



საქართველოს ტექნიკური უნივერსიტეტი
GEORGIAN TECHNICAL UNIVERSITY

Approved by
Resolution № 2319 of the Academic
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Bachelor's Educational Program

Program Title

აგრონომია

Agronomy

Faculty

აგრარული მეცნიერებების და ბიოსისტემების ინჟინერინგის ფაკულტეტი

Faculty of Agricultural Science and Bio-system Engineering

Program Head/Heads

Full Professor Vladimer DOLIDZE

Qualification to be Awarded and the Extent of the Program in terms of Credits

Bachelor of Agronomy

Will be awarded by combining at least 222 credits of the education program's primary specialty and no more than 20 credits of free components if 242 credits are completed.

Language of Teaching

Georgian

Prerequisite for Admission to the Program

Only the holder of a state certificate proving complete general education, or an equivalent person who have passed the relevant unified national examinations in accordance with the rules established by the Ministry of Education and Science of Georgia, shall have the right to study at the Bachelor's Educational Program.

Program Description

The program is based on the ECTS system; 1 credit is equal to 25 hours, which includes both contact and independent work hours. The distribution of credits is presented in the program curriculum.

One semester includes 20 weeks, of which the learning process takes place over a period of 15 weeks.

The rector of the GTU issues an academic calendar before the beginning of the semester, which is published on the website.

The duration of the program is 4 years (8 semesters). Bachelor's qualification will be awarded by combining a primary specialty (at least 222 credits) and free components (at least 20 credits) if at least 242 credits are completed.

The primary specialty of the education program (222 credits) includes:

- a) foreign language component - 10 credits. At the beginning of the study, the student has the right to choose one of four foreign languages (English, Russian, German, French) and accumulate 5-5 credits during the first two semesters;
- b) elective education course in humanitarian sciences - 5 credits. (introduction to philosophy, sociology, applied psychology, adolescent and adult psychology);
- c) compulsory education courses in the specialty - 207 credits;
- d) compulsory elective education courses in the specialty - the student selects a certain number of subjects from these courses, totaling at least 20 credits.

The first semester includes five compulsory courses in the specialty and a foreign language - 5 credits for a total of 32 credits;

The second semester includes five compulsory courses in the specialty, including one elective block from which the student chooses one subject, a foreign language - 5 credits and an elective education course in humanitarian sciences - 5 credits for a total of 29 credits;

The third semester includes four compulsory courses in the specialty, including three elective blocks from which the student chooses one subject each, the elective education courses in humanitarian sciences from which the student chooses one subject - 5 credits and a foreign language - 5 credits, for a total of 30 credits;

The fourth semester includes six compulsory courses in the specialty, including one elective block from which the student chooses one subject, for a total of 31 credits;

The fifth semester includes six compulsory courses in the specialty - for a total of 30 credits;

The sixth semester includes six compulsory courses in the specialty, including one elective block from which the student chooses one subject, for a total of 30 credits;

The seventh semester includes six compulsory courses in the specialty for a total of 31 credits;

The eighth semester includes one compulsory course in the specialty and one elective block from which the student chooses one subject. It also includes free components (free elective education courses). Of these, the student chooses 4 subjects - 20 credits and a module, which, if chosen, the student will study all the subjects combined in the module; it includes as well practical training (9 weeks, 5 hours per day) for a total of 29 credits.

Detailed information about the learning process is provided in the Instructions for Managing the Educational Process at Georgian Technical University at the following electronic address.

Program Objective

The objective of the program is the preparation of a highly qualified specialist in the field of agronomy, who, under conditions of integration into the international scientific and educational space, will be able to compete in the area of agribusiness and will be oriented to the customers' needs; who will have a professional, humanitarian, social and economic education, will be able to introduce and implement the care and cultivation of food, field, vegetable, perennial crops, using modern achievements of agronomy, to obtain a high and quality yield.

Learning Outcomes/Competences (general and professional)

Knowledge and Understanding - A professional agronomist provides planning and organization of horticultural production.

The agronomist has knowledge of:

- modern methods of cultivation of field, food, vegetable, perennial crops;
- varieties, seeds, planting material
- soil and its fertility;
- fertilizers herbicides;
- agricultural machinery;

Knows:

- biological regularities of the development of the plant world;
- morphoanatomical structure of a plant and physiological and biochemical processes occurring in it;
- has knowledge about seed material and methods of its quality assessment;
- peculiarities of growing agricultural crops that ensure a quality harvest;
- about the main factors of soil formation, morphological features, composition and properties, fertility and ways to increase it;
- the need of agricultural crops for nutrients and their provision through fertilizers;
- methods and rates of fertilizer application to ensure safe and quality yields;
- has knowledge of modern farming systems, crop rotation;
- recognizes crop pests (weeds, pests, disease-inducing microorganisms) and knows methods of protection against them;

Understands:

- principles of growing safe agricultural products; and the dangers associated with the scientifically unjustified use of chemical plant protection products and fertilizers;
- causes of soil erosion, acidification, salinization and knows the methods of their control.

Ability to apply knowledge in practice - knows modern methods of growing agricultural crops. Can organize and manage the work of structures working in the agrosphere, plan and implement production processes; can assess the physiological state of a plant and determine the plant's requirements to living conditions; select agricultural machines for a specific task and develop a plan-schedule for their use; plan and implement soil protection measures; taking into account the direction of the main activity of the farm, develop a crop rotation system, determine the sequence of growing crops and agrotechnics in it; take into account the soil and climatic conditions of the field, the characteristics of crops and develop fertilizer application systems with the indication of norms, forms, methods and timing of fertilizer application;

Ability to make conclusions - to analyze the effectiveness of measures by using statistical methods (regression, correlation analysis). Forecasting and quantitative assessment of weed and pest prevalence. Given the financial and resource situation of the farm, can determine the scale of potential activities, is able to find experimental data and information in the existing literature and electronic sources and draw adequate and justified conclusions on their basis;

Communication skills - will be able to prepare a detailed written report on ideas, existing problems, and ways of solution and orally communicate information to specialists and non-specialists, creatively using modern information and communication technologies;

Ability to learn - will be able to consistently and multifacetedly evaluate own learning process, identify further learning needs, evaluate own skills, and maximally and efficiently distribute time.

Values - participating in the process of value formation in the field of agriculture and striving for their affirmation, asserting values, ethical responsibility, and values associated with the profession in all professional activities in cooperation with colleagues.

Methods of Achieving Learning Outcomes (teaching-learning)

- Lecture Seminar (group work) Practical Laboratory Practice
 Course work/Project Consultation Independent work

In the learning process, depending on the specifics of a particular study course program, the following activities of the teaching-learning methods are used, which are outlined in the relevant study course programs (syllabi): (discussion, debate, presentation, group work, etc.)

1. **Discussion/debate** – this is the most widely spread method of interactive teaching. A discussion process greatly increases the quality of students' involvement and their activity. A discussion may turn into an argument and this process is not merely confined to the questions posed by the teacher. It develops students' skills in reasoning and substantiating their own ideas.
2. **Cooperative learning** - this is a teaching strategy in which each group member is required not only to learn independently, but also to help his teammate learn the subject better. Each group member works on a problem until everyone has mastered it.
3. **Collaborative work** - using this method implies dividing students into separate groups and giving each group its own task. The group members work at their issues individually and at the same time share their opinions with the rest of the group. According to the problem raised, it is possible to shift the functions among the group members in this process. This strategy ensures the students' maximum involvement in the learning process.
4. **Problem-based learning (PBL)** - a method that uses a specific problem as the initial stage of the process of acquiring and integrating new knowledge.
5. **Case study** - the teacher discusses specific cases with students and they study the issue comprehensively and thoroughly. For example, in engineering safety it might be a discussion of a specific accident or disaster, in political science it might be a specific issue, such as an analysis of the Karabakh problem (the Armenian-Azerbaijani conflict), etc.
6. **Brain storming** - this method involves facilitating the formation and expression of as many, preferably radically different, opinions and ideas on a particular issue/problem within the theme as possible. The mentioned method stipulates the development of a creative approach to the problem. The use of the method is effective when there are 2 large groups of students and consists of several basic stages:
 - definition of the problem/issue from a creative point of view;
during a certain period of time, uncritical recording of thoughts expressed by listeners on a problem (mostly on the board);
 - definition of the evaluation criteria to determine whether the idea corresponds to the purpose of the research;
 - evaluation of the chosen ideas according to predetermined criteria;
 - through exclusion, to highlight those ideas that are most relevant to the issue;
 - identification of the idea with the highest score as the best way to solve the problem.
7. **Role-playing and situational games** - games, implemented according to pre-designed scenarios, allow students to look at the problem from different positions. This helps them to form an alternative point of view. As well as discussion, these games also develop the student's ability to independently express their position and defend it in an argument.

8. Demonstration method - this method implies a visual presentation of information. It is quite effective in terms of achieving results. In many cases, it is better to present the material to students in both audio and visual form simultaneously. The material being studied can be demonstrated by both the teacher and the student. This method helps to make visible the different stages of understanding the learning material, to clarify what students will have to do independently; At the same time, this strategy visualizes the essence of the issue/problem. The demonstration can take a simple form.

9. Inductive method - determines the form of transfer of any knowledge when, in the process of learning, the course of thought is directed from facts to generalization, i.e., when transferring the material, the process goes from the specific to the general.

10. Deductive method - determines the form of transferring any knowledge, which is a logical process of discovering new knowledge based on general knowledge, i.e., the process goes from the general to the specific.

11. Method of analysis - helps to break down the learning material as a whole into its component parts. This facilitates detailed coverage of individual issues within a complex problem.

12. Synthesis method - involves grouping separate issues into a whole. This method helps to develop the ability to see the problem as a whole.

13. Verbal or oral method. This method includes lecture, narration, conversation, etc. In the above process, the teacher conveys and explains the learning material through words, and students actively perceive and internalize it by listening, memorizing, and understanding.

14. Writing work method - implies the following forms of activity: copying, taking notes, making a synopsis of the material, composing theses, writing an abstract or essay, etc.

15. Explanatory method - is based on discussing a given issue. In the process of explaining the material, the teacher brings concrete examples, the detailed analysis of which is made in the framework of the given topic.

16. Activity-based learning - requires the active involvement of the teacher and the student in the learning process, where the practical interpretation of theoretical material is especially important.

17. Project development and presentation - during the work on the project, the student uses the acquired knowledge and skills to solve a real problem. Project-based learning increases students' motivation and responsibility. The work on a project includes the stages of planning, research, practical activity, and presentation of the results in accordance with the chosen issue. A project is considered to be realized if its results are presented in a clear and convincing manner and in a correct form. It can be done individually, in pairs, or in groups. It can also be done within one subject or within several subjects (subject integration). Once completed, the project will be presented to a wider audience.

Student's Knowledge Assessment System

The student's knowledge is assessed on a 100-point scale.

Positive grades are:

- (A)-Excellent - 91-100 points;
- (B)-Very Good – 81-90 points;
- (C)-Good – 71-80 points;
- (D)-Satisfactory – 61-70 points;
- (E)-Sufficient – 51-60 points.

Negative grades are:

- (FX) - Failed to pass – 41-50 points, which means that the student needs more work to pass and is allowed to take an additional exam once with independent work;
- (F) - Failed - 40 points or less, which means that the work done by the student is insufficient and he/she will have to study the subject again.

Fields of employment

- Individual farms;
- Cooperative farms;
- Agro-firms;
- Non-governmental organizations working in the field of agriculture;
- Existing research institutes in the field of agriculture;
- Ministry of Environment Protection and Agriculture of Georgia.

Opportunities for continuing education

Master's degree educational programs

Human and material resources needed to implement the program

The program is provided with adequate human and material resources. For additional information, please find the attached documentation.

Number of attached syllabi: 76