SCHEDA DELL'INSEGNAMENTO (SI)

"REARING TECHNIQUES OF AQUATIC SPECIES"
SSD AGR/20

DENOMINAZIONE DEL CORSO DI STUDIO: MARINE BIOLOGY AND AQUACULTURE - L- M6 CLASSE DELLE LAUREE IN BIOLOGIA

ANNO ACCADEMICO 2022-2023

INFORMAZIONI GENERALI - DOCENTE

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INFORMAZIONI GENERALI - ATTIVITÀ

INSEGNAMENTO INTEGRATO (EVENTUALE):

MODULO (EVENTUALE):

CANALE (CURRICULUM EVENTUALE): MARINE AQUACULTURE

ANNO DI CORSO : II

SEMESTRE: II

CFU: 6

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OBIETTIVI FORMATIVI

The course aims to provide the student with the knowledge related to the rearing techniques of the traditionally farmed and newly introduced fish species in Italy and their nutrition, feeding, structures, technologies and breeding systems. The rearing techniques of the most commonly farmed bivalve mollusks in Italy will also be treated.

RISULTATI DI APPRENDIMENTO ATTESI (DESCRITTORI DI DUBLINO)

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Conoscenza e capacità di comprensione

At the end of the course, and after passing the exam, students are expected to have acquired knowledge related to the finfish and mussels and clams rearing sector that will allow them to use advanced textbooks, elaboration and application of original ideas relating to the rearing of innovative fish species, as well as the ability to operate in a research context linked to the aquaculture sector.

Capacità di applicare conoscenza e comprensione

Similarly, students are expected to be able to apply the acquired knowledge in the context of finfish and bivalve mollusks rearing, also demonstrating understanding and problem-solving skills in conducting practical activities within aquaculture farms.

PROGRAMMA-SYLLABUS

Classroom lessons (h 40)

Lesson topic:
Introduction to aquaculture. Origins and development of the modern aquaculture. The state of the world and Italian aquaculture.
N. of hours 4

Lesson topic:
Classification of aquaculture facilities: structures and materials.
N. of hours 1

Lesson topic:
Chemical-physical constants of water. Qualitative parameters of the rearing waters: temperature, pH, dissolved oxygen, ammonia, nitrite, nitrate etc.
N. of hours 2

Lesson topic:
Elements of ichthyology.
N. of hours 1

Lesson topic:
European sea bass and gilthead sea bream rearing techniques.
N. of hours 5

Lesson topic:

Recirculating systems in aquaculture
N. of hours 1

Lesson topic:
Rearing of innovative fish species: European eel.
N. of hours 1

Lesson topic:
Rearing of innovative fish species: sharpsnout sea bream and meagre.
N. of hours 2

Lesson topic:
Rearing of innovative fish species: blackspot sea bream.
N. of hours 1

Lesson topic:
Rearing of innovative fish species: common sole and turbot.
N. of hours 2

Lesson topic:
Fish nutrition. Nutritional peculiarities of fish species compared to terrestrial vertebrates.
N. of hours 2

Lesson topic:
Energy utilization and determination of energy and nutrients digestibility in fish species.
N. of hours 2

Lesson topic:
Lipids in fish nutrition. Nutritional requirements, metabolic bioconversion capacity, PUFA, EFA and physiological, metabolic and structural functions.
N. of hours 2

Lesson topic:
Protein in the diet of farmed fish species. Requirements, biological value, essential amino acid requirements. Innovative protein sources in aquaculture.
N. of hours 2

Lesson topic:
Carbohydrates in the diet of fish species. Nutritional value and types of usable carbohydrates. Digestive and metabolic problems related to their use in diets for carnivorous fish.
N. of hours 2

Lesson topic:
Italian and world production and economic statistics of bivalve molluscs.
N. of hours 2

Lesson topic:
Elements of systematics, biology and ecology of farmed molluscs and crustaceans.
N. of hours 4

Lesson topic:
Mussels: biology and rearing techniques of the most commonly farmed species.

N. of hours 2

Lesson topic:
Clams: biology and rearing techniques of the most commonly farmed species.
N. of hours 2

Practical Teaching (8 h)

Lesson topic:
Formulation of a diet for a carnivorous fish species using the Microsoft Excel program.
n. of hours 2

Lesson topic:
Practical lesson in a fish farm. Monitoring of water quality parameters: temperature, salinity, pH and dissolved oxygen. Determination of ammonia, nitrite and nitrate by spectrophotometer.
n. of hours 3

Lesson topic:
Practical lesson in a recirculating system. Monitoring of water quality parameters: temperature, salinity, pH and dissolved oxygen. Determination of ammonia, nitrite and nitrate by spectrophotometer.
n. of hours 3

MATERIALE DIDATTICO
- Sparidae: Biology and Aquaculture of Gilthead Sea Bream and Other Species, First Edition. Edited by Michail A. Pavlidis and Constantinos C. Mylonas © 2011 Blackwell Publishing Ltd. Published 2011 by Blackwell Publishing Ltd. ISBN: 978-1-405-19772-4
- The State of World Fisheries and Aquaculture 2020. Sustainability in action. FAO, Rome. 207 pp.
- Recent Advances and New Species in Aquaculture. Edited by Ravi K. Fotedar, Bruce F. Phillips. 2011 by Blackwell Publishing Ltd
- Aquaculture Production Systems Editor James H. Tidwell. 2012 by John Wiley & Sons, Inc.
- Acquacoltura Responsabile. Cataudella-Bronzi. Unimar-Uniprom. Roma 2001
- Marine Bivalve Molluscs Second Edition Edited by Elizabeth Gosling, John Wiley & Sons, Ltd, Fishing News Books, Blackwell Publishing, 2015
- Molluscan Shellfish Farming. Edited by B. E. Spencer by Fishing News Books, Blackwell Publishing, 2002

MODALITÀ DI SVOLGIMENTO DELL'INSEGNAMENTO
Frontal lessons, classroom exercises, practical training in farms.

VERIFICA DI APPRENDIMENTO E CRITERI DI VALUTAZIONE

a) Modalità di esame:

L'esame si articola in prova	
scritta e orale	
solo scritta	x
solo orale	
discussione di elaborato progettuale	
altro	

In caso di prova scritta i quesiti sono (*)	A risposta multipla	x
	A risposta libera	x
	Esercizi numerici	

(*) È possibile rispondere a più opzioni

b) Modalità di valutazione:

Grades ranging from 0 to 30. The exam is passed with a minimum grade of 18.