



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2019/2020
BACHELOR'S DEGREE (BSC)	ENVIRONMENTAL ENGINEERING
SUBJECT	APPLIED TOPOGRAPHY - LABORATORY
TYPE OF EDUCATIONAL ACTIVITY	F
AMBIT	10807-Altre conoscenze utili per l'inserimento nel mondo del lavoro
CODE	09107
SCIENTIFIC SECTOR(S)	
HEAD PROFESSOR(S)	DARDANELLI GINO Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	3
INDIVIDUAL STUDY (Hrs)	0
COURSE ACTIVITY (Hrs)	0
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	3
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Pass/Fail
TEACHER OFFICE HOURS	DARDANELLI GINO Monday 10:00 13:00 dicam 2 PIANO EX DIPARTIMENTO DI TRASPORTI

DOCENTE: Prof. GINO DARDANELLI

PREREQUISITES	Topography, cartography and GIS
LEARNING OUTCOMES	<p>Knowledge and understanding</p> <p>-knowledge of land surveying problems, using topographic techniques; in particular the students will be able to use theoretical knowledges and methodologies to acquire and elaborate data. They will be able to analyze in a critical way the results obtained to produce cartographic representation of the study areas, evaluating and monitoring the time series of displacements of structures, landslides or other.</p> <p>Applying knowledge and understanding</p> <p>-The student will be able to design topographics surveying to create maps for the project of a civil or environmental structure and to monitor structures and landslides periodically.</p> <p>Making judgements</p> <p>-The student will be able to analyze and choose the best surveying techniques to create maps (medium and large scale maps), monitoring and evaluating the displacements of civil and environmental engineering structures through the use of available resources</p> <p>Communication skills</p> <p>-The student will be able to talk about problems of topographic surveying and cartographic applications, identifying any problems related to costs and time.</p> <p>Learning ability</p> <p>-Updating through scientific reviews developed in the geodetic and topographic science.</p>
ASSESSMENT METHODS	<p>The final examination consist of an oral exam, based on the contents addressed in the course. The oral examination questions will be open to verify the knowledges and the capabilities of the students about land surveying through techniques and instruments used in geodesy, topography, GPS and photogrammetry. The final assessment will be made on the basis of several conditions related to the level of knowledge about theoretical and practical models to solve topographic problems, according to a correct use of technical language. On the basis of the level of knowledge acquired (from an inadequate to an excellent level) and the technical language to explain the contents of the course, the grades are out of 30. The exam fails if the students don't have a sufficient knowledge of the contents addressed in the course;</p> <p>(rating 18-20/pass): sufficient knowledge of the main contents and sufficient use of technical language;</p> <p>(rating 21-23/satisfactory): knowledge of the main contents and use of technical language, low degree of autonomy in the application of theories to solve engineering problems related to land surveying;</p> <p>(rating 24-25/good): good knowledge of the contents and limited capability to apply several methodologies to solve engineering problems related to land surveying;</p> <p>(rating 26-29/very good): good knowledge of the contents and use of appropriate language, good capability to apply several methodologies to solve engineering problems related to land surveying ;</p> <p>(rating 30-30 e lode/excellent): excellent knowledge of the contents and correct use of language, excellent level of autonomy in the analysis of engineering problems and their solutions.</p>
EDUCATIONAL OBJECTIVES	Acquisition of knowledge about theory and methodology to acquire and elaborate data, to make evaluations about results. Create maps of the study area and analyze the results of time series of the displacements of engineering structures.
TEACHING METHODS	Lectures, classroom exercises and surveying
SUGGESTED BIBLIOGRAPHY	<p>Italiano</p> <p>Birardi G. – Corso di Topografia vol. 1-2 Pitagora Editrice Bologna.</p> <p>Cina A. - GPS – Principi, modalita' e tecniche di posizionamento, ed. CELID Torino, 2000.</p> <p>Galetto R., Spalla A. – Lezioni di topografia. CUSL, Pavia 1998.</p> <p>Testa M. Topografia in cantiere, DEI 1995G. Bezoari, C. Monti, A. Selvini</p> <p>English</p> <p>Engineering Surveying Manual, American Society of Civil Engineers, 1985</p> <p>Hoffmann-Wellenhof B., Lichtenegger H., Collins J.Global Positioning System, Springer Verlag Wien New York</p>

SYLLABUS

Hrs	Frontal teaching
1	Topographic instruments and measurements (angle, direction and elevation)
1	Project planning for surveys: preliminary design, crossing selection, final design and construction
1	Introduction to the topographic networks

SYLLABUS

Hrs	Frontal teaching
1	Topographic networks: calculations, equations to determine the stations coordinates, angular measurements
1	Spirit levelling
1	Introduction to Global Navigation Satellite Systems, Glonass, Galileo, Egnos, Beidou
1	Global Positioning System Networks: design and construction of a project using more receivers
1	Global Navigation Satellite Systems: introduction, Sputnik, Transit. The advantages using combined systems GPS+Glonass; results of Glonass System
1	Introduction to the use of Permanent Network Reference Stations GPS+Glonass, NRTK
Hrs	Practice
3	Polygonal scheme
3	Topographic network
4	Spirit levelling
4	GPS networks
4	RTK survey