Biomechanics

Biomechanics is the science that studies the action of mechanical forces on a body at the macro and/or micro scales. An introduction to the medical context will be addressed by a clinician experienced in clinical research activities. Courses on mechanical characterization, tissue and biological fluid modelling and fluid/structure interactions will be delivered by teacher-researchers specialized in the field. Within the framework of a project, various scientific articles directly related to the courses will be offered to the students in order to enable them to understand the challenges and methodology in R&D. Finally, a practical work that will be a concrete application of the courses will be proposed. Class topics: Introduction – Anatomy & Physiology – Mechanical behavior of living tissues – Biofluid models & rheology – Biological fluid flows at macro and micro scales – Fluid/biological structure interactions – Numerical modeling with COMSOL.

On line ressources:

An introduction to biomechanics - J.D. Humphrey et al, Springer 2nd Edition, 2015

Fundamentals of Biomechanics - D. Knudson, Elsevier 2nd Springer, 2007

Cardiovascular biomechanics - P.R. Hoskins et al , Springer 1st Edition, 2017