

Water and Wastewater Treatment

1. **Course number and name:** 020GEPGS5 Water and Wastewater Treatment
2. **Credits and contact hours:** 4 ECTS credits, 2x1.25 hours
3. **Name(s) of instructor(s) or course coordinator(s):** Marina KHOURY
4. **Instructional Materials:**
 - a. Mémento technique de l'eau – Dixième édition – Degrémont Suez
 - b. Wastewater engineering – Treatment & Reuse – Metcalf & Eddie
 - c. Standard ATV-DVWK-A 131E dimensioning of single stage activated sludge plants
 - d. Standard ATV-DVWK-A 131E dimensioning of trickling filters and rotating biological contactors
 - e. Instructor's notes: 'Génie des Procédés et Traitement de l'Eau'
5. **Specific course information**
 - a. **Catalog description:**
 - Water characteristics
 - Types of water to be treated and why
 - Physico-chemical processes for water treatment
 - Biological processes for water treatment
 - Sludge
 - Potable water treatment streams – Typical treatment plants
 - Waste water treatment streams – Typical treatment plants
 - b. **Prerequisites or co-requisites:** None
 - c. **Required:** Required major course for Water and Environment Specialty students
6. **Educational objectives for the course**
 - a. **Specific outcomes of instruction:**
 - General characteristics of water and classification of the constituents and impurities in water
 - Classification of waters (natural waters, potable waters, industrial waters, industrial effluents and domestic effluents), common characteristics and need of treatment
 - International standards for water quality
 - Water reuse
 - Physico-chemical processes for treatment (coagulation, flocculation, settling, flotation, adsorption, membranes...): Calculation and dimensioning
 - Biological processes for treatment: Calculation and dimensioning
 - Sludge resulting from water treatments: Classification and characteristics

- Sludge treatments and use
 - Preliminary design of a waste water treatment plant, calculations based on German Standard
 - Typical Treatment streams in potable water treatment plants
 - Typical Treatment streams in waste water treatment plants
- b. PI addressed by the course:**

PI	1.1	1.4	2.3	3.1
Covered	yes	yes	yes	yes
Assessed				

7. Brief list of topics to be covered:

- Water: Characteristics, constituents, impurities: 5 hours
- Types of water to be treated and why: 6 hours
- Physico-chemical processes for water treatment: 10 hours
- Biological processes for water treatment: 10 hours
- Sludge: 3 hours
- Potable water treatment streams – Typical treatment plants: 0.5 hours
- Waste water treatment streams – Typical treatment plants: 0.5 hours