

SUBJECT TEACHING GUIDE

G1740 - CROSS-CURRICULAR SKILLS, VALUES AND COMPETENCES

Degree in Marine Engineering

Academic year 2023-2024

| 1. IDENTIFYING DATA | | | | | |
|----------------------------------|---|------------------|--------------------|------------------|--------------|
| Degree | Degree in Marine Engineering | | | Type and Year | Core. Year 1 |
| Faculty | School of Maritime Engineering | | | | |
| Discipline | Linguistic Capacitation in English and Training in Values, Competences and Personal Skills Subject Area: Training in Values, Competences and Personal Skills | | | | |
| Course unit title and code | G1740 - CROSS-CURRICULAR SKILLS, VALUES AND COMPETENCES | | | | |
| Number of ECTS credits allocated | 6 | Term | Semester based (2) | | |
| Web | | | | | |
| Language of instruction | Spanish | English Friendly | No | Mode of delivery | Face-to-face |

| | |
|------------------|---|
| Department | DPTO. MATEMATICAS, ESTADISTICA Y COMPUTACION |
| Name of lecturer | TOMAS MARTIN HERNANDEZ |
| E-mail | tomas.martin@unican.es |
| Office | E.T.S. de Náutica. Planta: + 2. DESPACHO (234) |
| Other lecturers | JOSE MARIA HERRERA MURO MARIA ESTHER VALLEJO LOBETE ERNESTO MADARIAGA DOMINGUEZ LUIS JAVIER MARTÍNEZ RODRÍGUEZ JOSE IVAN MARTINEZ GARCIA JERONIMO MORCILLO DELGADO CRISTINA RODRIGUEZ GONZALEZ RAQUEL ARMESTO ALONSO CARLOS FERNÁNDEZ SIXTO |

3.1 LEARNING OUTCOMES

- Analyze critically the reliability of information in the network. Distinguish the types of information and documents and their legal status reuse. Manage and process the information ethically. Solve basic scientific problems multidisciplinary.

- Learning outcomes "Elaboración de textos científico-técnicos y presentaciones mediante el uso de LaTeX y Maxima" (Itinerary 1):

- Being able to generate a complex document or presentation with LaTeX and Maxima involved in complex mathematical expressions along with other elements such as tables, charts, indexes, animations, interactivity, etc.
- Being able to communicate (via e-mail, via the web, via a presentation, etc.) in an environment where the information to be transmitted requires the generation of material including complex mathematical expressions.
- Be able to use Maxima to address the computational problem solving whose formulation is made with mathematics as a language.

- Learning outcomes "Educación ante las Emergencias" (Itinerary 1):

Educate the students with basic aspects of emergencies that can occur in a work environment and in an academic environment (university campus).

- Learning outcomes of "Iniciación a la Ingeniería: laboratorio de mecatrónica (Arduino, Raspberry, ...)" (Itinerary A2):

1. Understand the fundamentals of scientific and technological disciplines through integration into mechatronics and robotics.
2. Know and identify on a controller board inputs, outputs, and controller.
3. Know in detail the basic sensors and actuators of a robotic system.
4. Understand the operation of a microcontroller
5. Evaluate the importance of Arduino as a learning tool for robotics and control .
6. Identify the different types of existing Arduinos
7. Know the most common types of shields and their functions.
8. Identify the basic elements of a program Arduino
9. Develop programs for simple control of various control circuits using Arduino .
- 10 Knowing Raspberry Pi and its basic characteristics
- 11 Managing the basics of OS Raspbian
- 12 Connect Raspberry Pi to an Arduino controller
- Develop simple programs in 13 Raspberry Pi to control sensors and actuators connected to Arduino .

- Learning outcomes of "Interpretación de planos y construcción de maquetas y prototipos de barcos" (Itinerary 2):

- Develop the capacity for technical analysis.
- Interpret plans of vessel shapes.
- Know and manipulate different materials, adhesives, etc.
- Development of skills of a manual nature.

- The Language Module is designed for students whose goal is to obtain a B1 level competence in speaking and writing English.

4. OBJECTIVES

GENERAL DESCRIPTION AND OBJECTIVES:

This is a subject characterized by multidisciplinary and complementarity and which are intended to be reflected, at a basic level, English language skills, techniques for Information, Communications, Computing, Automation, Navigation and Maritime Safety.

Students enrolled in this course can choose between three possible itineraries and it is necessary to choose one. Each itinerary consists of three sub-courses of 2 credits each. The possible itineraries are:

Itinerary 1: Common Part+ Latex and Maxima + Emergencies

Itinerary 2: Common Part + Mechatronics + Maquetas

Itinerary 3: Common Part + English + Business English

Learning outcomes "Uso legítimo y multidisciplinar de la información y el conocimiento" (Common part)

Analyze critically the reliability of information in the network. Distinguish the types of information and documents and their legal status reuse. Manage and process the information ethically. Solve basic scientific problems multidisciplinary.

Learning outcomes "Elaboración de textos científico- técnicos y presentaciones mediante el uso de LaTeX y Maxima " (Itinerary 1):

- Being able to generate a complex document or presentation with LaTeX and Maxima involved in complex mathematical expressions along with other elements such as tables, charts, indexes, animations, interactivity, etc.
- Being able to communicate (via e-mail, via the web, via a presentation, etc.) in an environment where the information to be transmitted requires the generation of material including complex mathematical expressions.
- Be able to use Maxima to address the computational problem solving whose formulation is made with mathematics as a language.

Learning outcomes "Educación ante las Emergencias" (Itinerary 1):

Educate the students with basic aspects of emergencies that can occur in a work environment and in an academic environment (university campus).

Learning outcomes of "Iniciación a la Ingeniería: laboratorio de mecatrónica (Arduino, Raspberry, ...)" (Itinerary A2):

1. Understand the fundamentals of scientific and technological disciplines through integration into mechatronics and robotics.
2. Know and identify on a controller board inputs, outputs, and controller.
3. Know in detail the basic sensors and actuators of a robotic system.
4. Understand the operation of a microcontroller
5. Evaluate the importance of Arduino as a learning tool for robotics and control .
6. Identify the different types of existing Arduinos
7. Know the most common types of shields and their functions.
8. Identify the basic elements of a program Arduino
9. Develop programs for simple control of various control circuits using Arduino .
- 10 Knowing Raspberry Pi and its basic characteristics
- 11 Managing the basics of OS Raspbian
- 12 Connect Raspberry Pi to an Arduino controller
- Develop simple programs in 13 Raspberry Pi to control sensors and actuators connected to Arduino .

Learning outcomes of "Interpretación de planos y construcción de maquetas y prototipos de barcos" (Itinerary 2):

- Develop the capacity for technical analysis.
- Interpret plans of vessel shapes.
- Know and manipulate different materials, adhesives, etc.
- Development of skills of a manual nature.

The Language Module is designed for students whose goal is to obtain a B1 level competence in speaking and writing English.

| 6. SUBJECT PROGRAM | |
|--------------------|---|
| CONTENTS | |
| 1 | <p>"Uso legítimo y multidisciplinar de la información y el conocimiento" (common part):</p> <p>1. "Uso legítimo de la información": How to critically analyze web content to the study. Distinguishing between types of information and documents. How to select and evaluate scientific information. Using the information gathered. How to avoid plagiarism and to respect and promote the creation. Citing literature and reference documents. How to prepare and submit papers.</p> <p>2. "Uso multidisciplinar del conocimiento": Computational resolution of navigational and scientific problems: Astronomical positioning. Newton's law of cooling. Harmonic motion. Kepler's laws and Universal Gravitation. Ecosystems. etc.</p> |
| 2 | <p>"Elaboración de textos científico-técnicos y presentaciones mediante el uso de LaTeX y MAXIMA" (Itinerary 1):</p> <p>1. Working environment (WinEdt and miktex). Tex files, .aux, .log, etc. LaTeX document types and design. LaTeX sources. LaTeX structures: lists, boxes, paragraphs, tables, etc. 2. Mathematical expressions in LaTeX: formulas, fractions, matrices, etc. 3. Definition of macros in LaTeX and use. Inclusion of graphics and color in LaTeX. References in LaTeX. Creating indexes and bibliographies (makeindex and BibTeX). 4. Design of presentations with LaTeX (beamer package). 5. The working environment MAXIMA. MAXIMA as a tool for exploration in Mathematics. 6. Generation 2D and 3D graphics with MAXIMA. 7. MAXIMA programming language.</p> <p>"Iniciación a la Ingeniería: Laboratorio de mecatrónica (Arduino, Raspberri, ...)" (Itinerary 2):</p> <p>1. Introduction 2. Background and basic concepts in robotics and control 3. Control Systems 4. Arduino: Plates and Shields 5. Arduino programming language 6. Practical exercises with Arduino: controlling sensors and actuators 7. Raspberry Pi: features and basic operation 8. Connecting Arduino with Raspberry 9. Practical exercises to control Arduino through Raspberry Pi</p> |
| 3 | <p>"Educación ante las Emergencias" (Itinerary 1):</p> <p>1. Module of fire prevention, evaluation, performance and evacuation of buildings and workplaces: Self-protection plans of buildings. Location of fire-fighting devices. Types and sources of ignition. Signs of emergency and alarm. Protocols in fire case. Escape routes in case of emergency.</p> <p>2. Module on adoption of minimum standard of competence in first aid: Structure and functions of the human body. Rating the victim. Injuries and a rugged transport. Evaluating an emergency situation. Knowledge of the resources available on campus or in the workplace.</p> <p>3. Module security emergencies: Bomb threats. Riots. Crowd control. Collective panic terrorist acts. Actions in the event of collapse or explosion. Civil protection.</p> <p>"Interpretación de planos y construcción de maquetas y prototipos de barcos" (Itinerary 2):</p> <p>Develop the capacity for technical analysis. Interpret plans of vessel shapes. Know and manipulate different materials, adhesives, etc. Development of skills of a manual nature.</p> |

4

"Business English" topics (Itinerary 3):

- Within the Company profiles section topics:
- The working day
- Online communication
- Company growth
- Company culture
- Describing statistics.
- Company finances
- Investments
- Starting up

"General English" topics (Itinerary 3):

Review / grammatical explanation and further oral practice of the following areas *:

- Tenses (especially past and the future);
- Comparative structures;
- Conditional structures;
- Reported Speech;
- "Modal verbs";
- "Used to" and "would";
- the passive voice;
- Relative pronouns;
- Linking words : Contrast and Result.

We practice the following styles:

- short story;
- Informal letters and emails;
- "Transactional letters";
- Essays;
- Descriptions.

7. ASSESSMENT METHODS AND CRITERIA

| Description | Type | Final Eval. | Reassessn | % |
|--|--------|-------------|-----------|---------------|
| Continuous assessment | Others | No | No | 50,00 |
| Questionnaires | Others | No | Yes | 50,00 |
| TOTAL | | | | 100,00 |
| Observations | | | | |
| In order to pass the course you will need evidence of a higher class attendance 70%. | | | | |
| Observations for part-time students | | | | |
| Part-time students will have facilities to carry out certain tests electronically, except for those that require their attendance. | | | | |

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

G. Grätzer: First Steps in LaTeX. Birkhäuser, 1999.

H. Kopka, P. W. Daly: A guide to LaTeX. Addison-Wesley, 2004

<http://maxima.sourceforge.net/docs/tutorial/en/gaertner-tutorial-revision/Contents.htm>

M. Rodríguez Riotorto: Primeros pasos en Maxima (2011) (<http://riotorto.users.sourceforge.net/>)

CLANCHY, J., BALLARD, B. 2000. Cómo se hace un trabajo académico: guía práctica para estudiantes universitarios. 2ª ed. Zaragoza: Prensas Universitarias

MARTÍNEZ RODRÍGUEZ, L. J. 2013. Cómo buscar y usar información científica: Guía para estudiantes universitarios 2013 [Libro en línea]. Santander. [Consulta: 10 de junio de 2014]. Disponible en: http://eprints.rclis.org/20141/1/Como_buscar_usar_informacion.pdf

TRIGO ARANDA, V. 2002. Escribir y presentar trabajos de clase. Madrid: Prentice Hall

ATP-02.1. NAVAL COOPERATION AND GUIDANCE FOR SHIPPING (NCAGS) – GUIDE TO OWNERS, OPERATORS, MASTERS AND OFFICERS. Edition A Version 1 SEPTEMBER 2014.

Best Management Practices for Protection against Somalia Based Piracy (BMP4). Operations, U. M. T. (2011).

Fate of marine oil spills. ITOPF Technical information paper, N° 2, 2002.

ISO 8217:2010 Petroleum products. Fuels (class F). Specifications of marine fuels.

Manual de Emergencias a Bordo, Tony Meisel, Omega, 2.007.

Manual de Supervivencia en el Mar, Keith Colwell, RYA, 2009.

Manual sobre la contaminación ocasionada por hidrocarburos, Parte IV, OMI, 2005.

MARPOL Consolidated edition. International Maritime Organization. 2016.

Merlos, J.A., (2009). El terrorismo marítimo en la estrategia de Al Qaeda. Revista General de Marina. Spanish Defense Ministry. February–January.

Orden FOM/1194/2011, de 29 de abril, por la que se regula el procedimiento integrado de escala de buques en los puertos de interés general.

Real Decreto 704/2011, de 20 de mayo, por el que se aprueba el Reglamento de protección de las infraestructuras críticas.

Reglamento (CE) No 324/2008 de la Comisión de 9 de abril de 2008, por el que se fijan los procedimientos revisados para las inspecciones de la Comisión en el ámbito de la Protección Marítima.

Seguridad marítima. Fernanda Miguélez Pose, Netbiblo, 2013.

SOLAS Consolidated edition. International Maritime Organization. 2017.