

## 25250 - Environmental science and sustainability

### Información del Plan Docente

<b>Academic Year</b>	2018/19
<b>Subject</b>	25250 - Environmental science and sustainability
<b>Faculty / School</b>	201 - Escuela Politécnica Superior
<b>Degree</b>	277 - Degree in Environmental Sciences 571 - Degree in Environmental Sciences
<b>ECTS</b>	6.0
<b>Year</b>	
<b>Semester</b>	First Four-month period
<b>Subject Type</b>	Optional, Compulsory
<b>Module</b>	---

### **1.General information**

#### **1.1.Aims of the course**

#### **1.2.Context and importance of this course in the degree**

#### **1.3.Recommendations to take this course**

This subject is offered in the [English Friendly](#) form

### **2.Learning goals**

#### **2.1.Competences**

#### **2.2.Learning goals**

#### **2.3.Importance of learning goals**

### **3.Assessment (1st and 2nd call)**

#### **3.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

### **4.Methodology, learning tasks, syllabus and resources**

#### **4.1.Methodological overview**

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, fieldwork and practice sessions.

#### **4.2.Learning tasks**

This course is organized as follows:

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- **Lectures:** Lectures introduce the main concepts and lines of the course. In addition, most difficult issues will be reviewed thoroughly. Bibliography and auto-evaluation tools are provided. Readings and instructions for all practical exercises will be provided on the course website (Moodle). External experts may also participate in some lectures. Participation is encouraged.
- **Practice sessions:** Practice sessions are part of the required activities for this course. If you miss a lecture or tutorial through illness or some other serious reason, it is your responsibility to attend an equivalent class from another stream. Some content and activities will not be available except by face-to-face attending the classes, and missing material will disadvantage you in the course assessment. These practice sessions include case study, field and expert lectures.

### 4.3.Syllabus

This course will address the following topics:

#### Section 1: Sustainability and environmental science

- **Topic 1. Introduction: Environmental science and sustainability.** Basic concepts, environmental science, ecology, ecologism, sustainability. Critical thinking. Scientific method.
- **Topic 2. Roots of the environmental crisis.** Environment pollution and degradation. Biodiversity decline.
- **Topic 3. Principles of Ecology: Self- sustaining mechanisms in ecosystems.** Ecosystems function. The biomes and aquatic life zones. Self- sustaining mechanisms. Homeostasis, succession, evolution.
- **Topic 4. Human Ecology: Our changing relationship with the environment.** Population growth. Overpopulation. Problems associated.
- **Topic 5. Principles and practices to create sustainable communities.** Challenges. Stabilizing the human population: strategies and ethics. Overcoming barriers.

#### Section 2: Global environmental issues

- **Topic 6. Global climate change.** Greenhouse effect. Ozone depletion. Acide deposition. El niño (ENSO).
- **Topic 7. Aquatic resources.** Global water balance. Nonpoint source pollution. Marine waste.
- **Topic 8. Overexploitation of natural resources.** Wild flora and fauna. Mining.
- **Topic 9. Agriculture.** Land use. Fragmentation. Fertilizers and pesticides. Transgenic products.
- **Topic 10. Renewable, non-renewable and alternative energies.** State of the art. Energy and development. Main impacts of energy exploitation. Alternatives.

#### Section 3: Regional and local environmental issues.

- **Topic 11. Urban, agricultural and industrial pollution.** Toxicity and pollution.
- **Topic 12. Atmospheric, noise, thermal and radioactive pollution.**
- **Topic 13. Solid and Hazardous waste.** Origin and management of solid and hazardous wastes. Kinds, effects on environment and principles of management.
- **Tema 14. Water pollution.** Pollution of surface water and aquifers. Pollution Management.
- **Tema 15. Environmental management.** Law IPPC (Marco legislativo de la Prevención y el Control Integrados de la Contaminación, IPPC). Agenda 21. What are Environmental Impact Evaluation and Environmental Audit?

### 4.4.Course planning and calendar

Non face-to-face activity																			88
Autonomous work	4	3	3	4	3	3	4	3	4	3	2	5	5	4	8	4			67
Group work	1	1	1	1	2	1	1	2	2	2	2	2	2	1					22
<b>TOTAL</b>	<b>8</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>12</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>150</b>

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Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of Sciences website and Moodle.

### 4.5. Bibliography and recommended resources

- BB** Chiras, Daniel D.. Environmental science / Daniel D. Chiras . 10th ed Burlington, MA : Jones & Bartlett Learning, cop. 2016
- BB** Ecología y medio ambiente / Teresa Valverde ... [et al.] ; revisión técnica Gabriel Ramos García, Héctor Meraz Larraga . México : Pearson, 2005
- BB** Goleman, Daniel. Inteligencia ecológica / Daniel Goleman ; [traducción, David González Raga] . 1ª ed. Barcelona : Kairós, 2009
- BB** Nebel, Bernard J.. Ciencias ambientales : ecología y desarrollo sostenible / Bernad J. Nebel, Richard T. Wright ; traducción, Francisco Javier Dávila ; revisión técnica, José Salvador Pantoja M. . 6ª ed. México [etc.] : Prentice Hall, 1999
- BB** Smith, Thomas Michael. Ecología / Thomas M. Smith, Robert Leo Smith . 6a. ed. Madrid [etc.] : Pearson Addison-Wesley, D.L. 2007
- BB** Tyler Miller, G. (2007). Ciencia ambiental: desarrollo sostenible. Un enfoque integral. Cengage Learning Latin America

The updated recommended bibliography can be consulted in:  
<http://psfunizar7.unizar.es/br13/egAsignaturas.php?id=10993>