

WATER REUSE AND DESALINATION

Responsible professor: JOSÉ ANTONIO LÓPEZ RAMÍREZ

Credits: 2,5 ECTS

Brief description of the contents:

- Conceptual framework: reuse of regenerated water
- Legal regime
- Water reuse technologies
- Water reuse case studies: agricultural uses, environmental uses, urban uses, industrial uses, uses for drinking water
- Water desalination processes
- Sea water desalination. Water outlets. Pre-treatments. SWDPs. Post-treatment
- Environmental and economic aspects of water desalination.
- Desalination and energy. Use of renewable energies

Detailed programme:

LEARNING BLOCK	TOPIC OR ACTIVITY
B1	CONCEPTUAL FRAMEWORK <ol style="list-style-type: none"> 1. Introduction to the reuse of regenerated water. 2. Reuse and water resources. 3. Sanitary and environmental aspects of the reuse of regenerated water.
B2	LEGAL REGIME <ol style="list-style-type: none"> 1. Spanish legislation. 2. Laws in other countries.
B3	WATER REUSE TECHNOLOGIES <ol style="list-style-type: none"> 1. Description of technologies. 2. Removal of water components.
B4	CASE STUDIES <ol style="list-style-type: none"> 1. Agricultural uses. 2. Environmental uses. 3. Urban uses. 4. Industrial uses. 5. Uses for drinking water.
B5	WATER DESALINATION <ol style="list-style-type: none"> 1. Desalination in the world. 2. Thermal processes. 3. Membrane processes. 4. Seawater and brackish water desalination 5. Legislation.
B6	SEAWATER DESALINATION <ol style="list-style-type: none"> 1. Water outlets. 2. Pre-treatments. 3. SWDPs. 4. Post-treatment.
B7	BRACKISH WATER DESALINATION PLANTS. SUSTAINABLE DESALINATION <ol style="list-style-type: none"> 1. Brackish waters. 2. Incrustations, fouling and biofouling. 3. Types of BWDPs. 4. Desalination with renewable energies.

- B8** DESALINATION PLANT DESIGN (I)
1. Theoretical aspects of the design.
 2. Design recommendations.
 3. Use of software.
- B9** DESALINATION PLANT DESIGN (II)
1. Practical aspects of the design.
 2. Problem solving.

Evaluation system:

SYSTEM	WEIGHT
Final exam	40 – 60
Written essays	40 – 60
Presentation of exercises, topics and projects	0 – 30
Computer practices and/or practice report	0 – 30