COURSE DATA

DATA SUBJECT

Code: 43135
Name: Systems engineering
Cycle: Master's Degree
ECTS Credits: 4
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
2144 - Master's degree in Aquaculture	Facultat de Ciències Biològiques	1	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2144 - Master's degree in Aquaculture	Systems engineering	COMPULSORY

COORDINATION

MONTERO ROYO FRANCISCO ESTEBAN

SUMMARY

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

COMPETENCES / LEARNING OUTCOMES

2144 - Master's degree in Aquaculture

Ability to work in teams.

Adquirir las destrezas básicas necesarias para: (a) anticipar las necesidades de I+D+i (p.e., las derivadas de la introducción de nuevas especies o la profilaxis frente a patógenos emergentes); (b) prevenir el impacto ambiental potencial; y (c) organizar la producción asegurando su viabilidad.

Apreciar la importancia de los trabajos multidisciplinares (incluyendo la dimensión ética) incluso en los aspectos aparentemente técnicos de la actividad profesional.

Conocer y saber manejar las fuentes documentales relacionadas con cada asignatura, con especial atención a las fuentes accesibles mediante redes informáticas.

Organizar y sintetizar información diversa para generar un todo coherente.

Poseer conocimientos básicos en el diseño de instalaciones, así como la evaluación del impacto ambiental de las mismas.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should demonstrate self-directed learning skills for continued academic growth.

DESCRIPTION OF CONTENTS

1. Location of an aquaculture facility

2. Elements of an onshore and an offshore facility

3. Water intake and pumping systems. Filtration systems

4. Recirculation systems. Control systems

5. Aeration and oxygenation methods

6. Water distribution systems: channels and pipes

7. Pond design

8. Floating and submerged structures for mollusks

9. Types of sea cages and mooring systems

10. Auxiliary structures for offshore

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	2,00
Theory	25,00

Seminar	10,00
Total hours	**37,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	15,00
Independent study and work	25,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	15,00
Total hours	**55,00**

TEACHING METHODOLOGY

Theoretical classes will describe the different production systems and the foundations for their design and calculat
By completing a coursework project on the technical design of a complete facility, on land or at sea, students will be

EVALUATION

Written exam with open-ended questions and problems (100%)

Open-ended written test:
A timed test, conducted under supervision, in which the student constructs his or her answer.
The student may or may not be granted the right to consult support materials.

REFERENCES

- Ingeniería de Costas. Ed. Limusa. 339 pag. (ARMANDO V. y GONZALO C., 1988.)
- Cage Aquaculture. Ed. Blackwell Publising. 368 pab. (BEVERIDGE, M., 2004.)
- Fundamentals of Aquaculture Engineering. Ed. Chapman & Hall. 355 pag. (LAWSON T., 1995)
- Recirculating Aquaculture Systems. Ed. Cayuga Aqua Ventures. 769 pag. (TIMONS M. 2002.)
- Acuacultura. Diseño y Construcción de sistemas. AGT Editor. 704 pag. (WEATON, F., 1977)