

From **June 5**, 2023, to **June 7**, 2023, in room **C**,

Professor Grigory **Panassenko**

Université Jean Monnet – Saint Etienne - France

will hold a PhD course entitled:

**"Multiscale mathematical modelling in engineering, biology, and medicine".**

#### Lecture schedule

- June 5, 9 a.m to 12 noon and 2 p.m. to 5 p.m.
- June 6, 9 a.m. to 1 p.m.
- June 7, 9 a.m. to 12 noon and 2 p.m. to 5 p.m.

#### Programme

1. Derivation of the main equations of mathematical physics used in the mathematical modeling and boundary and initial conditions: diffusion-convection equation, viscous flows equations (Navier-Stokes equations, Stokes equations, non-Newtonian flows), elasticity equations, visco-elasticity equations.
2. Recalling functional analysis theorems and brief mathematical analysis of equations of mathematical physics (weak formulation, existence, uniqueness and stability of the solution, i.e., well-posedness). Brief review of numerical methods.
3. Thin structures. Asymptotic analysis for partial differential equations in thin structures. Method of partial asymptotic decomposition of the domain for the diffusion equation and for flows in tube structures. Applications in biology and medicine.

Prof. Antonio Gaudiello

on behalf of Biagio Cassano, Emma D'Aniello, Giuseppina di Blasio, Adele Ferone, Antonio Gaudiello, Benedetta Pellacci, and Giovanni Pisante.