

Aquaculture Genetics (1002795)

Cursusomvang (nominale waarden; effectieve waarden kunnen verschillen per opleiding)

Studiepunten 6.0 **Studietijd 180 u**

Aanbodsessies in academiejaar 2024-2025

Lesgevers in academiejaar 2024-2025

Aangeboden in onderstaande opleidingen in 2024-2025 **stptn** **aanbodsessie**

Onderwijstalen

Engels

Trefwoorden

Molecular genetic techniques for detecting polymorphisms, qualitative and quantitative genetics, breeding programmes, chromosome manipulation, sex manipulation, polyploidisation, genetic maps.

Situering

This course starts with the study of the essential knowledge on genetic principles and molecular genetic techniques.

In the second part attention is paid to specific methods and implications of genetic research in aquaculture.

Inhoud

Theory

1. Fundamental knowledge on DNA structure
2. Molecular techniques for detecting genetic variation
3. Qualitative genetics
4. Quantitative genetics
5. F-statistics
6. Inbreeding
7. Use of androgenesis, gynogenesis and triploidisation
8. Manipulation of sexual phenotype
9. Breeding programmes
- 10 Genetic maps

Practical exercises

1. Handling and analysing genetic data
2. Application of molecular tools in analysis of broodstock population (paper group exercise)
3. Exercise on heritability
4. Lab exercise RFLP analysis of a mitochondrial DNA fragment

Begincompetenties

General biology, chemistry, biochemistry and basic knowledge on aquaculture.

Eindcompetenties

- 1 The student has insight into Mendelian genetics.
- 2 The student has knowledge on molecular markers and their application.
- 3 The student has basic knowledge on quantitative genetic models and parameters (heritability and genetic relations).
- 4 The student has insight into breeding value estimation in aquaculture (including sex

reversal).

5 The student understands the importance of selection, inbreeding and cross breeding in breeding programs.

6 The student has insight into the construction and the use of genetic maps.

7 The student is able to amplify and analyse (RFLP) a DNA fragment.

Creditcontractvoorwaarde

Toelating tot dit opleidingsonderdeel via creditcontract is mogelijk mits gunstige beoordeling van de competenties

Examencontractvoorwaarde

Dit opleidingsonderdeel kan niet via examencontract gevolgd worden

Didactische werkvormen

Werkcollege, Hoorcollege, Practicum, Zelfstandig werk

Toelichtingen bij de didactische werkvormen

Theory lectures: lectures based on powerpoint presentations.

Practical classes: RFLP experiment in small groups.

Exercises: guided exercises and calculations and group work on cloning strategies.

Studiemateriaal

Geen

Referenties

An introduction to genetic analysis (Griffits et al.)

Biotechnology and genetics in fisheries and aquaculture (Becuemont & Hoare)

Practical genetics for aquaculture (Lutz G.)

Principles of population genetics (Hartl & Clark)

Vakinhoudelijke studiebegeleiding

Study guidance upon request by email or on appointment.

Evaluatiemomenten

periodegebonden en niet-periodegebonden evaluatie

Evaluatievormen bij periodegebonden evaluatie in de eerste examenperiode

Schriftelijke evaluatie

Evaluatievormen bij periodegebonden evaluatie in de tweede examenperiode

Schriftelijke evaluatie

Evaluatievormen bij niet-periodegebonden evaluatie

Participatie, Werkstuk

Tweede examenkans in geval van niet-periodegebonden evaluatie

Examen in de tweede examenperiode is mogelijk

Toelichtingen bij de evaluatievormen

Period aligned evaluation: theory: written closed book exam.

Non-period aligned evaluation: practical classes and exercise assessment: participation and report.

Eindscoreberekening

Out of 20:

13 points attributed to written exam

2 point groupwork exercises

5 points attributed to report practical classes

Students that do not attend the practical classes without a valid reason, should retake the course the next academic year.

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