***Systems Analysis and Modelling***

***B 1.2.1.7***

**Degree:** Bachelor

**Year:** 2018-2019 academic year

**Semester:** Spring

**General workload:** 3 ECTS credits, 108 hours

**Goals of the course**

To shape a systemic view of the processes that are going on in the Russian and overseas economic entities.

Course objectives are the following:

To learn the theory and methodology of systems analysis;

To learn the basic techniques of systems analysis, system decomposition method, and function modelling methodology, to acquire the skills needed to identify the key system restrictions.

**Key didactic units**

* Basic concepts and definitions of systems analysis, properties of systems.
* Models and modeling of complex systems.
* Basic systemic methodology.
* System archetypes and patterns.
* Modelling of a system with delays.
* Multi-criteria decision-making based on pairwise comparison method use.

**Place of the discipline within the curriculum**

The discipline is part of the general professional training module and is aimed at forming universal and program-specific competences.

**Upon completing the course, the students should:**

*Know:* basic concepts of systems analysis, methods of systems analysis, basic static and dynamic models of systems analysis, IDEF0 methodology, methodology of pairwise comparisons, systems archetypes and algorithms for their analysis;

*To be able:* to identify basic issues in the system, to identify the stakeholders, to build function models, to perform system decomposition, to determine the basic quantitative indicators, to develop solutions and assess them, to identify the limitations of solutions;

*To have:* knowledge of the basic systems analysis methodology used in analyzing and developing solutions of complex unstructured problems on the micro- and meso-levels using the hierarchy analysis methodology and IDEF0 function modeling.

**Course structure:** work in class: lectures and seminars; business games; independent student work; test.

**Summative assessment:** pass/fail examination