

## Fish Laboratory Course (I002875)

**Course size** (nominal values; actual values may depend on programme)

<b>Credits 2.0</b>	<b>Study time 50 h</b>	<b>Contact hrs</b>	12.5h
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**Course offerings in academic year 2022-2023**

A (semester 2)	English	Gent
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**Lecturers in academic year 2022-2023**

Gutiérrez Fruitos, Joaquim	BARCELO1	lecturer-in-charge
Capilla, Encarnación	BARCELO1	co-lecturer
Fernández-Alacid, Laura	BARCELO1	co-lecturer
García de la Serrana, Daniel	BARCELO1	co-lecturer
García-Meilán, Irene	BARCELO1	co-lecturer
Martin-Pérez, Miguel	BARCELO1	co-lecturer

**Offered in the following programmes in 2022-2023**

	<b>crdts</b>	<b>offering</b>
<a href="#">International Master of Science in Health Management in Aquaculture</a>	2	A

**Teaching languages**

English

**Keywords**

*Fish handling, water quality, larval development, fish muscle growth and myogenesis, hyperplasic and hypertrophic growth, skeletal malformations, flesh organoleptic traits, feeds formulation.*

**Position of the course**

*This course aims at identification of aquaculture species, sampling and husbandry procedures, water quality measurements, muscle structure and morphology associated to flesh quality and identification of skeletal anomalies.*

**Contents**

- *Fish handling: anesthesia, blood draw and hematocrit, microchip injection, sacrifice, hormones administration and biometrics.*
- *Identification of species of interest in aquaculture and freshness parameters.*
- *Water quality: measurements of pH, salinity and nitrogenous compounds in different water samples.*
- *Fish muscle structure recognition: red and white skeletal muscle, myotomes and myoseptum; structural differences between fish species; colour analysis with Minolta colorimeter; lipid measurement with Fatmeter.*
- *Larval skeletal malformations analysis: methods to prepare fish larvae to study bone development; microscopic study of normal and malformed larvae, identification of cranial, vertebral and caudal anomalies.*

*These activities will be accompanied by specialized visits (research centre and mussel production centre and treatment plant) and/or selected conferences related to the topics dealt in the course.*

**Initial competences**

*General biology, general physiology, zoology*

**Final competences**

- 1 *Know how to handle the fish during different processes such anesthesia, sampling or hormone administration maintaining fish welfare*
- 2 *Know how to measure and to understand water quality parameters*

3 *Identifying muscle structures and appearance associated to species specificity, flesh quality and animal welfare*

4 *Identifying skeletal malformations in fish larvae*

#### **Conditions for credit contract**

This course unit cannot be taken via a credit contract

#### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

#### **Teaching methods**

Practicum, Demonstration, Group work, Guided self-study, Excursion, Seminar: coached exercises

#### **Learning materials and price**

*syllabus*

#### **References**

- Boglione, C., Gavaia, P., Koumoundouros, G., Gisbert, E., Moren, M., Fontagne, S., Witten, P. E. (2013). *Skeletal anomalies in reared European fish larvae and juveniles. Part 1: normal and anomalous skeletogenic processes. Reviews in Aquaculture 5 (Suppl. 1), S99–S120*
- Boglione, C., Gisbert, E., Gavaia, P., Witten, P.E., M. Fontagne, S., Koumoundouros, G. (2013). *Skeletal anomalies in reared European fish larvae and juveniles. Part 2: main typologies, occurrences and causative factors. Reviews in Aquaculture 5 (Suppl. 1), S121–S167.*
- Chhorn Lim, C.D. Webster (editors)  
[Nutrition and fish health](#). New York: Food Products Press, (2001). .
- Grosell, M., Farrell, A.P., Brauer, C.J. (2011). *The multifunctional gut of fish. Fish Physiology 30: 1-448*
- Johnston, I. *Fish Physiology, XVIII. Muscle Development and Growth*. Ed. Ian Johnston, William Hoar, Anthony Farrell, Academic Press 2001.
- Ross, L. G. and Ross, B. (2000) *Anaesthetic and sedative techniques for aquatic animals*. Wiley-Blackwell; 2nd Edition, UK
- Shadwinck, R.E. and Lauder, G.V. *Fish Physiology, XXIII. Fish Biomechanics*. Academic Press, 2006
- Vélez, E.J., Lutfi, E., Azizi, Sh., Perelló, M., Salmerón, C., Riera-Codina, M., Ibarz, A., J Fernández-Borràs, J., Blasco, J., Capilla, E., Navarro, I., Gutiérrez, J. (2017). *Understanding fish muscle growth regulation to optimize aquaculture production. Aquaculture, 467, 28-40.*

#### **Course content-related study coaching**

*Teacher available for student counselling*

#### **Assessment moments**

end-of-term and continuous assessment

#### **Examination methods in case of periodic assessment during the first examination period**

Report, Written examination, Participation

#### **Examination methods in case of periodic assessment during the second examination period**

Report, Written examination

#### **Examination methods in case of permanent assessment**

Report, Written examination, Participation, Job performance assessment

#### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible in modified form

#### **Calculation of the examination mark**

*Written exam 40%; Report lab activities 40%; Visits and conference questions 15%;*

*Behavioural evaluation accomplishment 5%*

*Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.*

