

Ano Letivo 2019-20

Unidade Curricular REPRODUÇÃO EM AQUACULTURA

Cursos AQUACULTURA E PESCAS (2.º Ciclo)
RAMO AQUACULTURA

Unidade Orgânica Faculdade de Ciências e Tecnologia

Código da Unidade Curricular 14301047

Área Científica CIÊNCIAS BIOLÓGICAS

Sigla CB

Línguas de Aprendizagem Português ou Inglês (se estiverem presentes estudantes internacionais)

Modalidade de ensino Presencial

Docente Responsável Adelino Vicente Mendonça Canário

DOCENTE	TIPO DE AULA	TURMAS	TOTAL HORAS DE CONTACTO (*)
Adelino Vicente Mendonça Canário	PL; T; TP	T1; TP1; PL1	7,5T; 5TP; 10PL

* Para turmas lecionadas conjuntamente, apenas é contabilizada a carga horária de uma delas.

ANO	PERÍODO DE FUNCIONAMENTO*	HORAS DE CONTACTO	HORAS TOTAIS DE TRABALHO	ECTS
1º	S2	7,5T; 5TP; 10PL	84	3

* A-Anual; S-Semestral; Q-Quadrimestral; T-Trimestral

Precedências

Sem precedências

Conhecimentos Prévios recomendados

Biologia Geral

Objetivos de aprendizagem (conhecimentos, aptidões e competências)

1) Provide basic concepts of reproductive biology 2) Provide the scientific and reasoning for the application of reproductive biology to aquaculture 3) Provide the tools for the students to explore recent advances in reproductive biology and related subjects both for basic science and applications of science.

Conteúdos programáticos

- 1) Introduction: Variability of reproductive strategies in teleost fishes
- 2) Origin and morphology of gonads and ducts
- 3) Sex determination and differentiation in fish
- 4) Gametogenesis
- 5) Neuroendocrine control of gametogenesis
- 6) The cycle of gametogenesis and endocrine cycle in salmonids and non-salmonids
- 7) Hormonal pheromones
- 8) The endocrine regulation of puberty in male fish: implications for ongoing problems in aquaculture
- 9) Hormonal spawning induction in fish farming
- 10) Environmental control of fish reproduction

Demonstração da coerência dos conteúdos programáticos com os objetivos de aprendizagem da unidade curricular

The objective of the discipline is to provide the students with a comprehensive background of reproductive biology theory and practice so that students have the capacity to analyse and diagnose the problems they will find in fish farms, as well as providing the tools so that they develop standard procedures and possibly innovate so as to make fish farming more competitive. Thus the course provides a comprehensive view of the morphology, the endocrine system, various key processes such as sex differentiation, puberty, gametogenesis and spawning and the influence of endogenous and exogenous factors. The approach to the various topics is backed up by recent bibliography and examples, pointing out known current problems and how to approach them.

Metodologias de ensino (avaliação incluída)

Topics will be presented in lectures which the students explore further in bibliography provided from books and scientific papers, generally reviews. A few practical hands on or demonstration classes will deal with basic topics such as gametogenesis. Students are encouraged to further explore particular topics by writing a review in the style of a scientific paper, which will be subject to peer review and will be presented orally. Students will be examined by 1) Extended abstract of article and oral presentation(25%) 2) 4) written exam(75%).

Demonstração da coerência das metodologias de ensino com os objetivos de aprendizagem da unidade curricular

The organization of the discipline in lectures and practical classes allow the students to have a global view of reproduction in particular in fish and the place this knowledge has in aquaculture. Students have the opportunity to practice some techniques and make observations in practical classes. They also have the opportunity to revise, criticize and present to colleagues relevant published literature. Overall they receive a comprehensive view of the key aspects of reproduction in relation to aquaculture.

Bibliografia principal

Babin, Patrick J.; Cerdà, Joan; Lubzens, Esther (Eds.) The Fish Oocyte, From Basic Studies to Biotechnological Applications, 2007, XIV, 510 p. Springer
Billard, R. (Ed.), 1990. Spermatogenesis in teleost fish. Marshall's physiology of reproduction. Churchill Livingstone, New York, 183-212 pp.
Bromage, N., M. Porter & C. Randall (2001) The environmental regulation of maturation in farmed finfish with special reference to the role of photoperiod and melatonin. Aquaculture, 197, 63-98.
Devlin, R. H. & Y. Nagahama (2002) Sex determination and sex differentiation in fish: an overview of genetic, physiological, and environmental influences. Aquaculture, 208, 191-364.
Hofman, M. A. (2004) The brains calendar: neural mechanisms of seasonal timing. Biological Reviews, 79, 61-77.
Peter, R. E. & K. L. Yu (1997) Neuroendocrine regulation of ovulation in fishes: Basic and applied aspects. Reviews in Fish Biology and Fisheries, 7, 173-197.

Academic Year 2019-20

Course unit REPRODUCTION IN AQUACULTURE

Courses AQUACULTURE AND FISHERIES
BRANCH AQUACULTURE
RAMO AQUACULTURA

Faculty / School FACULTY OF SCIENCES AND TECHNOLOGY

Main Scientific Area CY BI

Acronym BC GB

Language of instruction Portuguese or English (if international students are present)

Teaching/Learning modality direct contact with students

Coordinating teacher Adelino Vicente Mendonça Canário

Teaching staff	Type	Classes	Hours (*)
Adelino Vicente Mendonça Canário	PL; T; TP	T1; TP1; PL1	7,5T; 5TP; 10PL

* For classes taught jointly, it is only accounted the workload of one.

Contact hours

T	TP	PL	TC	S	E	OT	O	Total
7,5	5	10	0	0	0	0	0	84

T - Theoretical; TP - Theoretical and practical ; PL - Practical and laboratorial; TC - Field Work; S - Seminar; E - Training; OT - Tutorial; O - Other

Pre-requisites

no pre-requisites

Prior knowledge and skills

General Biology

The students intended learning outcomes (knowledge, skills and competences)

1) Provide basic concepts of reproductive biology 2) Provide the scientific and reasoning for the application of reproductive biology to aquaculture 3) Provide the tools for the students to explore recent advances in reproductive biology and related subjects both for basic science and applications of science.

Syllabus

- 1) Introduction: Variability of reproductive strategies in teleost fishes
- 2) Origin and morphology of gonads and ducts
- 3) Sex determination and differentiation in fish
- 4) Gametogenesis
- 5) Neuroendocrine control of gametogenesis
- 6) The cycle of gametogenesis and endocrine cycle in salmonids and non-salmonids
- 7) Hormonal pheromones
- 8) The endocrine regulation of puberty in male fish: implications for ongoing problems in aquaculture
- 9) Hormonal spawning induction in fish farming
- 10) Environmental control of fish reproduction

Demonstration of the syllabus coherence with the curricular unit's learning objectives

The objective of the discipline is to provide the students with a comprehensive background of reproductive biology theory and practice so that students have the capacity to analyse and diagnose the problems they will find in fish farms, as well as providing the tools so that they develop standard procedures and possibly innovate so as to make fish farming more competitive. Thus the course provides a comprehensive view of the morphology, the endocrine system, various key processes such as sex differentiation, puberty, gametogenesis and spawning and the influence of endogenous and exogenous factors. The approach to the various topics is backed up by recent bibliography and examples, pointing out known current problems and how to approach them.

Teaching methodologies (including evaluation)

Topics will be presented in lectures which the students explore further in bibliography provided from books and scientific papers, generally reviews. A few practical hands on or demonstration classes will deal with basic topics such as gametogenesis. Students are encouraged to further explore particular topics by writing a review in the style of a scientific paper, which will be subject to peer review and will be presented orally. Students will be examined by 1) Extended abstract of article and oral presentation(25%) 2) 4) written exam(75%).

Demonstration of the coherence between the teaching methodologies and the learning outcomes

The organization of the discipline in lectures and practical classes allow the students to have a global view of reproduction in particular in fish and the place this knowledge has in aquaculture. Students have the opportunity to practice some techniques and make observations in practical classes. They also have the opportunity to revise, criticize and present to colleagues relevant published literature. Overall they receive a comprehensive view of the key aspects of reproduction in relation to aquaculture.

Main Bibliography

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