ABSTRACT

Master's Dissertation: 93 pp., 23 fig., 24 tables, 97 sources, 1 appendixes.

Relevance. In order to plan and organize the work more efficiently, various mathematical and economic methods, including scheduling theory, must be used. Now the problems of scheduling theory are of great importance in practical problems. The rapid development of technology and communication is increasingly necessitated by the preparation of calendar plans related to the functioning of the industrial service sector of industrial enterprises, education, transport, etc. Problems in scheduling theory include the study of the computational complexity of problems, the development of approximate, heretical or exact algorithms for solving problems. However, in practice combinatorial algorithms are very limited in dimension.

So, it is important to develop software for scheduling tasks with parallel devices with the same performance, which will help to reduce the total penalty for violation of the directive deadline.

Relationship with working with scientific programs, plans, topics. The work was performed at the Department of Automated Information Processing and Management Systems of the National Technical University of Ukraine «Igor SikorskyKyiv Polytechnic Institute» within the topic « Effective methods for solving the problems of scheduling theory» (No. DP 0117U000919).

The purpose of the study is to increase the efficiency of the production systems by drawing up optimal or close to it the time-based criteria of work plans with minimization of the total advance of the schedule date when performing works by parallel devices.

To achieve this goal, you must complete the following **tasks**:

- perform an analytical review of existing scheduling systems, scheduling models, scheduling methods, production and operational scheduling systems;
- develop a method for solving the task of scheduling and minimizing the total advance of the schedule date when performing works with parallel devices;
- investigate the effectiveness of the developed method of scheduling;

– develop software implementation of the proposed method;

– carry out an experimental study of the results obtained.

The object of study is the operational and calendar planning of enterprise.

The subject of the study is the job-shop scheduling with minimization of the cumulative advance of the directive term when performing work using parallel devices

Scientific novelty of the obtained results

The algorithm of scheduling of work execution at the enterprise using the model of the theory of schedules was developed. Using the created algorithm allows to increase efficiency of work execution by minimizing the total advance and maximizing the moment of the beginning of the work execution.

Publications. The materials the work were published in the abstracts in the 14th International Scientific and Practical Conference "MODS 2019" and materials of the Third All-Ukrainian Scientific and Practical Conference of Young Scientists and Students "Information Systems and Technologies of Management" (ISTU-2019). The article of the master's dissertation was published in the journal "Informatics and mathematical methods in modeling".

PARALLEL DEVICES, SCHEDULE, SCHEDULE DATE, MAXIMIZING THE MOMENT OF THE BEGINNING OF THE WORK, MINIMIZING OVERALL ADVANCE.