Thermodynamique appliquée à la géologie

Lecturer
Sandra ARNDT (Coordinator)

Course mnemonic
GEOL-F205

ECTS credits
5 credits

Language(s) of instruction
French

Course period
First term

Course content

Thermodynamics: recall of the concepts of fundamental chemical thermodynamics; calculation of the variations of free energy during reactions between solids; evaluation of associations of stable minerals; equilibrium between solid and aqueous phases; influence of temperature and pressure on equilibrium. Kinetics: recall of basic concepts of the kinetics of homogeneous reactions; heterogeneous reactions: process of transfer of the components in the liquid and solid phases; control of the rate of dissolution by reactions at the interface; case of congruent dissolutions; case of incongruent reactions with diffusion through residual layer; reaction of homogeneous and heterogeneous nucleation: reactions of precipitation; kinetics of mineral growth.

Objectives (and/or specific learning outcomes)

To study the thermodynamic and kinetic aspects applied to geochemical reactions occurring at the Earth surface.

Pre-requisits and co-requisits

Pre-requisites courses

CHIM-F101 | Chimie générale | 10 crédits , CHIM-F101 | Chimie générale | 15 crédits , CHIM-F101 | Chimie générale | 20 crédits , CHIM-F101 | Chimie générale | 5 crédits and ENVI-F1001 | Sciences de la Terre, Environnement et Société | 5 crédits

Course having this one as co-requisit

GEOL-F307 | Cycle de la matière et de l'énergie dans les systèmes géologiques | 5 crédits

Teaching method and learning activities

Theory, exercises.

References, bibliography and recommended reading

M. Klotz et R. M. Rosenberg (2000) Chemical Thermodynamics: Basic Theory and Methods. 6th edition. John Wiley et Sons. G.M. Anderson (1996) Thermodynamics of natural systems. John Wiley & Sons, New York, 382p.

Other information

Contact(s)

Campus de la Plaine, Bâtiment B, 5ème niveau, Local 1B5.108

Evaluation method(s)

written examination

Evaluation method(s) (additional information)

Written exam.

Programmes

Programmes proposing this course at the faculty of Sciences

BA-GEOL | Bachelor in Geology | unit 3