

COMPLETION OF THE COURSE PROJECT ON THE SUBJECT " MACHINE DETAILS"

Nazarov Asror Allanazarovich
Raximov Jura Suyunovich
Radjabov Mansur Rustamovich
Tursunov Shavkat Serabovich
Sharipov Shuhrat Pulatovich

Karshi Engineering Economical Institute, UZBEKISTAN

Abstract: The course project is designed to strengthen, systematize, generalize the knowledge gained by the students during lectures, laboratory and practical classes, to formulate skills, qualifications and necessary competences, and to use them for the complex solution of professional issues in the professional activity of innovative engineering.

Keyword: innovation, course project, aggregation, fan, technology, drive unit, education.

Introduction.

As noted above, the task of training specialists in the professional activity of innovative engineering can be solved on the basis of modern methodological approaches and educational methods, which have recently been achieved on the basis of universal education of Sciences. This is done visually and efficiently, in particular, in the process of completing the course project on the subject of "machine details".

The methodologies we offer 5320300-technological machines and equipment will contribute to the development of the following skills from DTS and qualification requirements to the professional activities of bachelors in the field of Education:

from professional requirements:

Design and construction activities:

- development of project and program documentation;
- formation of skills for determining the working parameters and working capacity of technological machines and equipment;
- develop the skills of applying modern paradigms and methodologies, instrumental and computational tools in practice in accordance with the specialization of preparationtiradi.

The course project is designed to strengthen, systematize, generalize the knowledge gained by the students during lectures, laboratory and practical classes, to formulate skills, qualifications and

necessary competences, and to use them for the complex solution of professional issues in the professional activity of innovative engineering. The implementation of the course project is one of the main and compulsory forms of education in the general professional disciplines, it trains creative technical thinking, intellectual labor culture, teaches independent work in the educational sphere. It is precisely in the execution of the course project that the main element of the creative approach - the activity is involved. This is exactly the subject of the science of "machine details" - a science of extensive coverage analysis, synthesis and general law of machine design, since it allows the creative application of knowledge in the process of solving unfamiliar issues.

The task of the educational process of a higher educational institution is not only to provide educational and scientific information. Rather, the formation of professional qualities and the development of intellectual abilities are of great importance in the training of modern engineers. The training of future engineers on such a basis is carried out by increasing their scientific and professional training, as well as teaching the subjects that provide training.

It is known that the course project is regarded as an integral part of the learning process and it performs three inseparable functions: didactic, developmental and educational. The didactic function of the educator-the future innovation in the students is manifested in the formation of skills and skills of obtaining complex echa of professional issues in engineering activities, the application of knowledge. Developing function-develop creative potential in successful implementation of future innovation engineering activities in students, as well as the ability of future engineer to design, analyze and synthesize technical thinking, spatial imagination and machine details. Educational function-develop the ability to work in a culture of intelligent labor, in a team, in a variety of tasks, including leadership positions, take a responsible decision independently and protect it on the basis of arguments and evidencetiradi.

In our research work, 5320300-technological machines and equipment direction of education in order to develop certain skills related to research, design, use and service, production-technological and organizational-managerial activities, presented in the DTS and qualification requirements, we developed the methodology of course project implementation on the subject of" machine details "in support of" Veer " (Elpigich) technology from innovative educational technologies.

Description of the technology "**Veer**". This technology is complex and multifaceted, aimed at studying problematic topics.

The essence of technology is that the bunda is given a single piece of information on different branches of the subject. For example, pros and cons, advantages and disadvantages, benefits and losses are determined.

This interactive technology allows students to successfully develop critical, analytical and clear logical thinking, as well as to express their ideas, thoughts in written and oral form in a concise manner, as well as to protect it.

- The technology "Veer" is aimed at the active work of small groups, each participant and groups in general, which discuss some branches of the general topic.
- The technology "Veer" is at different stages of studying the subject:

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- in the beginning - free activation of their knowledge;
- in the process of studying the subject - deep knowledge and understanding of its basics;
- at the stage of completion - the acquired knowledge can be applied in order.

Basic concepts that you will encounter in Veer technology:

With the aspect (point of view), the subject, phenomenon, concept are checked.

Advantage-superiority in comparison with something, privilege.

Virtue is a positive quality.

Defect-imperfection, inconsistency with rules, criteria.

In addition to education, the technology "Veer" has an educational character:

- skill of working in teams, groups;
- skill to discuss problems, situations from different perspectives;
- ability to find compromising decisions;
- respect for the opinion of others;
- kindness;
- creative approach to work;
- activity;
- ability to concentrate attention on the problem also allows the formation of such qualities as mastery [33, 45-p.].

The course project is carried out by the students themselves independently, individually, in consultation with the leader, based on the assignment given on the option. In the course of the course project, students: Higher Mathematics, Physics, Theoretical mechanics, Informatics and Information Technology Sciences in mathematical and Natural Sciences; performs in general scientific disciplines: Materials Science and construction materials technology, material resistance, drawing geometrics and engineering graphics, machine theory and engineering, self-reliance on the knowledge and skills acquired in the subjects of standardization and technical measurements.

Based on Veer technology, depending on the number of students in the group, it is divided into several subgroups and divided into separate sections in the assignment of the course project into small groups. In addition to the individual implementation of the course project, students conduct research on the topic chosen in small groups.

In the group we divide 27 students into 9 subgroups. In each small group, 3 students are a team and work on their own assignment. At the end of the semester, before the defense of the course project, each small group gives a presentation on the results of the assignment given to them. The materials of the presentation will be discussed with the participation of the students of the group. Students who

actively participate are encouraged. Each section, which must be completed on the assignment of the course project, is distributed in groups. For example, let the group have the task of completing the project on the topic "design of a conveyor belt with a two-stage cylindrical wheel reducer". The course project requires the effective use of scientific, educational, educational-methodical tools, modern programs of Information Technologies, advanced foreign experience.

The first group carries out research in accordance with the results of the analysis of the schemes given in the assignment, the study of conditional marking in the kinematic and technological schemes of the Lent conveyer proceedings on the basis of the relevant regulations and structural normative documents, the thorough study of the mode of operation of the proceedings, the choice of electrodvigatel, the.

The second group is engaged in the design and verification calculations of the mechanical transmission of the open type in the structure of the institution. Each subgroup can receive the results of calculations in the previous sections from the calculations of one of the optional group members in the process of completing the task. During the semester, students also perform their individual assignments in parallel.

Due to the conditions of operation, mechanical transmission can be in an open or closed form. The open type mechanical extension type can be optional chervyakli, gear, chain, belt and other round, as shown in the instruction. The students of this group will conduct research on the types, function, advantages and disadvantages of open transmission, materials used in their preparation, as well as checking their consistency, comparing the computational values according to the standard, making the most appropriate decisions, that is, choosing the type of material with high efficiency and quality, depending on the working conditions.

Given that mechanical transmissions running in an open form do not have a constant lubrication system, the materials are checked for heat resistance, brittleness, vibration, bikrity, reliability and durability. Students will analyze local and foreign literature in the course of their research and choose material based on industry standards. On account of increasing the quality of the materials, they will learn to create structures that meet the modern requirements of the technological equipment being designed, taking into account the operational requirements, providing for the compactness of the dimensions of the bill of lading, long-term performance, and will develop specific proposals in this regard.

The third group will carry out research on the design and verification work of the closed transmission within the institution. Studies the types, function, place of use, advantages and disadvantages of closed joints, the materials used in their preparation, the causes of their failure, the methods of eliminating defects and other related materials. They give their proposals on studying the assignment, connecting them to their chosen specialists, searching for problematic situations, finding modern and fast solutions to the problem-solving.

The fourth group studies the types of Valence valves, their materials, design and inspection calculations, formation of Valence construction, calculation and design methods of Valence, as well as the requirements for them. The use of foreign literature in the formation of the design of shafts, the analysis of problems associated with shafts and arrows in production, the search for, the analysis

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of scientific research work carried out in this area, the compilation of casings on the subject are required. In addition, it will be desirable to carry out work on the automation of the process of designing shafts and arrows.

The fifth group studies the work that will be carried out in the first and second stage of laying the details of the reducer in the drafting proceedings in a sketch. Here, based on the values obtained as a result of the design calculations, the initial sketches are drawn consecutively, depending on the location of the reducer details on the millimeter in the A1 physique. All the details are made and drawn according to the standard. Dimensions, permissible and put are laid down according to the relevant norms. Students are required to thoroughly analyze textbooks, manuals, relevant normative documents, foreign experiences and literature, scientific research.

Students carry out the design drawings in the following sequence:

1. Study of the main normative documents;
2. Understand the stages of design in the design documentation;
3. Learning the general rules of drawing engineering drawings;
4. To weave the rules of sketching the details of the walkthrough;
5. To examine the use of normative documents in the formation of construction, the rules for the use of literature, copying and making the most effective decisions;
6. Know the rules for collecting and separating details;
7. To know the rules for setting characters in conditional technological and kinematic schemes.

The sixth group conducts research on the selection of bearings in the jurisdiction, checking their durability, calculating their lifetime. It learns to calculate the stresses generated by the types of bearings, on the bases of the shafts and arrows and, accordingly, to choose the type of bearings.

Students will study the materials of bearings, their lubricants, types of lubricants and their physical and chemical properties, the description of the marking of bearings, their conditional designation, the details of the most modern bearings of the present. All sizes of bearings, load carrying capacity are standardized. Students will learn about the selection, installation, analysis and synthesis of the most modern, high-quality, high-performance bearings, easy to service and repair during the design process of the office.

The seventh group studies the types of compounds used in collecting the details of the proceedings, the places of their use, the advantages and disadvantages, their materials, the durability and durability of the compounds. Given that the maintenance and repair work on the details of the proceedings will be convenient and easy, it will be necessary to thoroughly discuss the correct choice of the type of combination, the rules for the selection of combinations according to the rules of interchangeability in the process of exploitation, the permissible voltages depending on their material, the data on the geometrical dimensions. It will be necessary to study the standard as well as other students on the long-term performance, corrosion resistance, lubrication issues, dimensions and durability of the compounds. Here they study the scientific and technical literature, norms

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corresponding to the assignment and make presentations to the students of the group according to the knowledge and skills they have acquired.

The Eighth group is engaged in the analysis of problems in the proceedings. In particular, the basic description of problems, their types, structure, functions, comparison with each other, the main indicators by Standard, the correct choice of problems according to the places of use, the performance of problems, the printsip, learn to calculate the forces and voltages that affect them. In the process of studying problems, it will be necessary to study the problematic situations associated with their use, draw up casings, analyze foreign scientific and technical literature.

Iz the third group students are engaged in the study of the issue of lubricating the details of the proceedings. The development of the lubrication system and the selection of lubricants rely on the knowledge and Skills received in the Tribotechnika section of the science of "machine details". It conducts research on the types of oils, their use, function, cost-saving in the selection of the type of oil and the determination of quality oils. It is recommended to analyze scientific and technical literature, scientific research works, technical reference books on the field.

As noted above, each of the members of the small group prepared presentation materials on the end of the assignments given to them, the work done will be discussed within the group at least two weeks before the protection of the course project. When dividing tasks into groups, it is necessary to implement a differentiated approach depending on their complexity.

Conclusions and suggestions on the project. In the summary section, it is necessary to assess the importance of the project implementation on the basis of scientific, scientific and technical fundamental knowledge in the general professional disciplines aimed at solving professional issues for future professional engineering innovation activities, the conclusions about the methods used in the research and the skills formed in the calculations of designing various OMS in the Special attention will be paid to the solutions found through the creative approach.

In the process of designing, the science approach is used, since it not only imposes knowledge on the theory of machines and machines, but also requires knowledge in natural-scientific, general-scientific and special disciplines, as well as professional knowledge on the exploitation of the designed machines. In addition, it is intended for the problem, because students are faced with a complex problem of design, analysis and synthesis of a Real machine. The execution of the project is also based on the implementation of independent analysis and synthesis using personal experience. In the distribution of assignments among students, it is necessary to implement a differentiated approach, depending on their level of complexity.

Thus, a properly organized course project on the subject " machine details " will help students to systematize theoretical knowledge, use them in practice in future engineering innovation activities, develop their creative abilities, increase their creative potential in the process of complex solution of professional issues.

When called creative potential-in science and art, the discovery is understood. Creative potential is a low-flying quality, it is characteristic of talented individuals, sometimes even ordinary people make remarkable discoveries. The creative potential is also the ability to get new ones on ordinary items.

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