

<b>Module:</b>	<b>Elective Advanced Lectures: BCGS Courses</b>
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<b>Module No.:</b> physics70d
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**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 for Participation:****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).