

## Chemistry

### Chemistry 2

#### IDENTIFICATION

CODE : PC-S3-CH-H2  
ECTS : 5.0

#### HOURS

Lectures : 13.0 h  
Seminars : 30.0 h  
Laboratory : 29.5 h  
Project : 0.0 h  
Teacher-student  
contact : 72.5 h  
Personal work : 66.0 h  
Total : 138.5 h

#### ASSESSMENT METHOD

- 3 hours of written assessment  
- 3 hours of exam

Practical work : practical  
coursework + individual 2.5 hour  
practical test

#### TEACHING AIDS

Lecture, tutorial and practical work  
handouts.  
First Cycle Moodle interface: all  
lecture, tutorial and practical  
work documents, schedule and  
organization, basic exercise  
corrections, links to internet sites,  
exam questions and answers in  
French and in English.

#### TEACHING LANGUAGE

French

#### CONTACT

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#### AIMS

The main competencies covered by this chemical education are:

C11 - To split up a problem or a system into its component parts in interaction; C12 - To reduce a system or a problem by assumptions [hypothesis]; C13 - To modelize a system or a problem by convenient dimensions or objects in relation ; C14 - To build a scheme of the system or the problem; C16 - To build a justification; C21 - To estimate errors induced by the model implementation; C23 - To estimate errors induced by the model implementation; C24 - To implement scenarii to verify results coming from modelization; C32 - To acquire experimental data by identifying and evaluating acquisition limits; C33 - To observe and report observations; C51 To select and implement well-adapted tools to represent and analyze data; C53 To compare theoretical and experimental data on context based criteria; C54 - To interpret data in the context of a model; C61 - To structure a speech associated to a logical and argued reasoning, aiming at clearly identified objectives.

#### CONTENT

Lectures, tutorial classes and practical work in CHEMISTRY 2

To apply the thermodynamic laws to physical heterogeneous systems containing several constituents, main types of binary diagrams concerning the liquid-vapor, liquid-solid and solid-solid equilibriums.

To apply the thermodynamic laws to chemical systems: thermo chemistry, qualitative and quantitative laws of equilibriums, application to equilibriums in aqueous media [acid-base, redox, solubility, complexation reaction] and to electrochemical cells.

#### BIBLIOGRAPHY

- Cours de Chimie-Physique et Exercices résolus de Chimie-Physique : P. Arnaud [Ed. Dunod]
- Thermodynamique Chimique 2ème année PC-PC\* : P. Durupthy, C. Mesnil, T. Zobiri, collection H Prépa [Ed. Hachette]
- Thermodynamique Chimique: F. Brenon, C. Busquet, C. Mesnil, Ed. Hachette Supérieur.
- Chimie : Thermodynamique et Cinétique Chimique, Equilibres chimiques en solution, J. Mesplède, Ed. Bréal
- Chimie 1 Sup Bio, Vêto, DEUG B :P. Grécias,, J.P. Migeon, Ed. Techniques et documentation, Lavoisier.
- <http://chimie.net.free.fr/index2.htm>

#### PRE-REQUISITE

Education of 1st Year : Chemistry 1 [structure and chemical bonding] and general thermodynamics [gaseous state, thermodynamic laws, U, H, F and G state functions, 1st law applications to chemical reactions, study of pure elements.

Lab work : safety and use of current lab glassware

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