

# Course Package

## Soft and Biological Physics – 1A

Name module	Soft and Biological Physics - 1A
Educational programme	BSc Applied Physics
Course Code	202000717
Period	First block of the first semester (block 1A)
Study load	15 ECTS

Soft and Biological Physics			
block 1A	block 1B	block 2A	block 2B
<b>Physical Biology</b> 202001414 (5 EC)			
<b>Elective 1/2:</b>			
<b>Soft and Biological Techniques</b> 201700187 (5 EC)			
<b>Biophysical Techn.and Mol.Imaging</b> 201700187 (5EC)			
<b>Advanced Colloid &amp; Interfaces</b> 201800083 (5 EC)			

Required preliminary knowledge: Statistical Physics

Click [here](#) to view the course description of this module in our course catalogue. Please fill out the code '[201700186](#)' in the field 'Course Module/name'.

Academic year	2017
Course module/name	201700186
	<input type="checkbox"/> Also search in description
Show	<input checked="" type="radio"/> All course modules
	<input type="radio"/> Course modules for which you can register
	<input type="radio"/> Tests for which you can register
Starting block	No preference
Course type	No preference
Faculty	No preference
Organising study	No preference
Lecturer	
Participating study	No preference
Language of instruction	No preference

These packages are not fixed. They serve as an example of what you are able to select. It may be possible for you to make changes if you would like to do so.

The modules are tentative and subject to change. Please check [the website](#) regularly.

Please note: for the second block of the first semester (1B), check the modules taught by the study programme [Biomedical Technology](#) (M10 BMT, 1B Imaging and Diagnostics.)

### **Course description**

Soft and Biological Physics contains 3 parts: Physical Biology(PB), Advanced Colloids and Interfaces (ACI) and Soft and Biological Techniques (SBT).

PB covers the study of systems where physical interactions occur close to room temperature. A prime example includes liquid electrostatics, whereby charged objects (colloids, DNA, ...) can be manipulated with electric fields (for characterisation, sequencing, ...). So too at the cell level, ion channels within the cell membrane control the flux of ions into and out of the cell. These examples depend on diffusion, migration, hydrophobicity, and electrostatic screening, drawing on knowledge from statistical physics, electrodynamics, fluid physics, and solid state physics.

ACI is a theory course which covers a variety of chemical and physical interactions between materials, and studies their consequences for the behavior of colloidal particles (e.g. stable (dis)ordered suspension, or flocculation into aggregates) and the wetting of surfaces. Topics include Interfacial Tensions and Wetting, Van der Waals Interactions, Acid-Base Interactions, Colloidal Interactions and stability: electrostatic, DLVO and polymer-induced interactions.

SBT will also provide you with hands-on experimental experience of a variety of soft matter laboratory techniques, linked to the SBM and ACI theory courses, e.g. particle tracking, electrowetting, interfacial tension, protein unfolding and FRET.

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