Course Summary
Course Title: **MODELLING OF ECOLOGICAL SYSTEMS AND PROCESSES**
Credits: 1.5 (54 h.)

Course objective
Acquirement of theoretical knowledge and practical skills in the field of modelling the environmental systems and processes.
Course tasks
Familiarization with the models aimed to determine the state of ecosystems and processes, and methods of their construction and research, which are necessary for decision-making on managing the anthropogenic impact on the atmosphere and aquatic ecosystems.

Course outline
Objects, methods and aims of modelling ecological systems and processes. Features of wildlife ecosystem models. The construction of multiple-factor regression models. The construction of models based on complete factorial experiment. Stages of simulation model construction. Aquatic ecosystem modelling. Population dynamic modelling. Dispersion models of emissions fromstationary sources. Modelling of a clearing pool and its sediment forecasting. Modelling of the emission of pollutants from the cold source. Modelling of dispersion processes and transport of dust and gas emissions from massive explosions in quarries. Modeling of population dynamics processes in accordance with the limited factors.

Learning outcomes
After completing the course students should be able to:
- use modelling approach to the ecological systems and processes;
- analyze the specificity of wildlife ecosystem models;
- construct multi-dimensional models;
- form the stages of construction of the simulation models of different objects;
- apply thedispersion modelling methods of emission from stationary sources;
- analyze the models of aquatic ecosystems;
- identify and predict the volume of sediment of the wastewater in a sewage tank;
- model the pollutant emissionsfrom the cold source using the standardized methodology;
- model the dispersion and transport of dust and gas emissions;
- analyze the processes of population dynamics taking into account various factors.

Training activities: lectures and laboratory training sessions.

End-of-the-term assessment: test.

Head of the Ecology Department,
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