

## **INFORMATION TECHNOLOGY AND 3D MODELIN**

(course title)

### **COURSE SYLLABUS ABSTRACT**

6-05-0714-02 «Mechanical engineering technology, metal cutting machines and tools»

«Mechanical engineering technology»

(concentration)

6-05-0713-04 «Automation of technological processes and productions»

(speciality code and name)

«Automation of technological processes and productions in mechanical engineering»

(concentration)

|   | STUDY MODE                    |              |                                  |
|---|-------------------------------|--------------|----------------------------------|
|   | full-time                     | part-time    | part-time<br>(shortened program) |
| Speciality                                    | 6-05-0714-02,<br>6-05-0713-04 | 6-05-0714-02 | 6-05-0714-02                     |
| Year  | 2                             | 2            | 2                                |
| Semester                                      | 3                             | 3            | 3                                |
| Lectures, hours                               | 16                            | 4            | 4                                |
| Laboratory classes, hours                     | 34                            | 8            | 8                                |
| Course paper, semester                        | 3                             | 3            | 3                                |
| Exam, semester                                | 3                             | 3            | 3                                |
| Contact hours                                 | 50                            | 12           | 12                               |
| Independent study, hours                      | 94                            | 132          | 132                              |
| Total course duration in hours / credit units | 144/4                         | 144/4        | 144/4                            |

#### 1. Course outline

The purpose of the discipline is to present to students the theoretical foundations and practical examples of building three-dimensional models of machine-building objects, as well as modeling the dynamics and strength analysis of machine parts.

#### 2. Course learning outcomes

Upon completion of the course, students will be expected

to know:

- methods of computer-aided design of structures and technologies;
- fundamentals of building three-dimensional models of engineering facilities;
- basic principles of solving problems of engineering analysis of dynamics and strength of machines;
- basic programming technologies in an algorithmic language;
- modern computer-aided design (CAD) and engineering analysis (CAE) systems.

be able to:

- build three-dimensional solid-state models in modern CAD systems;
- perform engineering analysis of the dynamics and strength of machines in modern CAE systems;
- creatively apply the acquired knowledge in solving problems of engineering analysis of machine-building

objects.

to possess a skill:

- skills of computer-aided design of structures and technologies;
- programming skills in an algorithmic language;
- skills in solving problems of computer analysis of the dynamics and strength of machines.

#### 3. Competencies

- to know the basic programming technologies in a high-level algorithmic language, computer-aided design software, methods of computer-aided execution of drawings and other graphic works (6-05-0714-02, 6-05-0713-04);

- master the basics of working with software applications (6-05-0713-04).

#### 4. Requirements and forms of midcourse evaluation and summative assessment

Intermediate certification includes oral defense of laboratory work and the performance of test tasks. When defending laboratory work, the student answers control questions. Intermediate certification is carried out in the form of an exam. The exam ticket includes two theoretical questions and a task related to the construction of a 3D model.

