280647 - Naval Electronics

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 710 - EEL - Department of Electronic Engineering
Academic year: 2020
Degree: BACHELOR'S DEGREE IN MARINE TECHNOLOGIES (Syllabus 2010). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN MARINE TECHNOLOGIES/BACHELOR'S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2016). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan

Teaching staff
Coordinator: Josep M. Torrents
Others: Miguel Ángel García González
Clemente Pol Fernández

Opening hours
Timetable: Monday from 12 am to 1 pm.

Prior skills
Concepts of electric current, electrical voltage, power and energy, their relation in electrical circuits and the use of their units in the SI. Basic circuit analysis (Kirchoff and Ohm laws). Concept of numbering bases (binary, octal and hexadecimal).

Requirements
Pass 280641.

Degree competences to which the subject contributes
Specific:
1. Knowledge of electronics applied to the ship and offshore installations and their application to board.
2. Knowledge of the characteristics of electronic components and systems and its application on board.

Teaching methodology
Various methodologies are combined: Lecture, participatory class of problems, flipped classroom, electronic lab practical duties.

Learning objectives of the subject
Train students to practice the profession of engineer GTM and GESTN, according to the requirements of applicable law.
This course will evaluate the following STCW competences:
6. Operated electrical, electronic and control systems
E1. Monitor the operation of electrical, electronic and control systems

Teaching unit:
2020
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This course will evaluate the following STCW competences:
6. Operated electrical, electronic and control systems
E1. Monitor the operation of electrical, electronic and control systems
Besides, this subject deals with STCW, section A-III/6:
E.8 Maintenance and repair of electrical and electronic equipment.
   E.8.3 Detection of electric malfunction, location of faults and measures to prevent damage
   E.8.5 Function and performance tests of the following equipment and their configuration:
      .1 monitoring systems
      .2 automatic control devices
      .3 protective devices
      .4 The interpretation of electrical and electronic diagrams

E.9 Maintenance and repair of automation and control systems of main propulsion and auxiliary machinery
   E.9.3 Practical knowledge for the testing, maintenance, fault finding and repair
   E.9.4 Test, detect faults and maintain and restore electrical and electronic control equipment to operating condition

### Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 30h</th>
<th>20.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 10h</td>
<td>6.67%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 15h</td>
<td>10.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 5h</td>
<td>3.33%</td>
</tr>
<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
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</tbody>
</table>
Introduction to electronics.

**Description:**

**Related activities:**
Three hours a week lecture in large groups and workshops in the laboratory of electronics and electricity two hours every two weeks.

**Specific objectives:**
Develop the points mentioned in the description section (instrumentation, circuit analysis with active and passive components, digital and power circuits) using examples from the maritime and shipping environment.

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**Basic instrumentation**

**Description:**
DMM, Oscilloscope, Function Generator and Power supply

**Specific objectives:**
Basic knowledge of basic measure instruments

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**Dispositius semiconductors.**

**Degree competences to which the content contributes:**

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**Circuits amb semiconductors.**

**Degree competences to which the content contributes:**

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**Electrònica Digital.**

**Degree competences to which the content contributes:**
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(ENG) Electrònica de potència.

Degree competences to which the content contributes:

(ENG) Emmagatzement de l'energia elèctrica.

Degree competences to which the content contributes:

(ENG) Sensors d'aplicació a la marina.

Degree competences to which the content contributes:

(ENG) Control electrònic de motors elèctrics.

Degree competences to which the content contributes:

(ENG) El microcontrolador.

Degree competences to which the content contributes:

(ENG) Busos de comunicació digital en un vaixell.

Degree competences to which the content contributes:

Qualification system

A partial test. A final test (covers all subjects at the end of the course). The continuous evaluation of the laboratory. In class, some additional tests may be proposed. The final grade is the average of laboratory evaluation and tests.

Regulations for carrying out activities

The tests are individual. The material allowed for the tests is only pen (not pencil) and scientific calculator (not programmable). Mobile is not allowed.
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Bibliography

Basic:


Complementary:


Others resources:

Hyperlink

http://www.batterystuff.com/tutorial_chargers.html

http://www.falstad.com/fourier/index.html