Code: **QF331**

Name: **Físico-Química**

Name in English: **Physical Chemistry**

Name in Spanish: **Físico-química**

Subject type: **Weekly**

Approval Type: **Grade and Attendance**

Characteristic: **Regular**

Frequency: **75%**

Period Type / Offering period: **Semester / All periods**

Requires Final Exam: **Yes**

Vectors

T	L	P	O	PE	OE	SL	SEMANAS	CRÉDITO
4	**-**	**-**	**-**	**-**	**-**	**4**	**15**	**4**

Occurrence on curriculum: **53, 63**

Pre requirement: **MA111 ou MS380 + QG104 ou QG108**

Summary: **Real gas behavior, Gibbs free energy, physical and chemical equilibria, phase diagrams, chemical kinetics.**

Program:

I. PVT behavior of real gases.
II. Entropy, reversibility, and irreversibility.
III. Relationship between Entropy, Gibbs Energy, and Helmholtz Energy.
IV. Thermodynamic relationships for a system in equilibrium.
V. Standard thermodynamic functions of reaction.
VI. Thermochemistry, enthalpy, variation of enthalpy with temperature.
VII. Chemical potential, activities.
VIII. Physical transformations of pure substances.
IX. Simple mixtures, thermodynamics of simple mixtures, ideal and non-ideal solutions.
X. Phase diagrams for one and two components, phase rule.
XI. Chemical Equilibrium.
XII. Definition of reaction rate, rate constants, order, and molecularity of a reaction.
XIII. Integrated rate laws.
XIV. Reaction rates and temperature.

Basic Bibliography

1) LEVINE, I. **Physical Chemistry**
2) ATKINS, P. W. **Physical Chemistry**
3) CHAGAS, A. P. **Termodinâmica Química**, Ed. Unicamp, 1999