

## Spring Semester

### 7 SANITARY ENGINEERING AND SPECIAL TOPICS IN WASTEWATER TREATMENT

<u>Teachers:</u>	Akratos C.	Professor
	Kagalou I.	Professor
	Stavrakakis I.	PhD in Environmental Engineering

The course includes the following sections:

1. Concepts and Themes of Health Engineering (Contamination, Pathogenicity, Epidemiology Data, Waterborne Infections).
2. Waste water treatment methods.
3. Design/dimensioning conventional treatment plants with suspended biomass methods such as activated sludge, plants with attached biomass methods as well as natural wastewater treatment systems such as artificial wetlands and stabilization lakes.
4. Learning of waste water treatment plant design software Aqua Designer 8.1. and the budget calculation software of CAPDET processing units.
5. Modern trends in advanced wastewater and industrial wastewater treatment as well as sludge management.
6. Analytical biological adhesive and suspended growth processes for the removal of nutrient salts and micro-pollutants are presented, the modern trends in the treatment of liquid waste (MB R reactors, MBBR).
7. There are differences in methods of treatment of industrial and agro-industrial waste (anaerobic treatment, biological filters, membranes, natural treatment systems).
8. Modern methods for sludge treatment are presented (anaerobic digestion, energy utilization, nitrogen and phosphorus recovery from sludge).

After successful completion of the course the student is able to:

- Recognize the subject of Health Engineering.
- Apply mathematical water quality models.
- Analyze physico-chemical and biological/microbial indicator data.
- To combine and synthesize the acquired knowledge to protect aquatic systems and to respond to health crises
- To evaluate the health status of water bodies.
- To study, design, build, sewage treatment plants
- Know new techniques for urban and industrial waste water treatment

Teaching Mode: 3 hours suggestion-exercises / week