

Annotation to discipline “Mathematical modeling of systems”

Total work content of discipline learning is 3 points of credit (108 hours).

Purpose of discipline. To shape special skills and knowledge that will be enough for modeling of dynamical systems and distributed parameters systems.

After studying the discipline holder of a master’s degree has to be prepared for complex system modeling, in particular dynamical systems and distributed parameters systems.

Tasks of discipline. To grasp the existing condition of methods of complex system modeling. To become proficient in modern technologies of complex system modeling, in particular, dynamical systems and distributed parameters systems; research methods of stability of dynamical systems, methods of identification and optimization of parameters of dynamical systems. To familiarize oneself with mathematical methods, used for complex system modeling.

Main didactic units (parts).

Existing conditions of methods of complex system modeling.

Stages of complex system modeling.

Dynamical systems.

Methods of numerical integration of dynamic system equations.

Stability of dynamical systems.

Methods of identification of parameters of dynamical systems.

Methods of optimization of parameters of dynamical systems.

Methods of mathematical distributed parameters complex system modeling.

Mathematical methods, used for complex system modeling.