



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2023/2024
MASTER'S DEGREE (MSC)	CIVIL ENGINEERING
SUBJECT	AQUEDUCTS AND SEWERAGES
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50353-Ingegneria civile
CODE	01122
SCIENTIFIC SECTOR(S)	ICAR/02
HEAD PROFESSOR(S)	NASELLO CARMELO Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	9
INDIVIDUAL STUDY (Hrs)	145
COURSE ACTIVITY (Hrs)	80
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	NASELLO CARMELO Tuesday 10:00 13:00 Dipartimento Ingegneria Civile, edificio 8, secondo piano, area idraulica. Thursday 10:00 13:00 Dipartimento Ingegneria Civile, edificio 8, secondo piano, area idraulica.

DOCENTE: Prof. CARMELO NASELLO

PREREQUISITES	Knowledge of Hydraulics.
LEARNING OUTCOMES	The student will acquire the ability to carry out a design calculation or verification in typical situations, to perform and comment on the calculations and results. He will be able to understand technical texts and directories of components for water systems. The student will acquire the ability to prepare a written report about a water supply and a sewerage system design, supporting it with drawings, figures and tables that enable better understanding.
ASSESSMENT METHODS	The candidate will have to answer at least two/three oral questions on all parts covered by the program, with reference to the recommended texts. The final test is to assess if the student is able to establish the hydraulic characteristics of a water supply system, of a water pipe network and of a sewerage in an urban area. The pass mark will be reached when the student knows the hydraulic criteria that underlie the design of the studied hydraulic infrastructures; the student will also have to show presentation skills and the ability to transmit his knowledge to the examiner. Below this threshold, the examination will be graded as insufficient. The exam will be marked out of thirty. Satisfactory 18-20; acceptable 21-23; good 24-26; very good 27-29; excellent 30-30 cum laude.
EDUCATIONAL OBJECTIVES	At the end of a diligent and active attendance of the course, the student will be able to design a water supply and distribution system in urban areas. He will be able to determine the flow rate to size a sewage collector as well as the different branches of an urban drainage network. The student will be able to search national policies in the sector.
TEACHING METHODS	Frontal lessons. Tutorial design of a water supply system in a small town, and a tutorial for the design of a urban drainage system in a small town. The performance of the design exercise takes place in the classroom, with reference to concrete cases and with the support of the teacher in the determination of the design choices.
SUGGESTED BIBLIOGRAPHY	L. Da Deppo, C. Datei, V. Fioretto; P. Salandin: Acquedotti ed. Libreria Cortina, Padova. Tutte le edizioni. V. Milano: Acquedotti. Guida alla progettazione. ed. Hoepli, Milano. ISBN: 9788820351830 G. Becciu, A. Paoletti: Fondamenti di Costruzioni Idrauliche, UTET, Torino. ISBN-13978-8859805229 L. Da Deppo, C. Datei: Fognature ed. Libreria Cortina, Padova. Tutte le edizioni. AA.VV.:Sistemi di Fognatura.Manuale di Progettazione. Ed. Hoepli, Milano. ISBN-13978-8820324421 D.D. Ratnayaka, M.J. Brandt, M. Johnson: Water Supply, Elsevier Ltd. Hardcover ISBN: 9780081022559. D. Butler, J. Davies: Urban Drainage, E & FN Spon ISBN 0-419-22340-1.

SYLLABUS

Hrs	Frontal teaching
4	Introduction to water supply. Domestic and non domestic demand. Public and private water supplies.
2	Water sources: springs, wells, river.
4	Hydraulic design of gravity and pumping systems.
4	Reservoir: design and structures.
4	Pipe material.
2	Valve chambers. Anchorage and thrust blocks. Pipeline bridge.
2	Valves. Flow measurement devices.
3	Analysis of looped pipe network.
2	Air vessel.
4	Domestic water supply with a pressurized tank. Fire hydrant network design.
4	Introduction to sewerage system. Separate and combined system. Sewage flow: domestic wastewaters
4	Sewage flow: storm sewer.
4	Sewer diameter design.
4	Combined sewer overflows and side channel spillway.
3	Domestic sewer systems.
4	Detention tank for heavy rains. Sewage pumping station.
2	Best management practice to reduce stormwater runoff.
Hrs	Practice
6	Water supply design in a small town. Used software Autocad, Excel, Word.
6	Water supply design in a small town. Used software Epanet.
6	Urban drainage system design in a small town. Used software SWMM, Word.

Hrs	Practice
6	Combined sewer overflows. Used software Autocad, Excel, Word.