

- ECAM LaSalle Mechanical and Electrical Engineering Programme
- EENG - Year 1
- Semester 1
- Fundamental Sciences S1
- Chemistry

Chemistry

Données Générales

Programme Académique	ECAM LaSalle Mechanical and Electrical Engineering Programme		
Type d'EC : Cours	Chemistry (LIIEng01EChemistry)		
TD : 18h00 TP : 6h00 Cours : 18h00 Travail personnel : 36h00 Durée totale: 78h00	Statut	Periode Semester 1	Langue d'enseignement : English

Contenu

Electronic structures & periodic properties (atomic radius, ionization energy, electronegativity...) Types of chemical bonds between atoms (ionic, covalent, metallic) and between molecules (dispersion force, dipole-dipole, hydrogen bond) involving molecule polarity (dipole moment, VESPR model...) States of matter: gaseous state (concept of pressure including partial pressure & vapour pressure, ideal gas law, real gases, density, kinetic theory of gases, diffusion, effusion), condensed matter states (in particular crystallographic structures of solids). Aqueous solutions (solubility, different types of concentrations, colligative properties) Chemical equilibrium (advancement table for reversible reactions, equilibrium constant K & quotient of reaction Q, Le Châtelier's principle, introduction to thermochemistry) Chemical Kinetics (rate of reaction, half-life, orders of reaction & rate laws, Arrhenius equation) Chemical kinetics Chemical equilibrium Application to electrochemistry
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Prérequis

French High School Chemistry: electronic structure & stable ions in the periodic table, covalent bonds in molecules, electronegativity & polar molecules, chemical quantities (amount n, molar mass M, density ρ , concentration C), "advancement tables".

Bibliographie

Chemical Principles, the Quest for Inside, P. Atkins, L. Jones, L. Laverman Chemistry, the Central Science, T. Brown, E. LeMay, B. Bursten, C. Murphy, P. Woodward & M. Stoltzfus

Évaluation(s)

N°	Nature	Coefficient	Objectifs
1	Written exam	15	1 mid-term exam

Évaluation(s)			
2	Written exam	15	Final exam
3	Continuous Assessment	20	Including: weekly quiz, group works, solving exercises
4	Written exam	50	Final