25250 - Environmental science and sustainability

Información del Plan Docente

Academic Year	2017/18
Faculty / School	201 - Escuela Politécnica Superior
Degree	277 - Degree in Environmental Sciences 571 - Degree in Environmental Sciences
ECTS	6.0
Year	1
Semester	First Four-month period
Subject Type	Compulsory, Optional
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

This subject is offered in the English Friendly form

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

Theory sessions in which external expert communications are also included and participation is encourage.

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Practical sessions consist of study work with materials supplied by lecturers.

5.2.Learning tasks

The program offered to achieve the expected results include the next learning activities:

Theory sessions: Lectures introduce the main concepts and lines of the subject. 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).

Practical sessions: Practical classes form 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 physically attending the classes, and missing material will disadvantage you in the course assessment.

5.3.Syllabus

Theoretical Programme

BLOCK 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.

BLOCK 2: Global environmental issues

Topic 6. Global climate change. Greenhouse effect. Ozone depletion. Ácide 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. L and use. Fragmentation. Fertilizers and pesticides. Transgenic products.

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Topic 10. Renewable, non-renewable and alternative energies. State of the art. Energy and development. Main impacts of energy exploitation. Alternatives.

BLOCK 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?

Practical programme

The practical programme includes laboratory, seminars and field practical.

5.4.Course planning and calendar

Activity / Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total
Classroom activity																						62
Lectures	2	2	2	2	2	2		4	2	2	2		2	2			2					28
Practical sessions	2	2	2			2		2		2			2				2					14
Lab sessions							2		2					2								6
Field							6				4											10
Evaluation																			4			4
No-classroom activity																						88
Individual work	2	2	2	4	4	3	1	2	3	3	2	5	3	3	6	6	4	8				63
Group work	1	1	1	2	2	2	1	1	2	2	2	3	2	2			2					25
TOTAL	**7**	**7**	**7**	**8**	**8**	**9**	**10**	**9**	**9**	**9**	**10**	**8**	**9**	**9**	**6**	**6**	**10**	**8**	**4**			**150**

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5.5.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