ACADEMIC YEAR 2023/2024

General information	
Academic subject	**ANATOMY AND MORPHOGENESIS OF FARMED FISH** (integrated exam of ANATOMY AND PHYSIOLOGY OF FARMED MARINE SPECIES)
Degree course	Science of Marine Productions and Resources (L38)
Academic Year	I year
European Credit Transfer and Accumulation System (ECTS)	6 (5+1)
Language	Italian
Academic calendar (starting and ending date)	II semester
Attendance	Optional

Professor/ Lecturer	
Name and Surname	Aldo Corriero
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Department and address	Taranto presso Ex II Facoltà di Scienze MM.FF.NN, Via Alcide de Gasperi, (Quartiere Paolo VI) - 74123 Taranto
Virtual headquarters	Microsoft Teams
Tutoring (time and day)	By appointment to be agreed by email.

Syllabus	
Learning Objectives	The teaching course of Anatomy and Morphogenesis of Farmed Fish provides basic elements regarding the anatomy and developmental biology of farmed fish species as well as the main development anomalies of interest for the aquaculture sector.
Course prerequisites	The students must have passed the examinations of "General Biology and Zoology" and "Biochemistry".
Contents	**Histology** - Epithelial tissues. Connective tissue proper. Specialised connective tissues. Muscle tissues. Nervous tissue. **Anatomy** – Locomotor system. Digestive system. Respiratory system. Swim bladder. Integumentary system. Excretory system. Heart and circulatory system. Lymphatic system. Reproductive system. Endocrine system. Nervous system. Sense organs. **Developmental biology** – Egg. Fertilisation. Cleavage. Gastrulation. Organogenesis. Hatching. Larval phase. Post—larval phase. Skeletal and swin bladder anomalies.
Books and bibliography	• T. ZAVANELLA, R. CARDANI, Manuale di Anatomia dei Vertebrati, Antonio Delfino Editore, Roma, 2008. • M. DOAA, M. MOKHTAR, From Cells to Organs, Apple Academic Press • G.K. OSTRANDER, The laboratory fish, Academic Press, 2000. • E. De LUCA, Embriologia dei Cordati, Casa editrice Ambrosiana.
Additional materials	PPT files and scientific articles will be provided.

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours

U.O. Didattica e servizi agli studenti
Strada prov.le 62 per Casamassima, km. 3,00
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Hours			
150	**50**	**10**	**90**
ECTS			
6	**5**	**1**	

Teaching strategy	
	Frontal lectures will be carried out through PowerPoint presentations in classrooms provided with multimedia devices. Practical lectures will be carried out in exercitation rooms provided with microscopes. The course is not delivered in e-learning mode (with the exception of health emergency).
Expected learning outcomes	
Knowledge and understanding on:	Knowledge of fish histology, anatomy, developmental biology and main developmental anomalies of aquaculture interest.
Applying knowledge and understanding on:	Use of light microscope to analyse histological sections and identification of tissues. Identification of embryonal development phases. Identification of the main developmental anomalies of aquaculture interest.

Soft skills	• *Making informed judgments and choices*
	  ○ At the end of the course, the students will be able to interpret fish histological slides, fish developmental stages and identify the main developmental anomalies.
	• *Communicating knowledge and understanding*
	  ○ Students will be familiar with the anatomical terminology
	• *Capacities to continue learning*
	  ○ At the end of the course, the students will be able to autonomously study fish morphology subjects.

Assessment and feedback	
Methods of assessment	The exam will involve an optional ongoing test (Histology) and a final oral test. During the ongoing tests, the students will be required to identify and described histological micrographs of fish tissues. The final examination will involve the description of fish anatomical systems and the identification of fish developmental phases and anomalies.

Evaluation criteria	• Knowledge and understanding
	  ○ Knowledge of micro and macroscopical structure of farmed fish.
	  ○ Knowledge of the basic elements of fish developmental biology.
	  ○ Knowledge of the main developmental anomalies of farmed fish.
	• Applying knowledge and understanding
	  ○ Capacity to identify fish tissues and organs.
	  ○ Capacity to identify fish development stages.
	  ○ Capacity to identify fish development anomalies of aquaculture interest.
	• Autonomy of judgement
	  ○ Capacity to critically discuss the topics presented.
	• Communicating knowledge and understanding
	  ○ Correct use of the anatomical terminology
	• Capacity to continue learning
	  ○ Capacity to describe anatomical structures not presented by the teacher during the course.

Criteria for assessment and attribution of the final mark	The final grade is awarded out of thirty. The exam is passed when the grade is greater than or equal to 18/30. Description clearness and use of the correct terminology will be assessed. The outcome of the integrated exam of Anatomy and Physiology of Farmed Marine Species will correspond to the mathematical

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	average of the marks awarded for the exam of “Anatomy and Morphogenesis of Farmed Fish” and “Physiology and Endocrinology of Aquatic Animals”.
Additional information	

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