Summary of discipline CAE/CAD Systems

The program of the course "Systems CAE / CAD» drawn up in accordance with the educational and vocational training programs for bachelor direction (specialty) 6.051003 Instrument.

Academic discipline belongs to the series "Disciplines of Professional and Practical Training"

The object of the course is setting numerical experiment and the evaluation of its results, which are the most modern instrument design in the most famous companies in the fields of mechanical engineering and instrument making, and helps to significantly reduce the cost of expenses for conducting research and development work. Numerical simulations based on CFD (Computational Fluid Dynamics) technology improves the quality of any research, particularly aimed at improving the efficiency of processes and the development of equipment, the study of processes in oil and gas, automotive and missile industries, the study of heat transfer processes processing of materials , etc.

Academic discipline based on previously studied courses, including: Fundamentals of informatics and computing, mathematical methods and models on a computer, Fundamentals of Database, Physics and others.

1. The purpose and objectives of the course

1.1. The purpose of discipline.

The aim of the course is to develop students' abilities:

? creating geometric and physical models of studied processes and phenomena both in two-dimensional and three-dimensional spaces in

? construction of structured and unstructured grids, depending on the complexity of the model;

? numerical experiment planning for steady and unsteady regimes;

? monitoring and analysis of the solutions.

1.2. The main objectives of the course.

Requires educational and professional program students after mastering discipline must demonstrate the following learning outcomes:

knowledge: the overall structure of CAD / CAE, theoretical foundations related to modeling fluid flow and heat transfer processes in complex geometrical spaces;

the ability to: create a model for the task, correct take into account all factors of influence and, accordingly, set boundary conditions, use of modern numerical methods for solving fluid mechanics and analysis of the problem, to influence the convergence of the solution to accelerate getting the result, use information correctly received as a result of numerical experiment;

experience: full setting numerical experiment, starting with the formalization model and ending with an analysis of the results.