IV. DIDACTICS

PATTERN OF STUDENTS' KNOWLEDGE ASSESSMENT UNDER THE CONDITIONS OF DISTANCE TEACHING OF TECHNICAL SUBJECTS

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The educational process is a collective multi-criterial activity as based on different spheres of natural sciences, social sciences, economic sciences, humanities and engineering sciences [1]. The distance teaching and assessment process at higher educational establishments of professional training of engineering staff creates certain difficulties for the process of right assessment of knowledge gained. Such difficulties are conditioned by the lack of possibility for direct monitoring of the development and assessment process, but this may entail defrauding of the results. However, the challenge mentioned may be settled by using certain mathematical patterns for knowledge assessment, which are based on an ongoing process that comprises any and all tasks, curricular activities, knowledge shown and results achieved.

We define the teaching and assessment process

$$E = \{TP, P, L, C, F\},$$

where TP - contents of the teaching process; P - realization of practical works; L - realization of laboratory works; C - current assessments; F - final assessment.

The dynamics of the teaching and assessment process is defined by the following equalities:

$$\begin{cases} dp = (TP \cap P(t))dt;\ dl = (TP \cap L(t))dt; \\ dc = ((TP \cup P \cup L) \cap C(t))dt;\ df = ((TP \cup P \cup L) \cap F(t))dt. \end{cases}$$

The results of knowledge assessment are calculated as correlated with implication factors k_p, k_1, k_c, k_f from expression $Q(E) = (k_p p + k_l l + k_c c + k_f f)$ for time interval $[0, T]$, where

$$\begin{cases} p = \int\limits_0^T (TP \cap P(t))dt;\ l = \int\limits_0^T (TP \cap L(t))dt; \\ c = \int\limits_0^T ((TP \cup P \cup L) \cap C(t))dt;\ f = \int\limits_0^T ((TP \cup P \cup L) \cap F(t))dt. \end{cases}$$

References:

1. M.G. Lodico, D.T. Spaulding, K.H. Voegtle. *Methods in Educational Research. From Theory*