Course guide
280605 - 280605 - Fundamentals of Mathematics II

Unit in charge: Barcelona School of Nautical Studies
Teaching unit: 749 - MAT - Department of Mathematics.
Degree: BACHELOR'S DEGREE IN NAUTICAL SCIENCE AND MARITIME TRANSPORT (Syllabus 2010). (Compulsory subject).
Academic year: 2022  ECTS Credits: 6.0  Languages: Catalan

LECTURER

Coordinating lecturer: Primer quadrimestre: JOAN CARLES LARIO LOYO
Segon quadrimestre: MARIA MONTSERRAT VELA DEL OLMO

Others: Primer quadrimestre: JOAN CARLES LARIO LOYO - Grup: GNTM
Segon quadrimestre: MARIA MONTSERRAT VELA DEL OLMO - Grup: GNTM

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Ability to solve math problems that may arise in engineering. Ability to apply knowledge about: linear algebra, geometry, differential geometry to, differential and integral calculus, differential equations and partial differential, numerical methods, algorithmic numerical and statistical optimization.

TEACHING METHODOLOGY

(ENG) Receive, understand and summarize knowledge.
-Posing and solving problems.
-Developing arguments from a critical point of view and defending them.
-Doing work in group and individually.

LEARNING OBJECTIVES OF THE SUBJECT

- To be able to apply the knowledge on basic functions, differential and integral calculus, numerical methods and statistics.
- To solve the mathematical problems that arise in engineering.
- To develop the capacity of abstraction while solving problems.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>30,0</td>
<td>20.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>30,0</td>
<td>20.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h
CONTENTS

(ENG) Functions.

Description:

Specific objectives:
(ENG)

Related activities:
(ENG)

Full-or-part-time: 20h
Theory classes: 8h
Self study: 12h

(ENG) Derivation.

Description:

Specific objectives:
(ENG)

Related activities:
(ENG)

Full-or-part-time: 35h
Theory classes: 14h
Self study: 21h
(ENG) Integration.

Description:
Double and triple integrals: definition, iterated integrals and computation. Application: areas and volumes, computation of CM and inertial moments.

Specific objectives:
(ENG)

Related activities:
(ENG)

Full-or-part-time: 25h
Theory classes: 10h
Self study : 15h

(ENG) Ordinary Differential equations.

Description:

Specific objectives:
(ENG)

Related activities:
(ENG)

Full-or-part-time: 15h
Theory classes: 6h
Self study : 9h

(ENG) Statistics.

Description:

Specific objectives:
(ENG)

Related activities:
(ENG)

Full-or-part-time: 20h
Theory classes: 8h
Self study : 12h
GRADING SYSTEM

The final grade is the sum of the following partial grades: N_{final} = 0.90 \, NE + 0.10 \, NC.

The NE = \text{Max}(\, N_{mig}, \, N_f) where

\[ N_{mig} = 0.60 \, N_f + 0.40 \, N_p \]

where N_{final}: final grade.

N_f: grade of the final test.

N_p: grade of the partial tests.

The final test consist of some theoretical questions about concepts related to the course' learning aims, and a set of problems that require the application of the methods studied. Its duration is 3 hours.

The continuous grade consist of one or two test (each one hour long), the participation in class and the supervised activities carried out during the semester.

EXAMINATION RULES.

- If some of the activities of the continuous grade are missed, the continuous grade is 0.
- A student which does not make the final test is being considered as 'No Presentat'.

BIBLIOGRAPHY

Basic:

Complementary: