

ANNOTATION OF THE EDUCATIONAL COMPONENT

Synthesis of rational technological solutions

Status	Selective
Chair	Technical service and industrial machinery engineering
Teacher	Konoplianchenko Ievgen Vladyslavovych, Candidate of Technical Sciences, Assoc. Prof.
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Purpose of discipline	studying the basics of the theory of optimal design and acquiring skills in formulating optimization problems in the rational synthesis of technical objects, technological complexes and machine systems in modern production.
Main tasks	familiarizing postgraduate students with methods of setting and formulating optimization problems, using them in engineering activities to improve and optimize technological complexes and technical systems, and to acquire skills in creating innovative objects and managing them throughout their life cycle.

As a result of studying the discipline, the student must

know	<ul style="list-style-type: none">- methodological foundations of formalized description of a technological system;- principles of a systems approach to the topology of complex technological systems and its connections with the external environment;- properties of complex systems;- methodological foundations of structural optimization;- morphology of analysis and synthesis of technical solutions;- algorithm for synthesizing rational solution options.
be able	<ul style="list-style-type: none">- apply a systematic approach and take into account natural and high-tech processes when solving engineering problems and conducting research;- identify and understand cause-and-effect relationships between the studied processes and the initial characteristics of the research object, identify and evaluate influencing factors;- to conduct critical analysis, evaluation and synthesis of new scientific provisions and ideas regarding industrial mechanical engineering.- plan the creation of innovative objects and manage them throughout their life cycle.