

## Faculty of Biological, Agronomic and Environmental Engineering

### BRAL2201 Food technology

[105h+7.5h exercises] 8.5 credits

**Teacher(s):** Stéphane Dupire, Marc Meurens  
**Language:** French  
**Level:** Second cycle

#### Aims

The course aims at acquisition by the student of knowledge and control in food technology with regard to the unit operations, instrumentation and transformation processes of foodstuffs. The teaching of technology will be made in order to give to the future engineer the competences necessary to the exercise of its work notably in quality assurance.

#### Main themes

The course is divided in 6 parts. The 5 first are lessons covering each one of the principal aspects of training in food technology and the last consists of an exercise of application and integration of knowledge.

A. Unit operations of separation in sifting (sorting of the grains), dehydrations and separations liquid/solid (extraction, filtration, decanting, centrifugation and distillation) illustrated within the field of the brewery.

B Unit operations of conservation in the treatments by heat and cold, dehydration, addition of substances, fermentation, irradiation, conditioning and packaging.

C Biotechnological processes used in the germination of cereals, in the enzymatic engineering and fermentations illustrated within the field of malting and brewing.

D Transformations of the vegetal productions such as cereals, fruits and vegetables. - Transformations of the animal productions such as meat, fish, eggs and milk.

E Quality control including standards, legislation, techniques, control instrumentation, signal acquisition and data processing.

F Exercise integrated in the redaction and the presentation of a project of foodstuff production established on the basis of visit of companies and consultations of experts.

#### Content and teaching methods

Knowledge in food technology will be brought by modules of complete lesson in unit operations, transformation processes and quality control. These modules will be applied in an integrated exercise. The unit operations of separation will be sifting (sorting of the grains), dehydrations and separations liquid/solid (extraction, filtration, decanting, centrifugation and distillation) illustrated within the field of the brewery. The unit operations of conservation will be the treatments by heat and cold, dehydration, addition of substances, fermentation, irradiation, conditioning and packaging. The biotechnological processes will be those implied in the germination of cereals, in the enzymatic engineering and fermentations illustrated within the field of malting and the brewing. The transformations of the vegetal productions will be the processes of transformation of cereals into flour mill, bakery, pastry making, starch industry and brewery, fruits in jam and syrup factory, cider-house and oenology and of vegetables in canning facility, sugar refinery and oil mill. The transformations of the animal productions will be the processes of transformation of meat (pork butchery), fish, eggs and milk (dairy, cheese, butter factory).

The quality control will include standards (ISO), legislation (HACCP), techniques, instruments of control, the signal acquisition and data processing.

The integrated exercise will consist in the redaction and the presentation of a project of manufacture of foodstuff established on the basis of visits of companies and consultations of experts.

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

Precursory courses Engineering of agricultural industries  
Supplemental courses Statistical methods of quality control  
Evaluation Written examination, evaluation of integrated project  
Support Notes, multimedia documents, visits of companies  
Teaching team Professors and assistants

**Other credits in programs**

<b>BIR23/1A</b>	Troisième année du programme conduisant au grade de bio-ingénieur: sciences agronomiques (Sciences, technologie et qualité des aliments)	(8.5 credits)	Mandatory
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