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| **Faculty of Agriculture** |

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| **“Approved”** **Rector ------------ Prof. G. Gavtadze** **Academic Board Protocol № 1. 15.09.2017** |  | **“Approved”****Dean -----------–––– Prof. K. Kintsurashvili** **Faculty Board Protocol №2. 08. 09. 2017** |

Master Educational Program

 ***Agronomy***

**Coordinator: Roza Lortkipanidze**

Doctor of Agrarian Sciences, Professor

**599 23 64 79; 577 282 854;**

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**Kutaisi**

**2017**

**Curriculum**

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| **Program Title**  | **Agroecology**  |
| **Degree Awarded**  | Master of Agrarian Science in Agroecology  |
| **Faculty**  | Faculty of Agriculture  |
| **Program coordinator/s**  | **Roza Lortkipanidze –** Doctor of Agrarian Sciences, Professor Office phone number – (0431) 27 77 66Mobile phone number – 599 23 64 79e-mail: subtropikiroza@yahoo.com |
| **Duration of the program (semester, number of credits)** | Duration of the Master educational program is 2 academic years, (4 semesters) – 120 ECTS credits (3000 hours).  |
| **Language of the program**  | Georgian  |
| **Program development and renewal date of issue;**  | Program developed in 2011-2012Accredited in April 19, 2012. Decree №82 |
| **Program Prerequisits**  |
| A master of educational program can be an applicant of having bachelor academic degree who preliminarily registers in unified national exams centre, passes the exam of the learning program (General Skills). Preconditions for taking the program include passing the exam in specialty, considering the priority subjects and their corresponding coefficients set by the university. |
| **Aims of the program**  |
| Prepare a Master of Agrarian Science in Agroecology, who will be able to describe and use conditions of protecting environment in subtropical zone, examine and make researches of soil fertility, define action ways of competitive technologies to use erosive and meliorated lands; use high profitable systems of land cultivation and ways to preserve plants; use methods to get abundant crop of high quality.  |
| **Learning results (General and Branch Competencies)****(Schedule of Learning results is attached, see attachment 2)**  |
| **Knowledge and Recognition**  | * Knows agroecological description of humid and dry subtropics of subtropical zone of Georgia.
* Knows ecological aspects of producing agricultural products and agrarian processing companies; discusses problems of producing ecologically pure products; knows ecological importance of using energetic resources, principles of agro-ecological safety and realizes the importance of ecological education for the civilization.
* Knows methods of scientific research in agriculture, describes each method, realizes the methods of the field experiments and demands for these experiments, forms different schemes of the field experiments.
* Is able to use irrigation and drying systems and systems of using lands.
* Defines ecological soil sciences as independent part of soil sciences. Shows geographical spreading of soil on the basis of soil genesis, describes soil peculiarities and fertility, explains the importance of fertility in soil sciences.
* Names and describes meliorative areas and explains dependence of meliorative arrangements on agro-economic conditions.
* Speaks about the importance of using fertilizers in agriculture; discusses economic effectiveness of using fertilizers; defines the role of fertilizers on quality and quantity of crop.
* Knows bio-energetic activators used in agriculture and realizes their role in ability of energy of seed kindling and cropping up, rising and growing of engrafted sapling;
* Is able to describe harmful insects of agricultural crops, name them and specialize the nutrition, differentiate them from helpful insects, types of multiplying insects, their relation to the environment.
* Knows the importance of education management and educational work at high schools, realizes complex notions of high school didactics, basic principles and opportunities of learning and teaching. Knows professional characteristics of a lecturer, as a teacher of a high school; is able to conduct lessons and lectures.
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| **Skill to use knowledge in practice**  | **Skill to use knowledge in practice*** Is able to group subtropical crops according to the production received from them and is able to make agro-technological arrangements practically according to isolated crops.
* Is able to differentiate ecologically pure and biologically perfect agricultural products and maintain to produce ecologically pure agro-industrial production, is able to render harmless gases by chemical methods and is able to carry out activities to protect environment from industrial gases.
* Isolates ecological groups of plants (types) considering forming environment, is able to define agro-ecological features of subtropical climate, makes schedules of field experiment, makes versions and repetitions in the experiment, fills in all necessary documents.
* Is able to use new lands, arrange drying and irrigation systems and the whole complex of arrangements against erosion.
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| **Skill to make conclusions**  | **Skill to make conclusions*** Defines soil as living area and mechanical support, reservation for seeds, water and nutritional substances and minerals.
* Uses ways to define drying and irrigation standards and works out arrangements of increasing crops.
* Is able to select ways to increase soil fertility in order to create advantageous conditions for plants.
* Is able to plan dates of fertilizing practically, its rules, norms, taking samples from diseased plants and prepare for detailed analysis, sow them in fresh crop and examine them.
* Is able to analyze and evaluate processes of protected territories on the basis of acquired knowledge, and work out plans to preserve them.
* Is able to conduct lessons and practical works considering individual and age peculiarities of students.
* Is able to estimate soils of humid and dry subtropical zones of Georgia, orographical conditions and agro-climatic index.
* Is able to analyze situations in case of ecological problems, on the basis of acquired knowledge, make a right decision and maintain to produce ecologically pure agroindustrial production considering ecological problems of processing industry.
* Estimates the level of using meliorative lands in farming; prepares soil to make arrangements of producing cereals, vine-growing, citrus growing and ither agricultural or technical crops.
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| **Communication skills**  | **Communication skills** * Is able to express opinions and make conclusions related to subtropical crops and separate branches, talk with collegues, professional people and academic staff.
* Is able to lead ecological monitoring and have communication with monitoring staff, has skill to discuss ecological problems in native and foreign languages with any interested person and branch specialists.
* Develops skills to make presentations in front of full auditory and is able to express his/her ideas in written way.
* Is able to evaluate and analyze processes at protected territories on the basis of acquired knowledge and work out preservation activities.
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| **Learning skills**  | **Learning skills** * Is able to be involved in learning process independently and work hard during learning process.
* Defines and asserts continuing or ceasing of learning process.
* Works for acquiring useful knowledge, defines professional interest for stimulating and providing continuous learning process and for developing skills for researches and pedagogical work.
* Different methods of learning process used for perceiving learning materials determined by course aims provides a Master develop learning skills and give opportunity to define necessity of the following learning.
* Will be able to sum up theoretical and practical parts, make a conclusion on the basis of acquired knowledge about necessity of continuing learning.
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| **Values**  | **Values** * Has civilian values about protecting environment and safe products and carries out arrangements to prevent ecological problems. Defines and solves ecological problems in biosphere considering green plants uniqueness.
* Talks according to conclusions of planned meliorative arrangements. Evaluates restoration processes of soil fertility; defines arrangements of regaining newly meliorated soil in industrial rotation.
* Offers alternatives of arrangements against harmful diseases and insects.
* Takes responsibility for values characteristic to professional job and acts appropriately in changeable situations, has disciplined and punctual attitude towards his/her duty, functions and responsibilities; is able to make simple financial estimates.
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| **Teaching Methods**  |
| Methods of gaining learning results are: lecture, practical work; laboratorial work; group work; work on field experiment. Learning excursion is also included, as it means describing landscape in the excursion zone according to the theme of learning courses.Students have consultations. In order to have better learning results, midterm and final evaluations are also used according to preliminarily determined criteria. See in syllabus for detailed information.  |
| **Program Structure**  |
| Peculiarities in organizing teaching process: Duration of Master Educational program is 2 academic years (4 semesters). Compulsory and elective courses, professional practice, making experimental researches, preparing Master’s work on research results are determined in Program’s study schedule. (master’s work of 30 credits means teaching course “Master’s Work”). Presenting and maintaining the work will be approved by ATSU Academic Board, Decree N112 (10/11), June 10, 2011. The work will be approved according to “Guidebook of Working out Master’s Work”. **See Study Schedule in Attachment 1.**  |
| **Criteria and evaluation system of knowledge of a student** |
| The assessment of the academic performance of students of higher education programs at Akaki Tsereteli State University is carried out by the modern indicators with the order N3 (05.01.2007), and August 18, 2016, №102/N of the Minister of Education and Science of Georgia, defined principles of Akaki Tsereteli State University academic council. The assessment system of students changed at Akaki Tsereteli State University (Decree №45 (16/17) June 30, 2017).Assessment system of educational program component includes (100 points), the specific share includes 60 points (which itself includes: a student’s active learning process during each semester – 30 points and mid-term exam – 30 points), final exam – 40 points. A student is evaluated as the following: A student’s active learning during each semester (comprises different components of evaluation) – 30 points; Mid-term exam – 30 points; Final exam – 40 points.  The student has the right to take the final exam, if his/her minimum competency is 18 points. Evaluation system includes: a) Five forms of positive assessment: A) (A) Excellent – 91% and more from maximum evaluation;B) (B) very good – 81-90% from maximum evaluation; C) (C) good – 71-80% from maximum evaluation; D) (D) satisfactory – 61-70% from maximum evaluation; E) (E) sufficient – 51-60 % from maximum evaluation. B) Two forms of negative assessment: (FX) (Administrative Fail in course for grade/could not pass) A student gets 41-50% from maximum evaluation which means, that s/he is required to work more for passing the exam, and that s/he is entitled to take a makeup exam only once through personal study; (F) (Academic Fail) – A student gets 40% and less from maximum evaluation, which means that the work done by him/her is not sufficient and s/he has to retake the course. **According to educational component of educational program, in case of adoption of FX, a makeup exam will be appointed no less than 5 calendar days after the conclusion of the final exam results*** The number of minimum points received from the makeup final exam is 15 points.
* The number of minimum points received from the makeup final exam, is not added to the final assessment received by the student.
* Points received from makeup exam is a final assessment and is added to the final evaluation of the learning component of the educational program.
* According to the assessment 0-50 points received from the makeup final exam, in the final evaluation of the educational component, the student will be evaluated the F-0 score.

**Remark:** Midterm and final (makeup) exams take place in exam center of ATSU. Evaluation criteria in particular/specific courses are determined in appropriate course syllabus. |
| **Employment Opportunities**  |
| Masters of agro-ecology can be employed at: farming industry, state departments of agriculture, natural resources, private companies and environment protection, professional colleges and high schools, at nongovernmental organization programs of environmental protection and agrarian field, in agro-ecological programs of international organizations.  |
| **Supportive Resources**  |
| **Description of material-technical base of carrying out educational program:** **A) material resource** Gaining learning results determined in program are provided by university infrastructure and technical equipment. Auditoriums and laboratories serve to carry out the program (laboratory of monitoring of soil science, melioration and agro-ecology; laboratory of land tenure and agro-chemistry; laboratory of protecting plants; agrarian scientific research centre; experimental teaching industry of Nosiri; libraries, electronic library, informational communicational technologies (providing programmed computers is adequate to the educational program)). Contracts are made with enterprises. **B) Human Resource:** Carrying out educational program of preparing a Master is provided by highly qualified staff, 20 academic doctors are engaged in educational program: 4 professors, 9 associated professors, 1 assistant professor, 6 invited professors who have experience of professional work and do scientific-research, practical and methodical works.**Academic Staff:**

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| № | Human Resource  | Academic Degree  | Occupation  | Courses determined by study schedule |
| 1 | Roza Lortkipanidze  | Doctor of Agricultural sciences  | Professor  | Applied Ecology;Hydro-ecology;Professional Practice;Master’s work in agro-ecology.  |
| 2 | Roland Kopaliani  | Doctor of Agricultural sciences | Professor  | Subtropical Agriculture;Principles of developing tea-growing.  |
| 3 | Vakhtang Kobalia  | Doctor of Agricultural sciences | Professor  | Biotechnology of plants;Selection of subtropical crops.  |
| 4 | Ketevan Kintsurashvili  | Doctor of Technical sciences  | Professor  | Ecological problems in producing agrarian production  |
| 5 | Ramaz Kiladze  | Doctor of Agricultural sciences | Associated Professor  | Protected territories, parks and gardens of Georgia  |
| 6 | Nunu Chachkhiani-Anasashvili  | Doctor of Agricultural sciences | Associated Professor | Protecting plants.Bio stimulators in agriculture.Plants quarantine.Professional practice.Master’s work in agro-ecology  |
| 7 | Emzar Kilasonia  | Academic Doctor of Agro engineering  | Associated Professor | Technologies of low energy in agro-ecology  |
| 8 | Tristan Jobava  | Doctor of Agricultural sciences | Associated Professor | Bio stimulators in agriculture. |
| 9 | Lia Kopaliani  | Doctor of Agricultural sciences | Associated Professor | Actual problems of agro-ecology;Forest crops. |
| 10 | Nino Kelenjeridze | Academic Doctor of agricultural sciences  | Associated Professsor  | Methods of scientific researches in agro-ecology;Intensive land tenure;Hydro-ecology;Environment and agricultural chemistry. |
| 11 | Maka Kubaneishvili  | Academic Doctor of agricultural sciences  | Associated Professor  | Plants protection  |
| 12 | Nato Dvali  | Academic Doctor of Pedagogical Sciences  | Associated Professor  | Pedagogics  |
| 13 | Nino Kipiani  | Academic Doctor of agricultural sciences  | Associated professor  | Plants bio-technology.Selection of subtropical cultures. |
| 14 | Ketevan Kutelia  | Academic Doctor of agricultural sciences | Assistant professor  | Protected territories, parks and gardens of Georgia |
| 15 | Neli Kelenjeridze  | Academic Doctor of agricultural sciences | Invited specialists  | Methods of scientific researches in agro-ecology;Intensive land tenure;Environment and agricultural chemistry. |
| 16 | Alexander Chapichadze  | Academic Doctor of agricultural sciences | Invited specialists  | Bio stimulators in agriculture  |
| 17 | Dashniani Thea  | Academic Doctor of Philology  | Professor  | Branch Russian language  |
| 18 | Alavidze Maia  | Academic Doctor of Philology |  | Branch English language  |
| 29 | Khvedelidze ketevan  |  | Professor  | Branch French language  |
| 20 | Iremadze Maia  | Philologist  | Professor  | Branch German language  |

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**Attachment 1**

**Study Schedule 2017**

**Program Title: Master Educational program “Agroecology”**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Course  | Course code  | Credit  | Number of hours  | l/pr/lab/gr | Semester  | Preconditions  |
| Total  | Contact  | Ind.  | I | II | III | IV |
| Local  | Midterm and final exams  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 1 |  |
| 1 | Subtropical agriculture  |  ALM0010 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 | 5 |  |  |  |  |
| 2 | Ecological problems in producing agrarian production | ACM0250 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 | 5 |  |  |  |  |
| 3 | Actual problems of agro-ecology | ASM0030 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 | 5 |  |  |  |  |
| 4 | Methods of scientific researches in agro-ecology | ASM0020 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 | 5 |  |  |  |  |
| 5 | Technologies of low energy in agro-ecology | ADM1012 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 | 5 |  |  |  |  |
| 6 | Pedagogics  | PPM0480 | 5 | 125 | 45 | 3 | 77 | 2/1/0/0 |  | 5 |  |  |  |
| 7 | Applied Ecology  | ASM0030 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 |  | 5 |  |  | 2;3;5 |
| 8 | Intensive Land tenure  | ASM0040 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 |  | 5 |  |  | 2:3;5; |
| 9 | Hydro-ecology  | ASM0070 | 10 | 250 | 90 | 3 | 157 | 2/4/0/0/ |  |  | 10 |  | 3;7;8 |
| 10 | Environment and agricultural chemistry | ASM0060 | 5 | 125 | 45 | 3 | 77 | 2/0/1/0 |  | 5 |  |  | 1;3; |
| 11 | Plants bio-technology  | ASM0050 | 5 | 125 | 45 | 3 | 77 | 2/0/1/0 |  |  | 5 |  | 1;2;3 |
| 12 | Plants protection  | ASM0080 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 |  |  | 5 |  | 1. |
| 13 | Bio stimulators in agriculture  | ASM0090 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 |  | 5 |  |  | 1;10; |
| 14 | Protected territories, parks and gardens of Georgia | ALM0020 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 |  |  | 5 |  | 1;3;7; 9 |
| 15 | Branch English language  | HEM0701 | 5 | 125 | 45 | 3 | 77 | 0/3/0/0 | 5 |  |  |  |  |
| Branch French language  | HSM0990 |
| Branch German language  | HSM0921 |
| Branch Russian language  | HFM0850 |
| **Elective**  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | Forest crops  | ALM0031 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 |  |  | 5 |  |  |
| Principles of developing tea-growing | ALM0191 |
| Plants quarantine  | ASM0101 |
| Selection of subtropical cultures  | ASM0211 | 1/1/1/0 |
| 17 |  Professional Practice  | ACM0100 | 5 | 125 | 45 | 3 | 77 | 0/0/0/3 |  | 5 |  |  | 1;2;3;4;5 |
| 18 | Master’s work in agro-ecology  | ALM0230 | 30 | 750 | 40 | 3 | 707 | 0/0/0/4 |  |  |  | 30 | 1-18 |
| **Total**  |  | **120** | **3000** | **850** | **54** | **2096** |  | **30** | **30** | **30** | **30** |  |

**Attachment 2**

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| **№** | **Course**  | **Competencies**  |
| **Knowledge and Recognition**  | **Skill to use knowledge in practice**  | **Skill to make conclusions**  | **Communication skills**  | **Learning skills**  | **Values**  |
|  |
| 1 | Subtropical agriculture  | **×** | **×** | **×** | **×** | **×** |  |
| 2 | Ecological problems in producing agrarian production | **×** | **×** | **×** | **×** |  | **×** |
| 3 | Actual problems of agro-ecology | **×** | **×** |  |  |  | **×** |
| 4 | Methods of scientific researches in agro-ecology | **×** | **×** | **×** | **×** | **×** |  |
| 5 | Technologies of low energy in agro-ecology | **×** | **×** | **×** | **×** |  |  |
| 6 | Pedagogics  | **×** | **×** | **×** | **×** | **×** | **×** |
| 7 | Applied Ecology  | **×** | **×** | **×** | **×** | **×** |  |
| 8 | Intensive Land Tenure  | **×** | **×** | **×** | **×** | **×** |  |
| 9 | Hydro-ecology  | **×** | **×** | **×** | **×** |  | **×** |
| 10 | Environment and agricultural chemistry | **×** | **×** | **×** | **×** | **×** |  |
| 11 | Plants bio-technology  | **×** |  | **×** | **×** |  | **×** |
| 12 | Plants protection  | **×** | **×** | **×** | **×** | **×** | **×** |
| 13 | Bio stimulators in agriculture  | **×** | **×** | **×** | **×** | **×** | **×** |
| 14 | Protected territories, parks and gardens of Georgia | **×** |  | **×** | **×** |  | **×** |
| 15 | Branch English language  | **×** | **×** |  | **×** | **×** |  |
| Branch French language  | **×** | **×** |  | **×** |  |  |
| Branch German language  | **×** | **×** | **×** | **×** |  |  |
| Branch Russian language  | **×** | **×** | **×** | **×** |  | **×** |
| 16 | Forest crops  | **×** | **×** | **×** | **×** | **×** | **×** |
| Principles of developing tea-growing  | **×** | **×** | **×** | **×** |  | **×** |
| Plants quarantine  | **×** | **×** | **×** | **×** | **×** | **×** |
| Selection of subtropical cultures  | **×** | **×** | **×** | **×** | **×** | **×** |
| 17 | Professional Practice  | **×** | **×** | **×** | **×** | **×** | **×** |
| 18 | Master’s Work in agro-ecology  | **×** | **×** | **×** | **×** | **×** | **×** |