Title of the course: **Environmental Technologies and Operations I.- Water and waste-water treatment technologies**	NEPTUN-code: RKXKM1ABNE	Weekly teaching hours: *lecture+practical work+lab work* 1+2+0	Credit: 3 Exam type: e (written exam)
Course leader: Rita Kendrovics-Boda, Dr.	Position: associate professor	Required preliminary knowledge (with code too): RKXKE1ABNE	

Curriculum:

The course objective is to show water (drinking) and wastewater treatment technologies and the requirements of drinking water, law and standard of drinking water and cleaned wastewater. The first aim of this course is to provide technological knowledge about advanced drinking water treatment. Focus is on both, conventional and new, emerging technologies. The course discusses relevant unit processes involved, and their role and location in a typical treatment chain. Physical, chemical and biological unit processes will be covered in the course. Further emphasis is on the effect of treatment on water quality and the transformations taking place in the water phase.

The second aim of this course is to describe wastewater definition, types of wastewater, and components of wastewater and sewer systems. Introduces wastewater treatment steps: Pre-treatment, Primary, Secondary and Tertiary treatment steps and available technologies within each step.

Highlights treatment technologies and reuse of sludge remaining in large volumes at the end of the treatment process.

Professional competencies:

Comprehensive knowledge of the basic features and interrelations of environmental elements and systems, as well as of the environmentally harmful substances affecting them. Knowledge of major environmental technologies, equipment and structures associated with each technology, including the functioning and operation thereof.

Able to perform basic tests of the quantity and quality characteristics of environmental elements and systems by state-of-the-art measuring instruments; to draw up and implement measurement plans; and to evaluate data.

Able to solve tasks of water, soil, air, radiation, and noise protection, as well as of waste treatment and processing at proposal level; to participate in preparing decisions; to perform authority audits; and to take part in the operation of these technologies.

Able to carry out management duties subject to sufficient professional experience.

Able to reveal deficiencies in the technologies applied and process risks and to initiate mitigation measures after getting familiarized with the technology concerned.

Constantly upgrading their knowledge of environment protection by attending organized professional development training courses.

Literature:

Nicholas P. Cheremisinoff, Ph.D.: Handbook of water and wastewater treatment technologies, ISBN: 0-7506-7498-9, in e-learning system

Dr. Michael R. Templeton, Prof. David Butler:Introduction to wastewater treatment in e-learning system

Nicholas P. Cheremisinoff: Handbook of water and wastewater treatment technologies in e-learning system