

Main course information	
Academic subject	Analytical Chemistry I (Part of General Chemistry)
Degree course	Biological Sciences (I level)
Degree class	L-13
ECTS credits (CFU)	2
Compulsory attendance	YES
Teaching language	Italian
Accademic Year	2019/2020

Professor/Lecturer	
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Tutorial time/day	

Course details	Pass-fail exam/Exam with mark out of 30	SSD code	Type of class
	Exam with mark out of 30	CHIM01	Lecture/workshop

Teaching schedule	Year	Semester
	I	I

Lesson type	CFU/ECTS	Lessons (hours)	CFU/ECTS lab	Lab hours	CFU/ECTS tutorial/workshop	Tutorial/workshop hours	CFU/ECTS field trip	Field trip Hours
	I		8	I	15			

Time management	Total hours	Teaching hours	Self-study hours
	50	23	27

Academic Calendar	First lesson	Final lesson

Syllabus	
Course entry requirements	
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	
<i>Knowledge and understanding</i>	Knowledge of physical quantities; knowledge of base mathematical operations: equivalnces, I and II degree equations; operations with powers in base ten; logarithms
<i>Applying knowledge and understanding</i>	The laboratory work (compulsory frequency) provides the students with the technical ability in the base chemical operations (proper use of balance and laboratory glassware, preparation of solutions) and the understanding of phenomena relevant to dissolution of substances, chemical equilibria, chemical species transformation, phase changes
<i>Making informed judgements and choices</i>	By the close combination of lessons, numerical exercises and laboratory works students develop the ability to critically evaluate the numerical result of an exercise as well as of a laboratory experiment.
<i>Communicating knowledge and understanding</i>	Students are encouraged to elaborate oral and written reports on laboratory experiences. The acquisition of scientific speech skills is promoted through the knowledge of correct scientific (chemical) terminology, the use of a clear language and synthesis ability.
<i>Capacities to continue learning</i>	Students are stimulated to deepen the concepts and issues treated during the teaching course by consulting more textbooks, cosschecking information, evidencing interdisciplinary correlations and through the proper use of databases and on-line available literature

Syllabus	
Course content	<p>Lectures:</p> <ul style="list-style-type: none"> -How to express and calculate solution concentration (Molarity, Normality, Molality, weight %, Volume %, molar fraction, ppm /parts per million, ppb/parts per billions) -Chemical properties of solutions and chemical equilibria: definition and significance of pH, electrolytes, acids, bases -Volumetric analysis: general principles, primary standards, acid-base titrations -Ox-Red equilibria and Nerst equation <p>Laboratory work</p> <ul style="list-style-type: none"> -Information on safety standars, safety devices, ,security arrangements, correct behavior in a chemical laboratory, Good Laboratory Practice (GLP) -How to use and clean laboratory glassware (pipettes, Eppendorf pipettes, burets, beakers, graduated flasks, cylinders, ...) and base instruments (balance, ionic exchange resins for water deionization, ...) -Preparation of standard solutions and dilutions -Titrimetric determination of bases and acids -Metallic copper recovery from a solid mixture through selective solubilization and ox-red reactions
Course books/Bibliography	Il Laboratorio di Chimica di M.Consiglio, V. Frenna, S.Orecchio, EdiSES, Napoli P. Giannoccaro S. Doronzo: ELEMENTI DI STECHIOMETRIA. Ed. EdiSES, Napoli
Notes	Slides and on-line sites are used to illustrate safety standards, devices (individual and collective) and procedures
Teaching methods	Lectures supported by powerpoint presentations; Laboratory work; numerical exercises and resolution of typical stoichiometry problems.
Assessment methods (indicate at least the type written, oral, other)	Written exam as "self-evaluation" test (no mark), preliminary to oral exam
Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are	Students are requested to write and balance in a correct way chemical reactions and to solve simple problems related to analyte concentration and pH calculation. They must show to be able to work in the laboratory in a clean and safe way; to critically evaluate the obtained results and to write clear reports. Work in team is salso encouraged.
Further information	