

## **ABSTRACT**

for coursework, student Kovkrak Maksym, group XA-51  
on discipline "Numerical methods"  
on the topic of *"Solving the system of ordinary differential equations  
by the improved Euler method"*

In the course work the problem was analyzed and the means necessary for its realization were analyzed, the proposed numerical method was studied and investigated. To solve the problem, a software product was developed in the Visual Studio 2015 environment (C ++, Win32 Console Application). The program allows solving systems of ordinary differential equations up to five inclusive. The solution of the system is displayed not only in the dialog box, but also on the MS Excel sheet and in the text file. The test examples of solving systems of two and three differential equations are given.

In the second part of the work, tasks of approximation of functions were solved: the search for approximating functions (finding the coefficients of empirical and polynomial dependencies) and spline-interpolation. The obtained results showed a fairly good approximation to the experimental values.