

Course title: **Principles of Colloid Chemistry** (lecture)  
Hours per week/credits 2/ ?  
The European Credit Transfer System (ECTS) is applied. Semester = 15 weeks.  
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## **COURSE PROGRAMME**

### **Interfaces**

Excess interfacial energy and its consequences (surface tension, vapor pressure and solubility of small particles, wetting phenomena).

Gibbs thermodynamics of interfaces. Adsorption at different interfaces. Adsorption isotherms, surface equation of state.

Electrical structure of solid/liquid interfaces (Gouy-Chapman theory).

### **Small particle systems**

*Dispersion colloids.* Interactions in colloid and nanosize systems. Theories of colloid stability.

*Association colloids.*

Physical chemistry of surfactants. The hydrophobic interaction. Theories of micelle formation. Mass action and pseudo phase-separation model. Ionic micellar systems.

*Macromolecular colloids.*

Conformation of the linear polymers in solution. Short range segment-segment interactions. Theta solvents. Thermo-mechanical behavior of the solid polymers.

### **Interfaces and colloid systems in external fields**

Gravitational and centrifugal field (sedimentation). Mechanical shear (rheology). Electromagnetic field (light scattering). Electrical field (electrokinetic phenomena).

Textbook recommended:

R. J. Hunter: *Foundation of Colloid Science*, Clarendon Press, Oxford, 2000.