



# Faculté d'ingénierie biologique, agronomique et environnementale

## AGRO

BIRC2107 Exercices intégrés en chimie appliquée et bioindustries

[45h+0h exercises] 3.5 credits

**Teacher(s):** Eric Gaigneaux, Patrick Gerin, Michel Ghislain, Michèle Mestdagh, Philippe Perpete  
**Language:** french  
**Level:** 2nd cycle course

### Aims

#### Know-how and skills

- Capacity to integrate basic disciplines for understanding and mastering the scientific and technological aspects of a bio-engineering problem.
- Capacity to seek, collect, analyze and synthesize bibliographical data on the subject.
- Capacity to write a structured and critical review report presenting the state of the art on the subject; capacity to orally communicate the content of this review.
- Capacity to work in team, which requires initiatives and organisation to take in charge and to carry out the project.

#### Knowledge:

- Operational knowledge of bibliographic research techniques.

### Main themes

The integrated exercise require the students to synthesize the scientific and technological state of the art of a multidisciplinary subject relevant to bio-engineering on the basis bibliographical research. These exercises involve the use of bibliographic search methods, the identification of the relevant sources of information, the collection of the documents and of the relevant data, their understanding, their analysis, their structuring and their synthesis. The result of this synthesis is communicated as a written report and as an oral presentation, which must be understandable by a reader having a general scientific background, but not a specialised one. These exercises require the students to organize themselves as a team to be able to handle in a sufficiently complete way the various aspects of their subject.

### Content and teaching methods

The students have to describe the scientific and technological state of the art on multidisciplinary subjects (questions) in bio-engineering. The subjects are proposed by the teachers according to their fields of interest and competences. The tools that can be used at UCL for the bibliographic research are presented to the students. The later have to gather as teams of 4-7 students and to organize their work :

- to seek and gather the relevant information concerning their subject;
- to analyze, structure and synthesize this information;
- to write a structured and synthetic final report;
- to present and defend orally this report.

The students' work is completed under the weekly guidance of one teacher. At various stages, a common meetings is organised to train each students team to present a progress report and to learn about the progress of the other teams.

**Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)**

Precursory courses Knowledge and skills acquired through all the courses in science and engineering of the BIRC program.  
 Supplemental courses Activities that exploit the skills acquired with the integrated exercises: Project in industrial chemistry, final work

Evaluation Oral presentation and written report on the subject

Support Bibliographic research tools available at UCL, with guidance by the teachers

Teaching team As much as possible, the teacher team gathers peoples with competencies in the field of specialisation of the students (agro-food technology, bio-industry, chemistry-catalysis, environmental technology).

Miscellaneous As much as possible, the proposed subject will correspond to the fields of specialisation of the students.

**Other credits in programs**

<b>BIR22/0C</b>	Deuxième année du programme conduisant au grade de bio-ingénieur: Chimie et bio-industries (Technologies & gestion de l'information)	(3.5 credits)	Mandatory
<b>BIR22/1C</b>	Deuxième année du programme conduisant au grade de bio-ingénieur: Chimie et bio-industries (Sciences, technologie & qualité des aliments)	(3.5 credits)	Mandatory
<b>BIR22/2C</b>	Deuxième année du programme conduisant au grade de bio-ingénieur : Chimie et bio-industries (Ingénierie biomoléculaire et cellulaire)	(3.5 credits)	Mandatory
<b>BIR22/3C</b>	Deuxième année du programme conduisant au grade de bio-ingénieur : Chimie et bioindustries (Nanobiotechnologies, matériaux et catalyse)	(3.5 credits)	Mandatory
<b>BIR22/4C</b>	Deuxième année du programme conduisant au grade de bio-ingénieur : Chimie et bio-industries (Technologies environnementales: eau, sol, air)	(3.5 credits)	Mandatory