



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Scienze Agrarie, Alimentari e Forestali
<b>ACADEMIC YEAR</b>	2022/2023
<b>BACHELOR'S DEGREE (BSC)</b>	AGRICULTURAL ENGINEERING
<b>SUBJECT</b>	TOPOGRAPHY, CARTOGRAPHY AND PRINCIPLES OF CAD
<b>TYPE OF EDUCATIONAL ACTIVITY</b>	B
<b>AMBIT</b>	50120-Discipline dell'ingegneria agraria, forestale e della rappresentazione
<b>CODE</b>	20626
<b>SCIENTIFIC SECTOR(S)</b>	ICAR/06
<b>HEAD PROFESSOR(S)</b>	DARDANELLI GINO      Professore Associato      Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	
<b>CREDITS</b>	8
<b>INDIVIDUAL STUDY (Hrs)</b>	132
<b>COURSE ACTIVITY (Hrs)</b>	68
<b>PROPAEDEUTICAL SUBJECTS</b>	
<b>MUTUALIZATION</b>	
<b>YEAR</b>	2
<b>TERM (SEMESTER)</b>	2° semester
<b>ATTENDANCE</b>	Not mandatory
<b>EVALUATION</b>	Out of 30
<b>TEACHER OFFICE HOURS</b>	<b>DARDANELLI GINO</b> Monday    10:00    13:00    dicam 2 PIANO EX DIPARTIMENTO DI TRASPORTI

DOCENTE: Prof. GINO DARDANELLI

<b>PREREQUISITES</b>	To demonstrate basic knowledge of elementary geometry and trigonometry.
<b>LEARNING OUTCOMES</b>	Knowledge and comprehension: Acquisition of the ability to set a topographical survey by providing the appropriate tools. Ability to graphically display, also with the help of CAD technologies, the results of the survey. Ability to recognize and organize in autonomy the design plans and specifications for rural transformation. Being able to arrange a suitable survey and representation of rural lands. Being able to expose the proposed exercises to experienced and not experienced audits. Being able to read and to interpret the official Italian cartography by using the different representation systems. To own the ability to consult scientific publications on surveying and mapping. Learning skills: Ability to use the acquired knowledge in the professional practice of the agronomists.
<b>ASSESSMENT METHODS</b>	The evaluation (minimum grade is 18 and maximum is 30 cum laude) is stated using the following scheme: 1) Knowledge of the topics, capability to apply the learned knowledge, capability to analyze the studied problem, ability to present the topic is judged sufficient (18-21) 2) Knowledge of the topics, capability to apply the learned knowledge, capability to analyze the studied problem, ability to present the topic is judged fair (22-25) 3) Knowledge of the topics, capability to apply the learned knowledge, capability to analyze the studied problem, ability to present the topic is judged good-high (26-28) 4) Knowledge of the topics, capability to apply the learned knowledge, capability to analyze the studied problem, ability to present the topic is judged high advanced (29-30 cum laude)
<b>EDUCATIONAL OBJECTIVES</b>	Acquiring the professional tools aimed to design any project of land improvement. In particular, by completing the course, the student will be able to read and interpret the Italian official cartography, as well as to know how to prepare small and detailed maps.
<b>TEACHING METHODS</b>	Lecturers and practical training in classroom or in the field.
<b>SUGGESTED BIBLIOGRAPHY</b>	Renato Cannarozzo Lanfranco Cucchiari William Meschieri Misure, rilievo, progetto, Quinta edizione, 2017 Zanichelli ISBN: 9788808520906 Riggio A., Carlucci R. Topografia di Base, EPC editore, 2015 ISBN: 978-88-6310-579-7 Dispense in pdf degli argomenti illustrati a lezione.

### SYLLABUS

Hrs	Frontal teaching
1	Course Introduction: Content and aims. Mode for the final exam.
2	Error Theory Elements. Errors in topographical measurements and their compensation (notes).
4	Introduction to geodesy.
5	Cartography: Representation of earth's surface and deformations. Conical and cylindrical projections. Graphical errors and tolerance. Italian official cartography. UTM and Gauss Boaga systems. Digital mapping. Cassini-Soldner system for cadastral maps.
12	Instruments to measure angles and distances: total station. Global Positioning System: the structure of the system and its use. Static and NRTK survey.
14	Topographic measurements, tools and representation: Planimetric and altimetric survey. General information on planimetric surveys. Main schemes for survey of soil surface: Polygonal and triangulation. Mapping of small surfaces. Longitudinal profile of the terrain. CAD tools.
4	Calculation of agricultural surfaces; Measuring methods based on the survey data (orthogonal coordinates, polar coordinates).
6	Introduction to the use of CAD. Design setting, organization and management. Drawing dimensioning. Printing of graphic tables. Interchange files. CAD-GIS introduction
Hrs	Practice
2	Error Theory Practical exercises
2	Cartography Practical exercises
2	Total station surveying
2	Spirit levelling
2	Static GPS surveying
2	RTK and NRTK GPS surveying
8	CAD Practical exercises