

## DIMENSIONING OF UNITS FOR WATER TREATMENT

**Responsible professor: JOSÉ ANTONIO PERALES VARGAS-MACHUCA**

**Credits: 5 ECTS**

Brief description of the contents:

- Dimensioning parameters and technology selection principles for water treatment
- Dimensioning of roughing, desanding and degreasing units
- Dimensioning of primary and secondary settlement units
- Dimensioning of units for biological treatment of wastewater: activated sludge, bacteria beds and biodiscs
- Dimensioning of units for sludge thickening, conditioning and dehydration.
- Dimensioning of units for sludge stabilisation
- Dimensioning of low cost units for wastewater treatment: lagoon systems, constructed wetlands, Imhoff tanks
- Dimensioning of units for physicochemical treatment of wastewater and drinking water

Detailed programme:

LEARNING BLOCK	TOPIC OR ACTIVITY
<b>B1</b>	Dimensioning methods and technology selection principles for water treatment.
<b>B2</b>	Dimensioning of roughing units.
<b>B3</b>	Dimensioning of desanding and degreasing units.
<b>B4</b>	Dimensioning of primary and secondary settlement units.
<b>B5</b>	Dimensioning of units for biological treatment of wastewater: activated sludge.
<b>B6</b>	Dimensioning of units for biological treatment of wastewater: bacteria beds and biodiscs.
<b>B7</b>	Dimensioning of units for biological treatment of wastewater: nutrient removal.
<b>B8</b>	Dimensioning of units for sludge stabilisation: aerobic digestion.
<b>B9</b>	Dimensioning of units for sludge stabilisation: anaerobic digestion.
<b>B10</b>	Dimensioning of units for sludge thickening, conditioning and dehydration: gravity and flotation thickening, band filter, drying and centrifuge.
<b>B11</b>	<b>Computer class:</b> AAD presentation and use of spreadsheets and software specialised in the dimensioning of wastewater treatment units I.
<b>B12</b>	Dimensioning of units for physicochemical treatment of wastewater and drinking water: coagulation-flocculation-lamella clarifier.
<b>B13</b>	Dimensioning of low cost units for wastewater treatment: green filters, peat filters, lagoon systems and constructed wetlands.
<b>B14</b>	<b>Computer class:</b> Use of spreadsheets and software specialised in the dimensioning of low cost wastewater treatment units.
<b>B15</b>	Visit to the WWTP in <i>Arcos de la Frontera</i> and unit calculation.
<b>B16</b>	Dimensioning of units for physicochemical treatment of wastewater and drinking water: filtration.
<b>B17</b>	Dimensioning of units for physicochemical treatment of wastewater and drinking water: activated carbon adsorption.
<b>B18</b>	Dimensioning of units for physicochemical treatment of wastewater and drinking water: disinfection.
<b>B19</b>	<b>Computer class:</b> Use of spreadsheets and software specialised in the dimensioning of wastewater treatment units II.

**B20** Visit to *El Montañés* DWTP and unit calculation.

Evaluation system:

	<b>SYSTEM</b>	<b>WEIGHT</b>
	<b>Final exam</b>	30 – 60
	<b>Written essays</b>	30 – 60
<b>Presentation of exercises, topics and projects</b>		15 – 40
<b>Laboratory practices and/or practice report</b>		25 – 50