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| COURSE: PHYSICAL CHEMISTRY | | | |
| ACADEMIC YEAR: 2017/2018 | | | |
| TYPE OF EDUCATIONAL ACTIVITY: Affine | | | |
| TEACHER: LUCIANO D'ALESSIO | | | |
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| Language: italian | | | |
| ECTS: 6 (5 lecture + 1 practical) | n. of hours: 56 (40 lecture + 16 practical) | Campus: Potenza/Matera Dept./School: School of Agriculture, Forest, Food and Environmental Sciences Program: MSc in Food Science and Technology | Semester: 1st |
| EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES <p><i>The course aims to provide the conceptual and methodological tools of thermodynamics, chemical kinetics and molecular structural studies, with particular reference to food science and technology applications. The student will gain the critical knowledge of the subject and the ability to solve simple numerical problems, also using IT tools.</i></p> <ul style="list-style-type: none"> <i>knowledge and understanding: Knowledge and understanding of the general principles and methods of chemical physics. Knowledge and understanding of the main theoretical and experimental principles of chemical kinetics. Knowledge and understanding of the principles of classical thermodynamics and their utilization for the study of physical-chemical equilibria. Knowledge of the quantum relativistic approach for understanding the atomic and molecular structure.</i> <i>applying knowledge and understanding: Ability to identify and analyze the factors that control the evolution of chemical reactions, the rate of reaction kinetics and the approach to chemical equilibrium state. Ability to develop simple mathematical models of physical-chemical processes for the resolution of various problems of practical interest. Ability to use databases and software for prediction and modeling of dynamical and equilibrium properties of main physical-chemical systems. ☒</i> <i>making judgements: Ability to identify the most effective tools for the description, simulation and analysis of physical-chemical systems interesting from the applicative point of view. ☒</i> <i>communication skills: Ability to communicate the importance of mathematical modeling of the reality to both non-technical and technical audiences. Ability to communicate with operators for the formulations of prediction tools of kinetics and thermodynamic systems. ☒</i> <i>learning skill: Ability to access sources of scientific and statistical data, to critical understanding and summarize the data. Ability to access documentation and information sources on food microbial quality and safety using technical and scientific literature. ☒</i> | | | |
| PRE-REQUIREMENTS <p><i>Mathematics: Differential and integral calculus, study of functions.</i> <i>Physics: Elements of mechanics, thermodynamics, electromagnetism.</i> <i>General Chemistry: Structure and properties of elements and compounds.</i></p> | | | |
| SYLLABUS <p>chemical kinetics thermodynamics quantum-relativistic mechanics</p> | | | |
| TEACHING METHODS <p><i>Theoretical lessons, Classroom tutorials</i></p> | | | |
| EVALUATION METHODS | | | |

Written examination, Oral examination

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Atkins-De Paula, Elementi di Chimica Fisica, Zanichelli
<http://oldwww.unibas.it/utenti/dalessio/benvenuti.html>

INTERACTION WITH STUDENTS

Reception by appointment

EXAMINATION SESSIONS (FORECAST)¹

2/6/18, 3/6/18, 5/8/18, 6/5/18, 7/3/18, 10/2/18, 12/4/18

SEMINARS BY EXTERNAL EXPERTS YES NO

FURTHER INFORMATION