Know that elimination and substitution mechanisms are in competition
- Know how to discuss the influence of substrate class
- Know how to discuss the influence of nucleophile strength
- Know how to discuss the influence of solvent polarity
- Know how to discuss the influence of solvent proticity

- For each functional group, know how to identify the reactivity of the functional group
- For each functional group, know how to predict possible reactions based on operating conditions
- For each functional group, know how to write the reaction mechanism associated with the envisaged reactions

PROGRAM

1. Nucleophilic/electrophilic centers, leaving groups, and writing mechanisms (curved arrows).
2. Nucleophilic substitutions SN1 and SN2 : mechanisms, energy profiles, influencing factors (substrate, nucleophile, solvent).
3. Eliminations E1 and E2 : mechanisms, regioselectivity (Zaitsev / Hoffmann), stereospecificity.
4. Substitution vs. Elimination competition : prediction criteria.
5. Application by functional groups : identifying reactivity and writing associated mechanisms.

BIBLIOGRAPHY

PAUL ARNAUD

REQUIREMENTS

Organic Chemistry I