

Course Syllabus

020GEPGS5 Water and Wastewater treatment

1. **Course number and name:** 020GEPGS5 Water and Wastewater treatment
2. **Credits and contact hours:** 4 credits, 35.0 hrs
3. **Instructor's or course coordinator's name:** Marina KHOURY
4. **Textbook and other supplemental material:**
 - 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:** None
 - c. **Required/Elective/Selected Elective:** Required major course for Water and Environment Specialty students
6. **Specific goals 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. KPIs addressed by the course:

KPI	a1	a2	c3	e3	g1	k1
Covered	x	x	x	x	x	x
Assessed						
Give Feedback						

7. Brief list of topics to be covered and approximate number of lectures:

- 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