This course will be primarily devoted to **diffusion on networks** of new products/epidemics/..., as described by the discrete Bass and Bass-SIR models. This is a new research area, where most of the progress has been done during the last 10 years. Our approach will be to analyze these models using a variety of analytical methods. We will also study some general methods for mathematical models (dimensional analysis, averaging principle) and analyze models in chemical kinetics, epidemiology (SIR), queueing theory, and nonlinear pricing (optimal three-part tariff plans, reference-price effects).

**Prerequisites:**
- Ordinary differential equations 1
- Numerical analysis 1

**Course attendance is mandatory**

**Final grade:**
- 20% HW assignments
- 80% Final project