VIRTUAL LABORATORY WORK OF THE RESISTANCE OF MATERIALS COURSE

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The most important thing for a future design engineer is to acquire deep theoretical knowledge in the field of construction and the ability to use it in their professional activities. But, without practical skills, it is difficult to understand the theoretical material, especially in remote mode.

Nowadays, students need to learn a lot of material on their own due to the reduction of modern programs. Therefore, in these conditions, it is most appropriate to use electronic and virtual educational materials that reflect program questions, on the basis of which it is possible to learn the basics of the mechanics of a deformed body - the resistance of materials.

Laboratory work is an integral part of the educational component of resistance of materials. So, for example, the constants included in the calculation formulas (moduli of elasticity, Poisson's ratios, limits of proportionality, fluidity, strength, temporary resistance to rupture, etc., etc.) are established only based on the results of experiments. Hypotheses and assumptions underlying many formulas require experimental justification. Model and full-scale tests are of great importance, ensuring the reliable performance of structures.

At the same time, due to physical wear and tear of the equipment, most of the laboratory work has to be done in demonstration mode, which naturally reduces the quality of teaching. In addition, in many cases, students are only passive observers of the testing process, and the rapidity of experiments (experiments) does not allow them to follow the changing parameters.

The Department of Resistance of Materials develops and implements virtual laboratory works that simulate the deformation of experimental samples and models under various influences and are implemented in the educational process.

The advantages of virtual laboratory work include: the possibility of multiple repetitions of tests in order to focus attention on individual details of the experience; independently manage load processes; carrying out comparative tests; testing students on the subject of laboratory works; availability of a journal (reporting form) from each laboratory work.