



## MAPR2141 Physical chemistry of hydrometallurgical processes

[30h+30h exercises] 5 credits

This course is taught in the 2nd semester

**Teacher(s):** Joris Proost  
**Language:** French  
**Level:** Second cycle

### Aims

Study of the physico-chemical fundamentals and technological aspects of hydrometallurgical processes, and their application to the extraction and recycling of metals.

### Main themes

#### 2. Course description

Among the basic hydrometallurgical processes being considered are

- leaching
- purification of leach solutions (chemical precipitation, ion exchange, solvent extraction)
- metal extraction (cementation, precipitation by reductive gases, electrolysis)
- electrolytic metal refining.

These processes are treated both from a theoretical and technological point of view. The theoretical part is largely based on

- the study of thermodynamic equilibrium of ions, oxides, sulphides and metals in aqueous solutions (e.g. by E-pH diagrams)
- chemical and electrochemical kinetics and rate theory

From a technological point of view, these basic processes and principles are applied for the construction of a global flow-sheet describing the extraction and recycling of metals. Laboratory sessions are organized to actively demonstrate the different processes.

### Content and teaching methods

Nil

**Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)**

Nil

### Other credits in programs

<b>INCH21</b>	Première année du programme conduisant au grade d'ingénieur (5 credits) civil chimiste		
<b>INCH22</b>	Deuxième année du programme conduisant au grade d'ingénieur civil chimiste	(5 credits)	Mandatory