



## Teaching Guide

| Teaching Guide      |                                                                                                                      |        |                           |           |
|---------------------|----------------------------------------------------------------------------------------------------------------------|--------|---------------------------|-----------|
| Identifying Data    |                                                                                                                      |        |                           | 2017/18   |
| Subject (*)         | Marine energy resources                                                                                              |        | Code                      | 730G05040 |
| Study programme     | Grao en Enxeñaría Naval e Oceánica                                                                                   |        |                           |           |
| Descriptors         |                                                                                                                      |        |                           |           |
| Cycle               | Period                                                                                                               | Year   | Type                      | Credits   |
| Graduate            | 2nd four-month period                                                                                                | Fourth | Optativa                  | 4.5       |
| Language            | Spanish                                                                                                              |        |                           |           |
| Teaching method     | Face-to-face                                                                                                         |        |                           |           |
| Prerequisites       |                                                                                                                      |        |                           |           |
| Department          | Enxeñaría Naval e Industrial                                                                                         |        |                           |           |
| Coordinador         | Díaz Casás, Vicente                                                                                                  | E-mail | vicente.diaz.casas@udc.es |           |
| Lecturers           | Díaz Casás, Vicente                                                                                                  | E-mail | vicente.diaz.casas@udc.es |           |
| Web                 |                                                                                                                      |        |                           |           |
| General description | Abordaranse os principais aspectos do deseño de instalacións para o aproveitamento dos recursos enerxéticos mariños. |        |                           |           |

## Study programme competences

| Code | Study programme competences                                                                                                                                                                                                                                                                                                       |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1   | That the students proved to have and to understand knowledge in an area of study what part of the base of the secondary education, and itself tends to find to a level that, although it leans in advanced text books, it includes also some aspects that knowledge implicates proceeding from the vanguard of its field of study |
| B2   | That the students know how to apply its knowledge to its work or vocation in a professional way and possess the competences that tend to prove itself by the elaboration and defense of arguments and the resolution of problems in its area of study                                                                             |
| B3   | That the students have the ability to bring together and to interpret relevant data (normally in its area of study) to emit judgments that include a reflection on relevant subjects of social, scientific or ethical kind                                                                                                        |
| B4   | That the students can transmit information, ideas, problems and solutions to a public as much specialized as not specialized                                                                                                                                                                                                      |
| B5   | That the students developed those skills of learning necessary to start subsequent studies with a high degree of autonomy                                                                                                                                                                                                         |
| B6   | Be able to carrying out a critical analysis, evaluation and synthesis of new and complex ideas.                                                                                                                                                                                                                                   |
| C1   | Using the basic tools of the technologies of the information and the communications (TIC) necessary for the exercise of its profession and for the learning throughout its life.                                                                                                                                                  |
| C2   | Coming across for the exercise of a, cultivated open citizenship, awkward, democratic and supportive criticism, capable of analyzing the reality, diagnosing problems, formulating and implanting solutions based on the knowledge and orientated to the common good.                                                             |
| C4   | Recognizing critically the knowledge, the technology and the available information to solve the problems that they must face.                                                                                                                                                                                                     |
| C5   | Assuming the importance of the learning as professional and as citizen throughout the life.                                                                                                                                                                                                                                       |
| C6   | Recognizing the importance that has the research, the innovation and the technological development in the socioeconomic and cultural advance of the society.                                                                                                                                                                      |
| C7   | Capacidade de traballar nun ámbito multilingüe e multidisciplinar.                                                                                                                                                                                                                                                                |

## Learning outcomes

| Learning outcomes                                                                                 | Study programme competences |    |  |
|---------------------------------------------------------------------------------------------------|-----------------------------|----|--|
| Desenvolvemento e elaboración de proxectos conceptuais no eido da explotación de recursos mariños | B1                          | C1 |  |
|                                                                                                   | B2                          | C2 |  |
|                                                                                                   | B3                          | C4 |  |
|                                                                                                   | B4                          | C5 |  |
|                                                                                                   | B5                          | C6 |  |
|                                                                                                   | B6                          | C7 |  |



|                                                                                                             |    |    |
|-------------------------------------------------------------------------------------------------------------|----|----|
| Coñecemento de compoñentes, equipos e sistemas para instalacións de xeración de enerxías renovables mariñas | B1 | C1 |
|                                                                                                             | B2 | C2 |
|                                                                                                             | B3 | C4 |
|                                                                                                             | B4 | C5 |
|                                                                                                             | B5 | C6 |
|                                                                                                             | B6 | C7 |

| Contents                                                                                           |                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Topic                                                                                              | Sub-topic                                                                                                                                                                                                                                                             |
| Os seguintes bloques ou temas desenvolven os contidos definidos na guía do informe de verificación | Coñecemento de varios artefactos, fixa e variable, para a produción de enerxía renovable a partir de: vento, ondas, marea, outras fontes mariñas. Consideracións de comportamento, eficiencia, viabilidade e impacto ambiental. Regulamentos e normativas específicas |
| Bloque I: Sistemas de xeración de enerxías renovables mariñas                                      | Tema 1: Contextualización<br>Tema 2: Clasificación das enerxías renovables mariñas<br>Tema 3: Compoñentes do sistema de enerxía renovable mariña<br>Tema 4: Compoñentes do parque de enerxía renovable mariña                                                         |
| Bloque II: Lexislación / Regras de clasificación de enerxías renovables mariñas                    | Tema 5: Lexislación enerxética das enerxías renovables mariñas<br>Tema 6: Sociedades de Clasificación                                                                                                                                                                 |
| Bloque III: Cargas ambientais                                                                      | Tema 7: Caracterización da contorna mariña<br>Tema 8: Cargas ambientais (vento, ondas, correntes)                                                                                                                                                                     |
| Bloque IV: Deseño do dispositivo                                                                   | Tema 9: Caracterización enerxética<br>Tema 10: Compoñentes do conversor                                                                                                                                                                                               |

| Planning                                                                                                                        |                                        |                      |                               |             |
|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------|-------------------------------|-------------|
| Methodologies / tests                                                                                                           | Competencies                           | Ordinary class hours | Student's personal work hours | Total hours |
| Guest lecture / keynote speech                                                                                                  | C7 C6                                  | 20.5                 | 2                             | 22.5        |
| Case study                                                                                                                      | B1 B2 B3 B4 B5 B6<br>C1 C2 C4 C5 C6 C7 | 3.5                  | 11.5                          | 15          |
| Supervised projects                                                                                                             | B1 B2 B3 B4 B5 B6<br>C1 C2 C4 C5 C6 C7 | 7.5                  | 65.5                          | 73          |
| Personalized attention                                                                                                          |                                        | 2                    | 0                             | 2           |
| (*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students. |                                        |                      |                               |             |

| Methodologies                  |                                                                                          |
|--------------------------------|------------------------------------------------------------------------------------------|
| Methodologies                  | Description                                                                              |
| Guest lecture / keynote speech | Desenvolvemento dos conceptos básico analizados na materia                               |
| Case study                     | Resolución de casos tipo propios da materia                                              |
| Supervised projects            | Elaboración dun proxecto conceptual nalgún dos campos dos sistemas analizados na materia |

| Personalized attention |                                                                                           |
|------------------------|-------------------------------------------------------------------------------------------|
| Methodologies          | Description                                                                               |
| Supervised projects    | Resolución das dificultades ou dúbidas relativas ao desenvolvemento do traballo tutelado. |

| Assessment    |              |             |               |
|---------------|--------------|-------------|---------------|
| Methodologies | Competencies | Description | Qualification |



|                     |                                        |                                                                                          |    |
|---------------------|----------------------------------------|------------------------------------------------------------------------------------------|----|
| Supervised projects | B1 B2 B3 B4 B5 B6<br>C1 C2 C4 C5 C6 C7 | Elaboración dun proxecto conceptual nalgún dos campos dos sistemas analizados na materia | 80 |
| Case study          | B1 B2 B3 B4 B5 B6<br>C1 C2 C4 C5 C6 C7 | Realización de casos tipo / problemas relativos ao contido da materia                    | 20 |

#### Assessment comments

Para a avaliación na segunda oportunidade ou adiantada o estudiantado terá que volver a entregar os estudos de casos e traballos tutelados explicado no desenvolvemento da materia.

#### Sources of information

|               |                                                                                                                                                             |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic         | - Ben C. Gerwick (2007). Construction of marine and offshore structures. CRC Press<br>- Twidell, John. (2009). Offshore wind power . Multi-Science Pub. Co. |
| Complementary |                                                                                                                                                             |

#### Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

Other comments

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.