

PROFESSIONAL APPROACH TO TEACHING OF ELEMENTS OF PROBABILITY THEORY FOR STUDENTS OF ECONOMICS

Nishonov T.S.

*Nishonov Tulanmirza Soyibjonovich - Senior Lecturer,
DEPARTMENT OF MATHEMATICS, ANDIJAN STATE UNIVERSITY,
ANDIJAN, REPUBLIC OF UZBEKISTAN*

Abstract: *the article examines the process of developing the practical and professional competencies of students majoring in economics in higher education through the study of probability theory and mathematical statistics. Mathematical sciences studied by students of economics and their composition, goals and objectives are analyzed. Probability theory and the concepts of mathematical statistics are presented in a way that is understandable to future economists in an understandable language, in an interesting way, based on a practical-professional approach.*

Keywords: *probability, statistics, random event, teaching, math, probability calculation.*

Introduction. As you know, the subject "Probability Theory and Mathematical Statistics" consists of interrelated sections "Probability Theory" and "Mathematical Statistics".

Probability theory is a mathematical science that studies random experiments, that is, the laws of unpredictable experiments. Mathematical statistics is a mathematical science that draws general conclusions about random events or processes based on data obtained from the observation of these events or experiments.

At present, the subject "Probability Theory and Mathematical Statistics" is taught in various bachelor's degree programs in higher education institutions of Uzbekistan, as well as in "Higher Mathematics", "Mathematics", "Applied Mathematics" and similar disciplines. In addition, secondary schools are taught as departments of mathematics, as well as a separate section of academic lyceum textbooks.

Methodological, pedagogical and psychological aspects of preparation for professional activity in the process of teaching probability theory and mathematical statistics in the Republic: by A.S. Rasulov, Y. Abdullaev, N.M. Soatov; The importance of studying probability theory and mathematical statistics and improving the pedagogical possibilities and methods of teaching, the general structure of probabilistic-statistical knowledge, improving the interrelationships between different mathematical disciplines: I.M. Gaysinskaya, H. Ochilova, J. Kudratov, D.V. Manevich, M. Tojiev, U.X. Xonqulov; organization of practical-professional teaching of mathematics, formation of experience of solving practical-professional problems based on mathematical methods: studied in detail by J. Ikramov, U.S. Begimkulov, D.N. Ashurova, O.G. Gaimnazarov and others. Issues of improving the theoretical and scientific basis of professional competence and assessment of strategic learning objectives on the basis of adequate criteria were discussed and researched by R.K. Juraev, N.A. Muslimov, A.R. Khodjabaev, U.I. Inoyatov, K.T. Olimov, Sh.E. Kurbanov.

The results of research and analysis show that there are no recommendations for the classification of economic-professional problems and methods of solving each of the classified forms, professional development of future economists, mathematical modeling based on probabilistic-statistical methods and its scientific and pedagogical basis, importance and The incomplete disclosure of opportunities and the fact that the country's higher education institutions have now moved to a credit-modular system of education, and similar factors require the study of the development of professional competence of students in economics through the study of possible statistical content.

Main body. In the field of economics of higher education institutions from the 2020-2021 academic year began teaching such subjects as Applied Mathematics 1 (APPMAT16), Applied Mathematics 2 (APPMAT26), Statistics (STATIS6), Introduction to Econometrics (INTECON6) on the basis of credit-module system.

Applied Mathematics 2 is taught according to the curriculum approved by the Protocol No. 3 of August 14, 2020 of the Coordinating Council of Educational and Methodological Associations in the field of higher and secondary special, vocational education. This subject is taught in the following areas: 5230100-Economics (by industries and sectors), 5230200-Management (by industries and sectors) and others. The subject is taught in the 1st year in the 2nd semester for a total of 180 hours, including 32 hours of lectures, 36 hours of practical training, 4 hours of certification and 108 hours of independent study. This subject consists of 6 credits.

The purpose of teaching science is to learn the basics of mathematical concepts applied in all areas of economics. We know that problems in economics are first translated into the language of mathematics and then from mathematical language into algebra. As a result, their algorithms are created to solve economic problems.

Tasks of science:

- to study the role of mathematics in economics;
- be able to solve simple problems related to linear algebra, analytical geometry, mathematical analysis, probability theory and mathematical statistics;
- be able to apply mathematical methods appropriate to the type of problem;

- teaching logical thinking;
- Teaching to create a mathematical model of economic problems.

Although Applied Mathematics 2 is a new subject in the curriculum, its sections and topics are the main sections of mathematics, especially Probability Theory and Mathematical Statistics.

The topics of this section are given in the sample science program as follows:

- Topic 1. Events and their probabilities.
- Topic 2. Space of elementary events.
- Topic 3. Freedom of events and the simplest formulas.
- Topic 4. Bernoulli scheme and limit theorems.
- Topic 5. Random quantities and their distribution laws.
- Topic 6. Random quantities in general. Distribution function.
- Topic 7. Numerical characteristics of random quantities.
- Topic 8. The law of large numbers and the central limit theorem.
- Topic 9. Elements of mathematical statistics.
- Topic 10. Elements of correlation theory.

It will be useful to explain the above topics to students of economics in the process of theoretical and practical training through problem situations and their solutions that will be needed in their professional activities. However, for the use of probability theory and mathematical statistics in practice, there are approximately the following standard questions about the calculation of probabilities in many literatures:

-The box has 10 details, 4 of which are painted. 4 details were taken for the risk. Find the probability that all the details obtained are painted;

-5% of the balls in the container are red and 15% are blue. Find the probability that a single ball taken from the container is not blue;

-Find the probability that the sum of the points scored in two games is 9.

In such cases, the condition of the matter is not only a little boring, but also of little practical importance. In fact, even though such issues later become the basis for larger practical problems, probability theory and mathematical statistics can initially give students the impression that they are engaged in unnecessary activities such as coin tossing, hasty throwing.

Prospective economists need to use information from Probability Theory and Mathematical Statistics in practical lessons that may interest or motivate students to study the subject. It is advisable to give new questions that reflect the teacher's personal approach. Giving the same questions to everyone is also less self-justifying.

For example, the following questions can be asked:

Interesting issues:

1. Find the probability that the word TULANMIRZA will appear again when the letters in the word TULANMIRZA are randomly changed (let everyone write their name instead of TULANMIRZA).

2. The letters TULANMIRZA are written on 10 balloons in the first box, and the letters NISHONOV are written on 8 balloons in the second box. When you get 3 balls at risk from the first box and 2 balls at risk from the second box, find the probability that it is possible to form the word ROMAN from the letters on the balls. find the probability that it is possible to form a word that makes sense out of the letters above, i.e., let the student create a problem and work on it himself).

3. The 11 balloons in the box have the letters CORONAVIRUS written on them. Find the probability that the word VIRUS is formed on the balls when 5 balls in a row are taken from the box.

4. Barcelona and Real Madrid football clubs are equally strong teams. Find the probability that Barcelona will win 4 times in their 4 match against each other.

Career-oriented issues for future economists:

1. One of the most difficult problems in studying the market is that consumers refuse to answer questions or if the survey is conducted in residential areas, they are not at home at this time. If the respondent (respondent) is at home, the probability of answering the questions is 0.94 and the probability that he is at home is 0.65. Evaluate the percentage of completed questionnaires based on this information.

2. The probability that a company building terminals for airports will enter into a contract with country A is 0.4, and the probability of concluding a contract with country B is 0.3. The probability of concluding an agreement with both countries is 0.12. What is the probability that a company will enter into a contract with at least one of these countries?

3. Some large stores (supermarkets) have a hidden "electronic eye" to determine the number of customers entering it. If two customers enter the supermarket in a row, the "electronic eye" has a probability of accounting for the first of them is 0.98, the probability of accounting for the second is 0.94, and the probability of accounting for both is 0.93. Find the probability that the device will account for at least one of the two customers who come in series.

4. The firm's marketing department is conducting a survey to find out what consumers think about a particular type of product. In the study area, 10% of the population consumes the products the firm is interested

in and is able to make assessments based on them. The firm randomly selects 10 people from the population in the study area. How likely is it that at least one of them will be able to reasonably evaluate the product?

Discussion and Conclusion. Assignment of such questions during the lesson and for independent study after the lesson will increase the students' interest in this subject and develop the skills to apply it in their future activities.

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