Università degli Studi della Basilicata
Scuola di Ingegneria

COURSE: Sanitary and Environmental Treatment Plant				
TEACHER: PROF. ING. ETTORE TRULLI				
e-mail: ettore.trulli@unibas.it		website:		
Language: ITALIAN				
ECTS: 9	n. of hours: 81	Academic year: 2014-2015	Campus: Potenza	Semester: I

TOPICS

The course aims to provide the knowledge regarding the plants and design to respond to the objectives of pollution control and environmental health and related in particular to the "anthropized water cycle" and the " solid waste management": natural water treatment, wastewater treatment, reuse of municipal effluent; systems for the control of "urban drainage"; sanitary landfill; incinerator; composting; anaerobic digestion for biogas production.

TEACHING METHODS

X Theoretical lessons
X Tutorials in classroom
□ Tutorials in laboratory
□ Project works
X Technical visits
Other activities _____

TEXTBOOKS

Notes provided by the lecturer. The teacher also recommends books, handbooks and journals of technical and scientific content on topics of interest for topics.

ON-LINE EDUCATIONAL MATERIAL

web address:

LEARNING OUTCOMES

Knowledge of the parameters of characterization of water and wastewater and solid waste. Discussion and analysis of issues related to the integrated water cycle and the management of municipal solid waste. Acquiring the theoretical knowledge and operational functioning of the physical-chemical and biological systems and the main water and wastewater treatment and waste. Knowledge of the major plant engineering aspects. The course examines and explores, through case studies, methodologies useful for the design of the plants. On the basis of the skills acquired in the course, the student will realize a design elaboration of an application of a specific technology.

REQUIREMENTS

Sanitary-Environmental Engineering

EVALUATION METHODS (please tick one or more options)

□ Intermediate verifications
□ Written examination
X Discussion of a project work
□ Practical test
X Oral examination
Other methods (please specify)

DETAILED CONTENT

The main topics of study related to integrated water cycle are: pollutants; the regulatory framework in the field of water policy; the quantitative and qualitative characteristics of wastewater; characterization of hydraulic loads and pollutants of the influent of sewage treatment plants; drainage systems of urban waste water (“mixed" and "separate"); estimation of the sewage flow; preliminary treatment: pumping station, equalization, screening, grit removal, flotation; sedimentation: tanks flow (longitudinal, radial); biological processes: "suspended" biomass (activated sludge process), attached biomass processes (trickling filters and bio-filters); water and wastewater disinfection. Treatment of sewage sludge: thickening; biological stabilization: aerobic digestion and anaerobic digestion; mechanical dewatering. Design of the main unit plant.

The main topics of study related to the cycle of treatment and disposal of municipal solid waste are: analysis of the production of waste; waste management strategies; characterization of waste; framework normative; collection facilities and selection of raw waste; separate collection; risks of uncontrolled disposal; sanitary landfill: plant lay-out; reducing emissions design criteria; waste to energy: principles of treatment, process diagrams, emission reduction, treatment of leachate and biogas; Composting: principles of treatment, process schemes, reducing emissions; the anaerobic digestion of waste materials. Design of the main unit plant.

SEMINARS BY EXTERNAL EXPERTS YES X NO □

FURTHER INFORMATION