

Modules:

physics700 **Elective Advanced Lectures**
 physics720 **Applied Physics**
 physics730 **Theoretical Physics**

Course:

Statistical physics of soft matter and biomolecules (T/A)

Course No.:

| Category | Type | Language | Teaching hours | CP | Semester |
|----------|------------------------|----------|----------------|----|----------|
| Elective | Lecture with exercises | English | 4+2 | 8 | ST |

Requirements:**Preparation:**

Advanced statistical mechanics

Form of Testing and Examination:

Oral examination

Length of Course:

1 semester

Aims of the Course:

Understanding the molecular structure and mesoscopic properties of various types of soft matter systems, in particular with regard to their role in living cells.

Contents of the Course:

Colloids, polymers and amphiphiles
 Biopolymers and proteins
 Membranes
 Physics of the cell

Recommended Literature:

J. K. G. Dhont, *An Introduction to Dynamics of Colloids* (Elsevier, Amsterdam, 1996).
 M. Doi and S. F. Edwards, *The Theory of Polymer Dynamics* (Clarendon Press, Oxford, 1986).
 S. A. Safran, *Statistical Thermodynamics of Surfaces, Interfaces, and Membranes* (Addison-Wesley, Reading, MA, 1994).
 G. Gompper, U. B. Kaupp, J. K. G. Dhont, D. Richter, and R. G. Winkler, eds., *Physics meets Biology — From Soft Matter to Cell Biology*, vol. 19 of *Matter and Materials* (FZ Jülich, Jülich, 2004).
 D. H. Boal, *Mechanics of the Cell* (Cambridge University Press, Cambridge, 2002).