DEPARTMENT	Scienze Agrarie e Forestali
ACADEMIC YEAR	2014-2015
DEGREE STUDY PROGRAM	**MSc AGRO-INGEGNERIA**
COURSE	Agro-technical Hydrology
PARTITION IN MODULES	NO
NUMBER OF MODULES	1
SCIENTIFIC SECTOR	AGR/08
TEACHER	Giuseppa Crescimanno Full Professor Università di Palermo
NUMBER OF CREDITS	6
NUMBER OF INDIVIDUAL HOURS NECESSARY TO ACHIEVE FULL LEARNING	90
NUMBER OF TEACHING HOURS	60
PREREQUISITES	No
STUDY PROGRAM YEAR	First
LOCATION	Indicated in the Class schedule
TEACHING ORGANIZATION	Lectures; Practical exercises
ATTENDANCE	Recommended
EVALUATION METHOD	Oral-Discussion of exercises carried out during the course
EVALUATION OF RESULT	Mark ranging between 18 and 30
SEMESTER	Second semester
AGENDA OF TEACHING ACTIVITIES	According to the calendar published before beginning the course
TIMETABLE OF STUDENT RECEPTION	Tuesday and Thursday 11-13

Expected results in terms of learning:
Learning how to determine soil water parameters using laboratory and field measurement techniques. Learning concepts and methodologies necessary for irrigation systems design.

Ability to apply concepts and methods learned:
Ability to develop irrigation scheduling optimizing crop yield. Ability to elaborate short duration high intensity rainfall.

Technical skills developed:
Ability to look for data to be elaborated to answer technical and irrigation problems in the farm.

Communication skills:
Ability to use a technical language and to interact with complementary skills.

Learning skills:
Ability to update knowledge with new methods and techniques.

Objectives of the course:
Objective of this course is to provide students with advanced concepts of agro-hydrology necessary for developing applications such as soil water balance and irrigation scheduling. These technical tools are necessary for irrigation management in the farm aimed at optimizing crop yield with the minimum water requirement. In addition, the course provides students with concepts and methods analysis of short duration high intensity rainfall necessary to predict the maximum discharge flow rate and to design irrigation systems.

Course	**Agro-technical hydrology**
Hours	Lectures:
2	Objectives and arrangement of the course. The soil as a physical medium for plant growth. The soil as a reservoir and medium of transport of water, energy, gas, solutes, particles, and particle bound chemicals
15	Soil water potential and soil water content. Soil water retention curve. Soil shrinkage curve.
7	Water transport. Hydraulic conductivity. Infiltration velocity. Infiltrometer.
6	Evapotranspration: reference and maximum. Crop coefficient.
18	Soil water balance in the vadose zone. Irrigation scheduling. Water stress and crop yield reduction. Soil-plant-atmosphere system dynamics as influenced by climatic conditions and agricultural management.
12	Rainfall, infitration and runoff. Methods analysis of short duration high intensity rainfall. Maximum discharge flow rate.
	Exercices
22	Soil water content, soil water retention curve, soil shrinkage curve, soil water balance and irrigation scheduling, short duration high intensity rainfall.
Suggested references	Lectures notes are given to students during the course