

**Course name: Mechanisms of evolution** (USOS Code: B-BMED.2008Eng)

**ECTS:** 4

**No. of hours:** 45 (30 lectures + 15 classes)

**Course coordinator:** Dr hab. Marek Kucharczyk, prof. UMCS

**Prerequisites:** General knowledge of biochemistry and genetics

**Course description:** Macroevolution: nature of selection and adaptation, levels of selection; adaptations: evolutionary analysis of forms and functions; conflict and interaction; evolution of interaction: coevolution of enemies and prey, mutualism, evolution of competitive interactions; biological altruism and its evolution; evolutionary aspects of reproduction, sexual reproduction and reproductive systems; sexual selection; the concept of species; speciation by selection, adaptive radiation, extinction; evolution of higher systematic units. Microevolution - relations between genome and phenotype; mechanisms underlying the formation of traits; outline of the "path" from genes to phenotype; influence of the environment on the formation and polymorphism of traits; genesis of genetic variation - DNA variation, mutations, mechanisms affecting the level of variation, mutation-selection equilibrium; evolution of genes and genomes; genetic polymorphism and its significance for evolution; epigenetics and evolution.

**Recommended literature:** Futuyma D.J. 2017. Evolution (4th ed.). Sunderland, MA: Sinauer Associates; Stearns S., Hoekstra R. 2005 Evolution (2th ed.) Oxford University Press.