

## COURSE DESCRIPTION

### COURSE DETAILS

Title (of the course): **BROMATOLOGÍA DESCRIPTIVA**

Code: 102222

Degree/Master: **GRADO DE CIENCIA Y TECNOLOGÍA DE LOS ALIMENTOS** Year: 2

Name of the module to which it belongs: CIENCIAS DE LOS ALIMENTOS

Field: ANÁLISIS DE ALIMENTOS Y BROMATOLOGÍA

Character: OBLIGATORIA

Duration: SECOND TERM

ECTS Credits: 6.0

Classroom hours: 60

Face-to-face classroom percentage: 40%

Study hours: 90

Online platform: <http://moodle.uco.es/>

### LECTURER INFORMATION

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### PREREQUISITES AND RECOMMENDATIONS

#### Prerequisites established in the study plan

Students must have already coursed the corresponding subjects of the Basic Formation module, especially

#### Recommendations

Class attendance by students is considered essential to receive all the information and experience of the teacher

### INTENDED LEARNING OUTCOMES

- |     |   |
|-----|---|
| CB3 | Students must possess the capacity to gather and interpret relevant information (usually in their field of study) in order to give opinions which include a reflection about relevant topics which are social, scientific or ethic in nature. |
| CB4 | Students must transmit information, ideas, problems and answers to both specialised and not specialised publics.  |
| CU2 | To know and improve the user level in the field of ICT.   |
| CT1 | Ability to express themselves correctly in the Spanish language in their disciplinary field.  |
| CT7 | Ability for analysis and synthesis.   |
| CT8 | To develop a critical reasoning.  |
| CT9 | To develop skills in research initiation.   |
| CE2 | To know the food production models, their composition and physical, physico-chemical and chemical properties to determine their nutritive and functional value.   |

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### OBJECTIVES

- To provide students basic knowledge on chemical and structural food composition of major groups of food products, both from animal and vegetal origin. To describe the establishment and relationship between these characteristics and different food quality criteria (nutritional and market value).
- To introduce students in the knowledge of compositional food elements, whose determination will be used for food analysis. This working element will allow quantify the food/quality relationship and how processing conditions affect.
- To train students on the basis of legislation and analytical methodology to be followed in the food quality field.
- To improve students` communication and application of knowledge in a future career individually or within a team, both in mother tongue language and in a foreign language.

### CONTENT

#### 1. Theory contents

##### INTRODUCTION

- Presentation of the subject. Objectives and principal assessment criteria.
- Introductory aspects to food science. Types and classification of foods. Nutrition and health claims.

##### PART 1. MEAT AND MEAT PRODUCTS

- Meat sector in figures. Nutritional value of meat. Carcass definition. Flow diagram of meat processing. European Community Models of meat quality grading. Sales description.
- Factors affecting the quality of animal carcasses. Animal body composition. Meat product pieces.
- Myofibrillar systems. Muscle contraction and biochemistry of muscle.
- Factors affecting meat quality. Conversion of muscle into meat. Alterations in meat quality: PSE and DFD meats.
- Strategies for improving meat quality.
- Characteristics and properties of meat emulsions. Scalded meat products. Gelatins. Restructured meats.
- Characteristics and properties of cured meat products. Foundations of the curing process. Parameters influencing quality of cured meat products.

##### PART 2. FISH AND FISHERY PRODUCTS

- Consumption trends of fish products. Sustainable fishing. Nutritional value of fish.
- Factors influencing fish spoilage. Shelf-life of chilled fish species.
- Traditional methods for evaluation of fish spoilage.
- Shellfish consumption. Nutritional value of shellfish. Shellfish harvesting and handling. Bivalve shellfish depuration methods. Shellfish labelling.
- Fermented fish. Frozen surimi and surimi-based products. Cured fishery products.

##### PART 3. MILK AND DAIRY PRODUCTS

- Milk and dairy consumption. Milk definition. Composition and nutritional value of milk. Types of milks.
- Structure of the milk components. Physicochemical properties of milk.
- Cream and whey processing. Lactose conversion.
- Butter and dairy spreads. Ice-creams. Categories and quality influencing factors.
- Fermented milk products. Requirements for fermented milk production. Yogurt, Kefir, Kumis and cultured cream. Categories and quality influencing factors.

##### PART 4. VEGETABLE ORIGIN FOODS

- Vegetables. Consumption trends. Classification, chemical composition and nutritional value. Postharvest modifications.

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- Definitions and classifications of fruits, vegetables and leafy greens. Minimally processing technologies.
- Legumes/pulses. Classification of cereals. Quality factors influencing bread-making.
- Edible vegetable fats and oils. Dietary recommendations and technological function.

### 2. Practical contents

#### PRACTICAL SESSIONS (CLASSROOM)

- Honey and bee products.
- Types of beverages.
- Fermented dairy products. Probiotics and prebiotics.
- Types of cheeses.
- Eggs and egg products. Functional aspects.
- Implementation and improvement of derived meat products formulations. Classification according to the Quality Standard.
- Food related aspects of Omega fatty acids.

#### PRACTICAL SESSIONS (LABORATORY AND EXTERNAL ACTIVITIES)

- Study of the gelification process of starchy products.
  - Study of food emulsions and foaming capacity: types and factors.
- External activity

Guided visit to a food industry (to be determined)

## METHODOLOGY

### General clarifications on the methodology (optional)

Particular cases will be considered

### Methodological adaptations for part-time students and students with disabilities and special educational needs

Particular cases will be considered through the provision of a justification of accredited documentation

### Face-to-face activities

Activity	Large group	Medium group	Total
<i>Assessment activities</i>	3	-	3
<i>Lab practice</i>	-	6	6
<i>Lectures</i>	30	-	30
<i>Seminar</i>	-	21	21
<b>Total hours:</b>	<b>33</b>	<b>27</b>	<b>60</b>

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### Off-site activities

Activity	Total
<i>Exercises</i>	10
<i>Information search</i>	10
<i>Reference search</i>	10
<i>Self-study</i>	60
<b>Total hours</b>	<b>90</b>

## WORK MATERIALS FOR STUDENTS

Coursebook

Dossier - <http://moodle.uco.es/moodlemap/>

Lessons summary

Oral presentations

References

### Clarifications

Working materials and supporting documents will be provided during teaching lectures and practical sessions.

## EVALUATION

Intended learnig	Exams	Oral Presentation	Placement reports
CB3		X	X
CB4		X	X
CE2	X	X	X
CT1	X	X	X
CT7	X	X	X
CT8	X	X	X
CT9		X	X
CU2	X	X	X
<b>Total (100%)</b>	<b>60%</b>	<b>20%</b>	<b>20%</b>
<b>Minimum grade</b>	<b>5</b>	<b>5</b>	<b>5</b>

(\*)Minimum grade necessary to pass the course

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### Method of assessment of attendance:

10%

### General clarifications on instruments for evaluation:

Special cases will be considered for part-time students who may provide a justification

### Clarifications on the methodology for part-time students and students with disabilities and special educational needs:

Special cases will be considered

### Qualifying criteria for obtaining honors:

*Particular cases will be considered for those students having scores higher than 9*

## BIBLIOGRAPHY

### 1. Basic Bibliography

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- Astiasarán Anchía, I y Martínez Hernández, J. (2000). Alimentos. Composición y Propiedades. McGraw-Hill. Interamericana, Madrid. (<http://datelobueno.com/wp-content/uploads/2014/05/Alimentos-Composicion-y-Propiedades.pdf>)
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- Garrido López, J.R., y García Sarasa, C. (2004). Manual de clasificación de frescura de especies de interés pesquero en Andalucía. Tomo I y II. Ed. Junta de Andalucía. Consejería de Agricultura y Pesca.
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- Lawrie, R.A. (1998). Ciencia de la carne, 3ª Ed. (ed. esp.). Editorial Acribia SA Zaragoza. ISBN: 978-84-200-0856-1.
- Lawson, H. (1999). Aceites y grasas alimentarias: Tecnología, utilización y nutrición. Editorial Acribia. I.S.B.N.: 978-84-200-0880-6
- Leieveld, H.L.M.; Mostert, M.A. y Holah, J. (2005) Handbook of hygiene control in the food industry. Woodhead Publishing Series in Food Science, Technology and Nutrition. ISBN-10: 1855739577/ISBN-13: 978-1855739574.
- Lück, E. y Jager, M. (1981) Conservación Química de los Alimentos, Características, Uso, Efectos. 2ª ed, Ed. Acribia, Zaragoza. 978-84-200-0898-1.
- Madrid Vicente, A. (2014) Los aditivos en los alimentos: según la normativa de la Unión Europea y la legislación española. Editorial Acribia, S.A. Zaragoza. ISBN: 9788494285042.
- Mendoza, E. (2010) Bromatología. Composición y propiedades de los alimentos. Editorial McGrawHill.

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ISBN: 9786071503794

- Milton, J.L. (1999). Aditivos y Auxiliares de Fabricación en las Industrias Agroalimentarias. 2ª ed, Ed: Acribia, Zaragoza. ISBN-13: 9788420008974.
- Ordoñez Sánchez, J.I. (2011). Guía de identificación de filetes y rodajas de pescado de consumo usual en España. Editorial Díaz de Santos, Madrid. ISBN: 978-84-9969-030-8.
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- Tetra Pack Processing Systems. (1996). Manual de industrias lácteas. (ed. Esp.). Madrid: Vicente Ediciones. ISBN: 978-84-89922-81-5.
- Vollmer G.; Josst, G; Schenker, D.; Sturm, W. y Vreden, N. (1999) Elementos de Bromatología descriptiva. Editorial Acribia. SA Zaragoza. ISBN: 978-84-200-0877-6.
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### Páginas web de interés

- Boletín Oficial del Estado: <http://www.boe.es>
- Codex Alimentarius: <http://www.fao.org/fao-who-codexalimentarius/es/>
- Food and Agriculture Organization of United Nations (FAO): <http://www.fao.org>
- Organización Mundial de la Salud (OMS): <https://www.who.int/es>
- European Food Safety Authority (EFSA): <http://www.efsa.europa.eu>
- Agencia Española de Consumo, Seguridad Alimentaria y Nutrición: [http://www.aecosan.msssi.gob.es/AECOSAN/web/home/aecosan\\_inicio.htm](http://www.aecosan.msssi.gob.es/AECOSAN/web/home/aecosan_inicio.htm)
- Ministerio de Agricultura, Pesca y Alimentación: <https://www.mapa.gob.es/es/>
- Ministerio de Sanidad y Consumo: <http://www.msc.es>
- El Portal de la Unión Europea: [http://europa.eu/index\\_es.htm](http://europa.eu/index_es.htm)
- Confederación de Consumidores y usuarios: <http://www.seguridadalimentaria.org>
- Fundación Alimentum: <http://www.fundacionalimentum.org/materiales/adultos>
- BEDCA: <http://www.bedca.net/bdpub/index.php>

## 2. Further reading

Complementary bibliography will be provided through the Moodle platform

## COORDINATION CRITERIA

Common evaluation criteria

Joint activities: lectures, seminars, visits ...

Tasks performance

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## SCHEDULE

Period	Assessment activities	Lab practice	Lectures	Seminar
1# Fortnight	0.0	0.0	6.0	3.0
2# Fortnight	0.0	0.0	4.0	6.0
3# Fortnight	0.0	0.0	4.0	6.0
4# Fortnight	0.0	0.0	4.0	6.0
5# Fortnight	0.0	0.0	4.0	0.0
6# Fortnight	0.0	3.0	4.0	0.0
7# Fortnight	0.0	3.0	4.0	0.0
8# Fortnight	3.0	0.0	0.0	0.0
<b>Total hours:</b>	<b>3.0</b>	<b>6.0</b>	<b>30.0</b>	<b>21.0</b>

The methodological strategies and the evaluation system contemplated in this Course Description will be adapted according to the needs presented by students with disabilities and special educational needs in the cases that are required.