



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze e Tecnologie Biologiche, Chimiche e Farmaceutiche		
ACADEMIC YEAR	2020/2021		
BACHELOR'S DEGREE (BSC)	CHEMISTRY		
SUBJECT	ANALYTICAL CHEMISTRY		
TYPE OF EDUCATIONAL ACTIVITY	A		
AMBIT	50138-Discipline Chimiche		
CODE	16159		
SCIENTIFIC SECTOR(S)	CHIM/01		
HEAD PROFESSOR(S)	AMORELLO DIANA	Ricercatore	Univ. di PALERMO
OTHER PROFESSOR(S)			
CREDITS	8		
INDIVIDUAL STUDY (Hrs)	128		
COURSE ACTIVITY (Hrs)	72		
PROPAEDEUTICAL SUBJECTS	00133 - GENERAL AND INORGANIC CHEMISTRY 15248 - CHEMICAL PREPARATIONS WITH LABORATORY PRACTICE		
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	AMORELLO DIANA Monday 12:00 14:00 Studio 1/A18 Edificio 17 Friday 12:00 14:00 Studio 1/A18 Edificio 17		

DOCENTE: Prof.ssa DIANA AMORELLO

PREREQUISITES	Students have to know principles and concepts explained in the courses of General and Inorganic Chemistry and Exercitations of Chemical Preparations with Laboratory Practice, particularly those concerning Chemical Equilibria.
LEARNING OUTCOMES	Knowledge of principles of chemical analysis. Ability to apply principles and techniques of volumetric analysis to calculate chemical composition of solution systems. Ability to choose the most suitable approach to the solution of different problems concerning analytical determinations. Ability to solve analytical chemistry problems and to describe and discuss the different solving procedures. Ability to use the argument of this course in a broader research or practical context.
ASSESSMENT METHODS	Written and oral examination. Written examination, lasting no more than four hours, requires resolution of two exercises concerning chemical equilibria in solution or titrations (acid-base, complex formation, solubility, redox) Aim of the examination is to ascertain the student's ability to visualize systems at equilibrium in aqueous solution, and to find the correct way to answer the questions put them. Each answer will get a mark between 0 and 15: student is allowed to held oral examination if they get a total score greater than 15. Questions put during the oral examination have the aim to clarify and explain the less correct parts of the written essay and to verify student's ability to use a proper language (correct, clear). The global evaluation will take into account: knowledge of the items, ability to join different knowledges and to apply them to the problem resolution, speaking correctness and clarity. During the course will be held an ongoing evaluation taking two hours about the topics carried out until then. The final vote will also take into account the on-going test and will be formulated as follows: Sufficient (18-20): Limited knowledge of limited topics processing and linking skills; Limited autonomy of judgment. Discreet (21-24): Discreet knowledge of the topics dealt with and the ability to elaborate and display knowledge with links between the various topics; Discreet autonomy of judgment. Good (24-27): Good knowledge of the topics dealt with and the ability to elaborate and display knowledge with links between the various topics; Good autonomy of judgment Very good (27-29): very good knowledge of the topics dealt with and the ability to elaborate and display knowledge with links between the various topics; Great autonomy of judgment. Excellent: (30-30 L): Excellent knowledge of the topics dealt with and the ability to elaborate and exhibit knowledge with a link between the various topics; Excellent judgment autonomy.
EDUCATIONAL OBJECTIVES	Students should develop the ability to use the contents of this course to improve their formation as a bachelor in Chemistry.
TEACHING METHODS	Lectures, and assisted exercises solving
SUGGESTED BIBLIOGRAPHY	D. A. Skoog, D. M. West, F. J. Holler, S. R. Crouch, Fondamenti di Chimica Analitica, EdiSes, Napoli 2015. D. C. Harris, Analisi Chimica Quantitativa, Zanichelli, 2017. J. N. Butler Equilibri ionici, Piccin (1969) Materiale fornito dal docente

SYLLABUS

Hrs	Frontal teaching
8	Basic principles of chemical analysis. Sampling. Activity coefficients. Treatment of solution equilibria
10	Treatment of acid base equilibria; Acid - base titrations
10	Treatment of complex - formation equilibria; Complexometric titrations
10	Treatment of solubility equilibria; Precipitation titrations
10	Treatment of redox equilibria; Redox titrations

Hrs	Practice
24	Practical examples of numerical and graphical solution of problems concerning the above items