

Faculty of Medicine



FARM1242 Introduction to analytical chemistry

[30h+105h exercises] 6 credits

Teacher(s): Marie-France Herent, Bernard Tilquin, Bernard Tilquin
Language: French
Level: First cycle

Aims

The introduction of the course is a link between general chemistry and analytical chemistry. Then, the major part of the course is devoted to the study of global analytical methods: titrimetry and gravimetry. A second part deals with some chapters which will be useful for the next years : Physical properties of drugs molecules. Seminars deal with the use of the constants and the drawing of titration curves. Rigor and precision are objectives that should be proposed in each part of the course. At the end, the student be able to master chemical equilibriums in particular-exchange reaction. He should also be qualified to achieve the experimental part while understanding the basis.

Main themes

The search for a quantitative approach of chemical analysis needs very precise definitions of chemical equilibrium and quantitative reaction (of titration). In purity analysis, the reference to pharmacopeia (oral communication) allows to set the objectives. The knowledge of chemical equilibrium is acquired by the study of global methods (titrimetry and gravimetry). Moreover, the theoretical knowledge makes it possible to avoid some experimental errors. At the end, the student will have an overall picture of the different methods and will be able to think about the problem of their selection and their interferences.

Content and teaching methods

Teaching comprises the notions that are necessary to the treatment of chemical balances in homogeneous phase and biphasic systems. These notions are then applied to the treatment of complex balances in solution. The basic methods of quantitative analytical chemistry as gravimetry and tritrimetry (acid-base, oxydo-reduction, complexometry, precipitation) constitute the main part of the course. Seminars are intended to illustrat the teaching by theoretical exercices, in particular the part devoted to multiple equilibriums and calculation of concentration. Supervised work at the laboratory with introduction and discussion are integrated in the teaching program. Syllabi are available for students. Consultation of reference books is strongly advised.

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

Background : Good knowledge of the basis of chemistry are required to follow this course. In particular, the notions regarding the different reactions in solution. The basis of thermochemistry and cheical equilibriums are supposed to be well-known.

Assesment : The level of knowledge reached by the student is assessed by written examination. Students must take part at the exercices (25% of the final mark). Exercices with increasing difficulty level are available on the web site and allow auto-evaluation of the student.

Stand : Syllabi, library, exercices on the web.

1 teaching assistant per 25 students (the assistant works also in FARM 21)

Reference books : Quantitative Chemical Analysis, D.C.Harris (Freema) - Physical Chemistry, P.W.Atkins (Oxford Univ.) - Foundations of chemical analysis, O.Budvesky (Ellis Horwood series).