

## 66708 - Evaluation of environmental effects and restoration

### Syllabus Information

**Academic Year:** 2019/20

**Subject:** 66708 - Evaluation of environmental effects and restoration

**Faculty / School:** 103 - Facultad de Filosofía y Letras

**Degree:** 328 - Master's in Land and Environmental Planning

**ECTS:** 6.0

**Year:** 1

**Semester:** Annual

**Subject Type:** Optional

**Module:** ---

### 1.General information

#### 1.1.Aims of the course

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

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#### 1.3.Recommendations to take this course

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### 2.Learning goals

#### 2.1.Competences

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#### 2.2.Learning goals

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#### 2.3.Importance of learning goals

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

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

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

#### 4.1.Methodological overview

The course combines theoretical conceptual parts with case examples and practical work.

The practice coursework allows to strengthen the use of analysis tools and diagnostics and teamwork.

The analysis of specific and complex cases is done by the teachers, who have selected a set of examples of various subjects and application results, some of which are visited in the field practices.

In the development of training activities, the theory and practice sessions are interspersed with case presentations, always following a consistent thread with the two main course sections: impact and restoration. This organization leads to better learning outcomes and enables students to continue developing their study and teamwork.

## 4.2. Learning tasks

The course includes the following learning tasks:

- Theory sessions (25 hours): They are used to present the basic concepts of *Environmental Impact Assessment and Environmental Restoration*. There are 10 sessions of 2.5 hours.
- Practical activities (20 hours): There are 8 sessions of 2.5 hours, aimed at the realization of different phases that are included in *Environmental Impact Assessment* projects and studies. Theory and practice sessions will alternate.
- Guided activities: Students will develop an Environmental Impact Assessment; and they will apply, to four specific cases, the restoration activities evaluation system previously designed in class. Both assignments will be done in groups during class time. Teachers will monitor their implementation during tutorials.
- Field work: Two field trips will be made in the course as an essential complement of the development of practical activities in Environmental Impact Assessment and Environmental Restoration projects.
- Tutorials: they aim at monitoring the assignments students must solve (those included in the program are different from the optional tutorials to which every student is entitled). The tutorials sessions are developed in the teacher's office.
- Assessment: There are three assessment activities:
  - Written exam of the theory topics (only for global assessment). Only the written test needs a specific time to do (about one hour).
  - Preparation of an Environmental Impact Assessment,
  - Design and implementation of a system for evaluating actions in environmental Restoration Projects

## 4.3. Syllabus

The course will address the following topics:

### Theory sessions

Topic 1. Introduction and environmental impact general concepts.

- 1.1. Introduction.
- 1.2. General concepts.
- 1.3. Main principles of Environmental Impact Assessment.
- 1.4. Levels of Environmental Impact Assessment.
- 1.5. Typology of impacts.

Topic 2. Legal and administrative framework on Environmental Impact Assessment.

- 2.1. Background.
- 2.2. The Community legislation.
- 2.3. State and Aragonese legislation.
- 2.4. Projects subject to Environmental Impact Assessment.
- 2.5. The administrative procedure in Environmental Impact Assessment.

Topic 3. Methodology for preparing Environmental Impact Assessments.

- 3.1. Minimum contents of the Strategic Environmental Study.
- 3.2. Minimum contents of the Environmental Impact Assessment.
- 3.3. Structure of the Environmental Impact Assessment.
- 3.4. Environmental Impact Assessment development methodology.
- 3.5. Corrective measures and environmental surveillance.

Topic 4. Ecological concepts, general concepts and environmental restoration rules and regulations.

- 4.1. General concepts.
- 4.2. Environmental restoration rules and regulations.
- 4.3. Ecological and environmental principles.

Topic 5. Methodology for restoration projects.

- 5.1. Restoration process planning.
- 5.2. Restoration process structure.
- 5.3. Restoration techniques and examples of projects.

Topic 6. Monitoring and evaluation of restoration projects.

### Practice sessions

In these classes the activities performed are:

1. Review of legislation.
2. Internet access servers with environmental information.
3. Revision of examples of environmental impact assessments.
4. Design and production different sections of an environmental impact assessment (project description, environmental inventory, environmental factors tree, selection of alternatives, evaluation of alternatives, identification and assessment of impacts).
5. Revision of examples of environmental restoration projects.
6. Design of a system of assessment of environmental restoration actions.

#### 4.4.Course planning and calendar

Sessions run during February and March. The academic activity of the course finishes after the written test of the theoretical part. Lecture sessions and practical activities take place in a classroom with capacity for 18 students, computers with Internet access, projector and blackboard. Field trips will be held in different parts of the Aragonese geography.

Session	Topic	Activities
1	1	Lecture sessions, practical activities: Internet access servers, Revision of examples of environmental impact assessments
2	2	Lecture sessions, practical activities: Review of legislation
3	3	Lecture sessions, practical activities: Design and production of an environmental impact assessment
4	3	Lecture sessions, practical activities: Design and production of an environmental impact assessment
5	3	Lecture sessions, practical activities: Design and production of an environmental impact assessment
6	3	Lecture sessions, practical activities: Design and production of an environmental impact assessment
7	3	Lecture sessions, practical activities: Design and production of an environmental impact assessment
8	3	Lecture sessions, practical activities: presentation and case assessment
9	3	Lecture sessions, practical activities: presentation and case assessment
10	4	Lecture sessions, practical activities: Design of a system of assessment of environmental restoration actions
11	4	Lecture sessions, practical activities: Design of a system of assessment of environmental restoration actions
12	4	Lecture sessions, practical activities: Design of a system of assessment of environmental restoration actions
13		Field work
14	5	Lecture sessions, practical activities: study cases presentation
15	5	Lecture sessions, practical activities: study cases presentation
16	5	Lecture sessions, practical activities: study cases presentation
17		Field work
18	5	Lecture sessions, practical activities: Applying a system of assessment in restoration projects
19	6	Lecture sessions, practical activities: Applying a system of assessment in restoration projects
20		Workgroup presentation

## 4.5. Bibliography and recommended resources

- Arribas de Paz, Ricardo. Estudios de evaluación de impacto ambiental: situación actual / Ricardo Arribas de Paz, César Antonio Rodríguez González. Huelva : Universidad de Huelva, D.L. 2004
- Manual de restauración de terrenos y evaluación de impactos ambientales en minería / [realizado por Francisco Javier Ayala Carcedo...[et ali.] . 2a. ed. Madrid : Instituto Geominero de España, D.L. 1989
- Gestión y restauración de humedales / [texto: Antoni Canicio... (et al.)] . Madrid : Fundación Santander Central Hispano, D. L. 200
- Canter, Larry W. Manual de evaluación de impacto ambiental: técnicas para la elaboración de estudios de impacto / Larry W. Canter ; traducción, Ignacio Español Echániz...[et al.]; revisión técnica, José Vicente López Alvarez, José María Casillas Barral, Rosa María Gómez Alonso . 1a ed. en español Madrid [etc.]: McGraw-Hill, D.L. 1997
- Carrasco García, María José. Evaluación de impacto ambiental de infraestructuras: redacción y tramitación de documentos / María José Carrasco García, Álvaro Enríquez de Salamanca Sánchez- Cámara. Madrid : AENOR Ediciones, D.L. 2010
- Ecological restoration: a global challenge / [edited by] Francisco A. Comín. Cambridge ; New York : Cambridge University Press, 201
- Conde Antequera, Jesús. El deber jurídico de restauración ambiental / Jesús Conde Antequera. [1ª ed.] Granda: Comares, 2004
- Conesa Fernández-Vítora, Vicente. Guía metodológica para la evaluación del impacto ambiental / Vicente Conesa Fdez-Vítora; colaboradores, Vicente Conesa Ripoll [et al.]; prólogo de María Teresa Estevan Bolea. 3a. ed. rev. y amp. Madrid [etc.]: Mundi-Prensa, 1997
- Evaluación de impacto ambiental / Alfonso Garmendia Salvador...[et al.] . Madrid [etc.]: Pearson/Prentice Hall, cop. 2005.
- Guadiamar, ciencia, técnica y restauración: el accidente minero diez años después / Héctor Garrido (coordinador). Madrid: Consejo Superior de Investigaciones Científicas, 2008.
- Gómez Orea, Domingo. Evaluación de impacto ambiental: un instrumento preventivo para la gestión ambiental / Domingo Gómez Orea. 2ª ed. rev. y amp. Madrid [etc.]: Mundi-Prensa, 2003
- Gómez Orea, Domingo. Recuperación de espacios degradados / Domingo Gómez Orea. Madrid: Ediciones Mundi-prensa, 2004
- Gómez Orea, D. Evaluación Ambiental Estratégica / D. Gómez Orea Madrid: Mundi-Prensa, 2007
- González del Tánago, Marta. Restauración de ríos y riberas / Marta González del Tánago, Diego García de Jalón. [Madrid] : Fundación Conde del Valle de Salazar; Mundi- Prensa, 2001
- Evaluación de impacto ambiental / Javier Granero Castro... [et al.] . Madrid : Fundación Confemetal, D.L. 2010
- Restauración hidrológico forestal de cuencas y control de la erosión: ingeniería medioambiental / [dirección, Filiberto López Cadenas de Llano; colaboradores, Gonzalo Fernández Tomás...(et al.)] . 2ª ed., rev. y amp. Madrid: TRAGSA : TRAGSATEC : Ministerio de Medio Ambiente : Mundi-Prensa, 1998
- Manual de estabilización y revegetación de taludes / [editor, Carlos López Jimeno; autores, Juan Luis Fariñas de Alba...et al.] . 2ª ed. Madrid: [s.n.], 2002
- Magdaleno Mas, Fernando. Manual de técnicas de restauración fluvial / Fernando Magdaleno Mas; Centro de Estudios de Técnicas Aplicadas. Madrid : Ministerio de Fomento, Centro de Publicaciones, 2008
- Mitsch, William J. Ecological engineering and ecosystem restoration / William J. Mitsch, Sven Erik Jørgensen. Hoboken : Wiley, 2004
- Evaluación de impacto ambiental: evolución normativo- jurisprudencial, cuestiones procedimentales y aplicación sectorial / Alba Nogueira López (dir.); Tomás Quintana López ... [et al.] . Barcelona : Atelier, 2009
- Evaluación ambiental estratégica: la evaluación ambiental de políticas, planes y programas / Juan José Oñate...[et al.]. Madrid [etc.]: Mundi-Prensa, 2002
- Handbook of ecological restoration. Vol. 1, Principles of restoration / edited by Martin R. Perrow and Anthony J. Davy. Cambridge : Cambridge University Press, 2002
- Handbook of ecological restoration. Vol. 2, Restoration in practice / edited by Martin R. Perrow and Anthony J. Davy. Cambridge : Cambridge University Press, 2002
- Restauración de ecosistemas mediterráneos / Asociación Española de Ecología Terrestre; José M<sup>a</sup> Rey Benayas, Tíscar Espigares Pinilla, José Manuel Nicolau Ibarra (editores) . 2ª ed. [Alcalá de Henares] : Universidad de Alcalá, Servicio de Publicaciones, D.L. 2007
- Temas sobre restauración ecológica / Sánchez, O. [et al.] México: Instituto Nacional de Ecología, 2005
- Restauración ecológica de áreas afectadas por infraestructuras de transporte: bases científicas para soluciones técnicas / Fernando Valladares... [et al.] . [Madrid]: Fundación Biodiversidad, D.L. 2011.

