

<b>Name Module:</b>	Soft and Biological Physics
<b>Language:</b>	English
<b>Module Coordinator/contact person:</b>	James Seddon
<b>Specific prerequisites:</b>	None
<b>Participating study:</b>	Applied Physics
<b>Starting block:</b>	TN MOD09

**Theme:**

Soft Matter Physics covers all aspects of physical systems that are governed by potentials close to thermal energy. Traditionally, this includes polymers, colloids, and liquid crystals. More recently, certain granular flows joined the club. Today it means soft and squidgy things that ooze. You will learn how bacteria swim, how to sequence DNA, and even how pinching your arm leads to a neural response (“ouch”). You will consider the manipulation of wet, ionic things (e.g., HIV in blood, molecular motors, ion channels, ...), with electric fields and electrodes. Electrodes = quantum mechanics & solid state physics; fields = electrodynamics; thermal energy = statistical physics; wet = fluid dynamics. And how do you even measure something close to thermal energy without changing the result? This is ultimate physics at its best. You have never sat a module like this and you will feel incomplete without it.

**Leading goals:**

- To be able to pick up a copy of *Science* or *Nature* and understand (= read, understand, dissect, analyse, and review) any article in the field of soft matter physics.
- To apply this to your research in Soft Matter Physics in your BSc, MSc, and/or PhD.

**Module breakdown:**

Soft and Biological Matter (SBM) – 5 EC – lecture course

Soft and Biological Techniques (SBT) – 5 EC – practicum

Biophysical Techniques and Molecular Imaging (BTMI) – 5 EC – lecture course

**Assessment:**

SBM: Written exam + presentation of literature

SBT: Lab book + questions

BTMI: Written exam + presentation of literature