

Formulation processes

1. **Course number and name:** 020PFOCS5 Formulation processes
2. **Credits and contact hours:** 4 ECTS credits, 2x1:15 contact hours
3. **Names of instructors:** Samar KADDAH
4. **Instructional materials:**
 - Course handouts
 - In-class problems

5. Specific course information

a. Catalog description:

This course allows to master notions related to the formation and stability of the colloidal medium in terms of the types of interactions; and the importance of the active surface area. Students will acquire notions on the instability of dispersed media following the phenomena of creaming, flocculation, temperature, and particle size, etc. The stability of this system will be discussed by the addition of dispersing agents: part of this course deals with the type of surfactants allowing the reduction of surface tension, and the increase of the stability of the colloidal suspension. Also, this course covers basic concepts on the formation of emulsions, foam and their stability as well as the formulation in the solvent phase. In addition, this course covers basic notions of the galenic pharmacy including formulation processes such as granulation, sieving, etc.

b. Prerequisites: None

c. Required/Selected Elective/Open Elective: Required

5. Specific goals for the course

a. Specific outcomes of instruction:

- Define a colloidal system, and the factors contributing to the formation of this system in terms of particle size and shapes, etc.
- Analyze the physics of colloidal dispersions: Brownian movement, attractive and repulsive forces, etc.
- Analyze the factors contributing to phase rupture (instability of the colloidal medium): creaming, flocculation, sedimentation, etc.
- Study the influence of the medium on the stability of the colloidal suspension: pH, particle size.
- Study the formulation of emulsions: surfactants and their types, the HLB and HLD scale, the formation of micelles and the factors affecting the critical micellar concentration through examples.
- Study the foam formation and stability, foaming power and measurement techniques with applications.
- Study the formulation in the solvent phase through the type of solvents; solvent power through the Hansen system in 2D and 3D through application examples.
- Study coating and sieving processes

- Study galenic pharmacy: capsules, tablets, etc.

b. PIs addressed by the course:

PI	1.2	1.3	2.1	2.2
Covered	x	x	x	x
Assessed	x	x	x	x

7. Brief list of topics to be covered

- The colloidal system and its properties
- Stability and Instability of the colloids
- Surfactants and their types with applications
- Formulation of emulsions
- Foam formation and stability
- Formulation in the solvent phase
- Introduction to the galenic pharmacy