Automation of process mechanisms design equipment
(course title)

COURSE SYLLABUS ABSTRACT

1-40 05 01 Information systems and technologies (majors in)
(speciality code and name)

1-40 05 01-01 Information systems and technologies (in designing and producing)
(specialisation code and name)

	STUDY MODE	
	full-time	part-time (shortened program)
Year	4	3, 4
Semester	7, 8	6, 7
Lectures, hours	52	12
Laboratory classes, hours	28	8
Exam, semester	8	
Pass/fail, semester	7	6, 7
Contact hours	80	20
Independent study, hours	112	172
Total course duration in hours / credit units	192/5,5	

1. Course outline

Automation of development and execution of design documentation in CAD. Working in Mathcad. Graphical construction of models of parts and mechanisms in CAD Compass 3D, Solidworks, NX. Construction and modeling of design diagrams of mechanisms. Computer implementation of dynamic mechanism synthesis.

2. Course learning outcomes

Upon completion of the course, students will be expected to

know: modern methods and methods of computer design; types and properties of structural materials used in mechanical engineering; basic performance criteria for machine parts and assemblies;

be able to: design general machine building structures with practical production of technical documentation and use of CAD; select reference literature, GOSTs, prototypes of structures during design, be able to model them in modern CAD; select reference literature, design prototypes; select the optimal materials for machine parts and use them rationally; perform calculations using classical methods and modern modeling;

possess: theoretical and experimental methods for assessing the quality and technical level of engineering equipment; methods of modern design, design and study of general-purpose parts and assembly units.

3. Competencies

AK-1 − Be able to apply basic scientific and theoretical knowledge to solve theoretical and practical problems;   AK-2 − Own system and comparative analysis; AK-3 − Own research skills; AK-4 − Be able to work independently; AK-5− Be able to generate new ideas (have creativity); AK-6 − Have a multidisciplinary approach to problem solving; AK-7 − Have skills related to the use of technical devices, information management and computer work; AK-8 − Have oral and written communication skills; AK-9 − Be able to study, improve your qualifications throughout your life; AK-10 − Use the basic laws of natural sciences in your professional activity; AK-11 − Own the main methods, methods and means of obtaining, storing, processing information using computer equipment; AK-14 − Organize your work on a scientific basis, independently evaluate the results of your work;

SLK-6 − Be able to work in a team; PK-2 Own the principles and basic skills, techniques, methods of setting up, adapting and maintaining software tools;; PK-4 Develop software tools and systems for providing automated support for solutions to professional tasks; PK-10 − Develop technical and design documentation for the created software tools for solutions to professional problems; PK-11 − Develop functional, information and other models of formalized representation of professional processes; PK-21 − Analyze and evaluate the collected data; PK-24 − Use global information resources; PK-31 − Design new and modernize technological processes that ensure the required technical and economic indicators.

4. Requirements and forms of midcourse evaluation and summative assessment

 − verbal-written: laboratory protection, test, exam.