

COURSE: PHYSICAL CHEMISTRY			
ACADEMIC YEAR: 2019-2020			
TYPE OF EDUCATIONAL ACTIVITY: Basic			
TEACHER: Luciano D'Alessio			
e-mail: luciano.dalessio@unibas.it		website:	
phone: 0971/206164		mobile (optional):	
Language: Italian			
ECTS: (lessons e tutorials/practice) 6	n. of hours: (lessons e tutorials/practice) 48	Campus: Potenza Dept./School: Dipartimento di Scienze Program:	Semester: II (2 march 2020 – 31 may 2020)
<p>EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES</p> <p><i>Knowledge and understanding:</i> The course aims to provide the conceptual and methodological tools of thermodynamics, chemical kinetics and molecular structural studies, with particular reference to biotechnology applications. The student will gain the critical knowledge of the subject and the ability to solve simple numerical problems, also using IT tools, and discuss a paper on a topic of their choice.</p> <p><i>Making judgments, communication and learning skills:</i> The student will demonstrate to express autonomous evaluations by utilizing the topics of the subjects, and to communicate effectively and properly the contents of a project work.</p>			
<p>PRE-REQUIREMENTS</p> <p>Mathematics: differential and integral calculus, study of the graph of a function Physics: kinematics, dynamics, fluid mechanics, thermology, electromagnetism General Chemistry: atomic and molecular structure, chemical reactions, chemical equilibria</p>			
<p>SYLLABUS</p> <p>CHEMICAL KINETICS Reaction rate, reaction order, mechanisms, molecularity, zeroth, first and second order, half-lives, radioactive decay, radiocarbon dating, simultaneous reactions, Arrhenius equation, activation energy, homogeneous, heterogeneous and enzymatic catalysis, oscillating reactions, deterministic chaos, fractal objects.</p> <p>THERMODYNAMICS Matter and energy, thermodynamic systems, state equations, state functions, zeroth law, ideal gas, intermolecular forces, Van der Waals equation, first law, internal energy, work, heat, specific heat, thermochemistry, Hess law, combustion, formation, atomization and bond enthalpy, reversibility and irreversibility, second law, entropy, third law and absolute zero, free energy, bioenergetics, ATP cycle, phase and chemical equilibria.</p>			
<p>TEACHING METHODS Theoretical lessons, Classroom tutorials, Project works</p>			
<p>EVALUATION METHODS Written examination, Oral examination, Discussion of a project work</p>			
<p>TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL ATKINS-DE PAULA, ELEMENTI DI CHIMICA FISICA, ZANICHELLI</p>			
<p>INTERACTION WITH STUDENTS Reception by appointment</p>			

EXAMINATION SESSIONS (FORECAST)¹

18/2/20, 17/3/20, 16/6/20, 14/7/20, 15/9/20, 13/10/20, 15/12/20

SEMINARS BY EXTERNAL EXPERTS YES NO

FURTHER INFORMATION

¹ Subject to possible changes: check the web site of the Teacher or the Department/School for updates.