

## Fish Laboratory Course (I002875)

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

**Credits 2.0** **Study time 50 h**

### Course offerings in academic year 2025-2026

A (semester 2) English Gent

### Lecturers in academic year 2025-2026

|                              |          |                    |
|------------------------------|----------|--------------------|
| 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        |
| Martín-Pérez, Miguel         | BARCELO1 | co-lecturer        |

### Offered in the following programmes in 2025-2026

|   |              |                 |
|---|--------------|-----------------|
| International Master of Science in Health Management in Aquaculture | <b>crdts</b> | <b>offering</b> |
|   | 2            | A               |

### Teaching languages

English

### Keywords

*Fish handling, water quality, larval development, fish muscle growth and myogenesis, hyperplastic 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

Group work, Seminar, Excursion, Practical, Independent work

#### Study material

None

#### References

- Boglione, C., Gavaia, P., Kourmoundouros, 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., Kourmoundouros, 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., Brauenr, 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

Participation, Written assessment, Assignment

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

Written assessment, Assignment

#### Examination methods in case of permanent assessment

Professional practice, Participation, Written assessment, Assignment

#### 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.*

