Course guide
390445 - DFNP - New Product Design and Formulation

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.
Degree: BACHELOR’S DEGREE IN BIOSYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR’S DEGREE IN FOOD ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2023  ECTS Credits: 6.0  Languages: Catalan, Spanish, English

LECTURER
Coordinating lecturer: IDOIA CODINA TORRELLA
Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

TEACHING METHODOLOGY

The teaching methods used in this course are lectures in which the teacher makes a speech to introduce the basic concepts of the subject and encourages students to participate doing or answering questions, cooperative learning exercises etc. There are also practical sessions so that students acquire lab skills. In order to acquire the lab skills and the knowledge of the foodstuff process, the innovative scientific-technical information must be searched by the students; besides this, they will must do the synthesis and analysis of experimental results.

LEARNING OBJECTIVES OF THE SUBJECT

At the end of the course, the student must be able to:
1. Identify and evaluate the implementation of new trends and ingredients used in the food industry.
2. Apply the current regulations related to the food formulation
3. Develop a new food product formulation
4. To design evaluation tests of the new foodstuff

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>20,0</td>
<td>13.33</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>40,0</td>
<td>26.67</td>
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</tbody>
</table>

Total learning time: 150 h
CONTENTS

(ENG) FASES I DESENVOLUPAMENT DEL DISSENY DE NOUS PRODUCTES ALIMENTARIS

Description:
1.1. Innovative food concepts, trends and legislation
1.2. Introduction to nutritional genomics, nutrigenetics and nutrigenomics
1.3. New foods: functional foods, fortified foods, foods without allergens, organic food, genetically modified foods, and others
1.4. Experimental design in innovation food

Related activities:
Activity 1. Participatory exposition sessions
Activity 2. Individual assessment tests
Activity 3 Innovation study of a new food product

Full-or-part-time: 50h
Practical classes: 12h
Laboratory classes: 8h
Self study : 30h

(ENG) NOUS INGREDIENTS: EXTRACTES VEGETALS (SENSE FUNCIÓ PREBIÒTICA)

Description:
2.1. Lipids (omega 3 linolenic acid ...) and fat substitutes
2.2. Carotenoids: A and ß-carotene, lutein and lycopene
2.3. Antioxidants: flavonoids, tocopherols, phenolic acids, phytoestrogens
2.4. Amino acids and vitamins: nutritional supplements
2.5. Dietary fibre without prebiotic function
2.6. Other ingredients

Related activities:
Activity 1. Participatory exposition sessions
Activity 3. Innovation study of a new food product
Activity 4. Laboratory practices and solving innovations exercises of a new product

Full-or-part-time: 50h
Practical classes: 14h
Laboratory classes: 6h
Self study : 30h
### NOUS INGREDIENTS: COMPONENTS PREBIÓTICS I MICRORGANISMES PROBIÓTICS

**Description:**
3.1. Getting prebiotics ingredients, probiotics microorganisms and symbiotic foods.
3.2. Prebiotics: Inulin, fructo-oligosaccharides and others.
3.3. Probiotic microorganisms: Saccharomyces, Bifidobacterium, lactic acid bacteria.
3.4. Relationship between prebiotic and probiotic ingredients and the food matrix

**Related activities:**
Activity 1. Participatory exposition sessions
Activity 2. Individual assessment tests
Activity 3. Innovation study of a new food product

**Full-or-part-time:** 50h
- Practical classes: 14h
- Laboratory classes: 6h
- Self study: 30h

### ACTIVITIES

#### ACTIVITAT 1: CLASSES D’EXPlicació Teòrica

**Description:**
In theoretical classes content of the subject will be presented, and mechanisms for active discussion for students will be established. There will also be seminars with the participation of the productive sector (producers of ingredients, responsible for R&D department)

**Material:**
- Virtual campus, databases, bibliographic material

**Delivery:**
- Abstracts, problems and bibliographic works

**Full-or-part-time:** 90h
- Practical classes: 38h
- Self study: 52h

#### ACTIVITY 2: WRITTEN TESTS ASSESSMENT

**Full-or-part-time:** 2h
- Practical classes: 2h
**ACTIVITY 3: INNOVATION STUDY OF A NEW FOODSTUFF**

**Description:**
The innovation of a new food product will be studied by students. A study of developing a new food or modification of some existing food (modified ingredients, formulation) will be proposed. The students will work different stages of development of the food product.

**Material:**
Virtual campus, databases, bibliographic material, laboratories (microbiology, food, sensory)

**Delivery:**
Delivery of a written report, presentation in class and oral discussion

**Full-or-part-time:** 40h
Laboratory classes: 11h
Self study: 29h

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**ACTIVITY 4: LABORATORY PRACTICES AND SOLVING INNOVATION EXERCICES OF A NEW PRODUCT**

**Description:**
Aspects of food innovation product related to physicochemical and sensory characteristics will be worked on

**Full-or-part-time:** 18h
Laboratory classes: 9h
Self study: 9h

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**GRADING SYSTEM**

The course grade (NFinal) will be calculated as:
N1: Individual test
N2: Seminars
N3: Lab sessions
N4: Group report (manuscript + oral presentation)
NFinal = 0.35N1 + 0.15N2 + 0.15N3 + 0.35N4

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**EXAMINATION RULES.**

The student will receive a calendar with the schedule of activities and delivery of exercises of various activities

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**BIBLIOGRAPHY**

**Basic:**

**Complementary:**
- Watson, Ronald R. Complementary and alternative therapies in the aging population [Recurs electrònic] [on line]. Amsterdam ;