



School of Agricultural and Natural Sciences

Programme Title

Agricultural Sciences

Qualification Awarded

1. Master's in Agricultural Sciences in Agronomy (0101)
2. Master's in Agricultural Sciences in Food Processing Technology (0104)
3. Master's in Agricultural Sciences in Forestry (0105)

Programme Credits

120 ECTS

Language of Instruction

Georgian

Objectives of the Programme

The objective of the programme is to prepare master with high qualification, who will possess deep and systematic knowledge in agricultural science and concrete its specific fields (agronomy, forestry, food processing technology). This knowledge will enable graduates to elaborate new and original ideas. He or she will be able to conduct research independently by using modern methods and approaches. Graduates will also be able to pursue scientific-practical work or continue studying on the Ph.D. level as in Georgia as abroad.

Objective of Agronomy specialization:

Prepare a master who will have deep and systematic knowledge in the field of agronomy; ability to manage soil fertility and plant nutrition; knowledge of integrated pests management; agro-ecosystems and its main directions, achievements of agro-biotechnologies and options of use; modern scientific methods and approaches of production-certification of seed and planting materials based.

Objective of Food Processing Technology specialization

Prepare a master who will have deep and systematic knowledge in food processing technology field; will know different physical-chemical properties of food components, methods to define and identify them and their impact on the human organism; understand the importance of microbiological and chemical parameters of product quality and safety.

Master students will learn methods of food storage, physiological, biochemical, microbiological and physical processes occurring in the product during the storage; how to define quality parameters and the ways to manage the factors affecting it.



Objective of Forestry specialization

Prepare a master who will have deep and systematic knowledge in forestry; graduate will know forest maintenance – principles of protection, restoration and use of the forest; will be able to develop new, original ideas for the sustainable management and problem-solving of the forest resources, rational use of nature and its reproduction; acknowledge the ways to solve different problems.

Career Options

- Ministry of Environment Protection and Agriculture of Georgia, National Forestry Agency and its all regional divisions
- Agency of Protected Areas and its regional divisions
- State and non-state organizations monitoring food safety
- Scientific-research centres, institutes and laboratories of relevant field
- Educational organization
- Agricultural raw material processing companies
- Governmental and non-governmental organizations of agricultural profile
- Municipal greenery offices
- Botanical gardens and nursery farms
- Create own farm and become employer
- State/private consultation organizations

Admission Prerequisites

Graduates with a bachelor degree or equivalent academic degree, graduate of foreign university in accordance with the requirements of article N50 of the Law on Higher Education of Georgia.

Enrolment is carried out in accordance with the Georgian legislation, general master's exam (A type test) and university rules. It is also possible to enrol by internal or external mobility according to the Georgian legislation and university regulations.

Learning Outcomes

Upon completion graduate will develop following competence:

General Competences:

Graduates will be able to:

- carry out research independently by using latest methods and approaches;
- make argumentative conclusion based on critical analyses and synthesis;



- communicate his or her conclusions and research methods to the academic and professional audience in Georgian and foreign languages;
- use modern information and communication technologies;
- proceed scientific literature, organize the work and present it publicly;
- plan study strategy independently;
- acknowledge specifics of study process;
- evaluate own and other's attitude to the values and take part in the establishment of new values.

Specific competences:

Agronomy Specialization:

Graduates will:

- be able to assess and manage soil fertility, determine the dosage of organic and mineral fertilizers and establish their influence on the quality of agricultural crops and environment pollution;
- understand the harm caused by harmful organisms and its management theory, methodology and plant protection laboratory methods;
- know functioning of natural and artificial ecosystems, principles of natural selection and adaptation of plants, modern agro, nano and biotechnological research methods of development of new varieties and hybrids.

Food Possessing Technology Specialization

Graduates will:

- know calculation and optimization methods of agricultural raw materials and storage processes
- be able to organize food factories and apply biotechnological and physical-chemical methods
- be able implement modern mechanisms of food quality control

Forestry Specialization

Graduates will:

- know modern approaches, principles of sustainable development and theoretical and practical topics of forestry policy
- be able plan and carry out forest management and inventory independently for multipurpose use of forests
- understand the harm caused by the harmful organisms and their management theory,



methodology and plant protection laboratory methods

AGRONOMY SPECIALIZATION:

Knowledge and understanding

Graduates will have knowledge of:

- morphological, physical, physical-chemical properties of the soil that are in direct correlation and defining natural fertility ability of the soil;
- factors affecting fertility of the soil and the ways to improve it;
- integrated management of the harmful organisms in agriculture;
- area of use of gen-modified microorganisms in modern biotechnologies;
- modern scientific and practical technologies and methods of seedling production;
- genetic principles of plant breeding and methods to increase plant yielding;
- structural organization and function of plant genome of agricultural crops, methods of genome research and directions in the research of genetic resources of agricultural plants.

Ability to apply knowledge to practice

Graduates will be able to:

- improve the farm fields as on the surface as in depth; plan and implement proper actions for rational usage of the fields
- manage fertility of the soil and implement proper measures for it
- construct schemes of organic and biological fertilizer application
- apply mutagenesis in selection of agricultural plants
- apply modern technologies of soil tillage and melioration

Ability to make conclusions:

Graduates will be able to:

- prepare documentation by using field specific terminology
- make an adequate and reasonable conclusion based on experimental data and information
- collect, monitor and analyse information for problem solving and form reasonable conclusion
- prepare detailed written report

Communication skills:



- communicate with the academic and professional society by using proper terminology as in Georgian and as in foreign languages in both writing and oral forms

Ability to learn

- improve the knowledge independently according to the activities

Values

- evaluate own and others' attitude towards the values and make the contribution in implementation of new values which will lead to the development of the agricultural sector.

FOOD PROCESSING TECHNOLOGY SPECIALIZATION:

Knowledge and understanding

Graduates will have knowledge of:

- biotechnology of food products, aspects and application of modern technologies in food production
- chemical composition and quality characteristics of food, food raw materials and products
- principles of quality and safety of food products
- organizing and managing of food production factories

Applying knowledge in practice

Graduates will be able to:

- determine chemical composition and quality characteristics of food, food raw materials and products by using latest laboratory methods;
- select optimal storage parameters based on concrete variety, apply additional measures to increase storage duration of the fruit; take into account how the features of concrete variety affect storage duration and loss;
- conduct the processes in accordance with the technological rules, in case of thermal processing get the minimum energy consumption, conduct chemical processes safely and get the high nutritional value food products;
- implement quality assurance principles of HACCP in a corresponding factors.

Ability to make conclusion:



Based on the documentation and material-technical data of the quality management of the food factory graduates will be able to make conclusion how efficient the quality management is and if there is need to update the technical equipment of the factory

Communication skills:

Graduates will be able to:

- prepare detailed report on the problems and solutions, proposals and opinions in the food processing technology and deliver information for specialists and non-specialists in Georgian and foreign languages both in written and oral form;
- use modern information-communication technologies; work with informational data, programs, electronic documents in order to improve technological processes; use of computer technologies for compiling business documents / accounts.

Ability to learn:

Graduates will be able to:

- regularly develop and update the knowledge and practical skills gained during the practical work in food processing factory
- plan own study process

Values:

Graduates will have motivation to participate in the value formation process in food processing technology field and strive for their implementation

FORESTRY SPECIALIZATION:

Knowledge and understanding

Graduates will have knowledge of:

- basic principles in forestry
- modern approaches of forestry policy, concept of sustainable forestry and tools of realization of it
- importance of legislative regulations and theories in the forestry field
- legislative regulations of forests and components of forests' ecosystems
- independent certification systems, schemes and specifics of the approaches
- legislative norms of indirect use of forests
- damage caused by the harmful organism to the forest and urban green spaces
- theoretical and methodological basics of the management of damage
- practical and laboratorial topics of plant protection



- effects of harmful organisms on ecological threats

Applying knowledge to practice

Graduates will be able to:

- define objects of forestry legislation regulations (forests and components of forests' ecosystems) and select legal forms for compliance
- assess impact on environment and conduct the tasks related to the ecological expertise
- based on the concrete circumstance define proper system and scheme of certification independently
- apply principles of sustainable usage of raw material of non-wood resources
- fight against harmful diseases by integrated methods of defense
- clarify and diagnose the plant diseases
- register damage caused by the harmful organisms; plan and carry out actions against those organisms
- take soil samples in the field conditions, prepare it for analyses and interpret results of laboratory research

Ability to make conclusions:

Graduates will be able to:

- analyse ongoing processes in forests and make corresponding conclusion
- make correct conclusions and predictions during the forest certification audits or monitoring stages, based on the critical analysis of complete and incomplete information related to the certification
- evaluate condition, define priorities and make innovative syntheses of the information based on the data of sustainable forest management
- prepare report on phytosanitary condition

Communication skills:

- graduates will be able to prepare and presents reports

Ability to learn

- graduates will be able to improve the knowledge independently according to the activities

Values

- graduates will be able to evaluate own and others' attitude towards the values and make the contribution in the implementation of new values which will lead to the development of the agricultural sector.



Learning and Teaching Methods

In order to achieve the learning outcomes, the purpose of each study course is to determine the appropriate learning and teaching methods. In general, within the master's study programmes, following methods are used:

- verbal method
- discussions / debates
- demonstration method
- team-work
- case studies
- brain storming
- induction method
- deduction method
- role and situational games
- practical and laboratory studies
- analysis

The lecturer is entitled to use method that is not included in the programme. The information about the different method should be included in the syllabus.

For measuring learning outcomes formative and summative methods are used, such as: homework, tests, practical exam, presentations, discussions of performed work, project and so on. The teaching methods are defined in the syllabuses of the courses.

Students Assessment System

Student's knowledge is assessed by a score system out of 100 points. The assessment is multicomponent and meets the rules of calculating higher educational program credits, approved by the Order N3 issued on 5 January 2007 by the Minister of Education and Science of Georgia.

During the assessment of student's knowledge, all the academic staff and any invited personnel are obliged to use the above-mentioned rule. Following scheme is used to assess the knowledge:

1. **Five types of positive assessment:**
 - (A) Excellent – score between 91-100;
 - (B) Very good – score between 81-90;



- (C) Good – score between 71-80;
- (D) Satisfying – score between 61-70;
- (E) Sufficient – score between 51-60.

2. Two types of negative assessment:

(FX) Fail to pass – score between 41-50, which means that the student needs to work more and he or she is able to redeliver exam after the independent preparation;

(F) Fail – score 40 and below, which means that work done by students is not sufficient and he or she must study the course again.

During the assessment of study outcomes forming and summary assessment forms are used. These include, but are not limited to: homework tasks, laboratory work, tests, oral and written exams, presentations, essays, projects.

Study Plan (Curriculum)

The study plan consists of several components:

Component	ECTS
General Model of Agricultural Sciences	26
Obligatory specialization education	45
Practical education	8
Free elective subjects	6
Master's Thesis	35
ECTS total	120

Human and Material resources

Agricultural University of Georgia employs outstanding academic and invited personnel with successful experience (see annex) for its educational programmes.

Educational programmes are financially and materially supported. For implementation of the programmes university allocates relevant financial resources. Programmes are also supported materially. Educational programmes are taught at Kakha Bendukidze University Campus, which is equipped with all the necessary inventory and other resources needed for high quality education.