MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN

Approved by Order No.1463 of the Mınistry of Education of the Republic of Azerbaijan, dated August 31, 2012

THE STATE STANDART OF HIGHER EDUCATION

EDUCATIONAL PROGRAM IN THE MASTER'S DEGREE SPECIALIZATION

ACADEMIC PROGRAM

Program code and Title: 060510 – Ecology

BAKU – 2012

1. General Provisions

1.1. The Educational Program for the Master's Degree in the specialty **060510 – Ecology** has been developed in accordance with the Law of the Republic of Azerbaijan on Education, the State Standard and Program of Higher Education approved by relevant decisions of the Cabinet of Ministers of the Republic of Azerbaijan, the requirements of the Content, Organization, and Rules for Awarding the "Master" Degree in Master's Education, the Classification of Specialties (Specializations) at the Master's Level of Higher Education, and other legislative acts.

1.2. 1.2. Regardless of their subordination, type of ownership, or organizational-legal form, higher education institutions operating in the Republic of Azerbaijan shall carry out master's training in the specialty **060510 – Ecology** in accordance with this Educational Program.

1.3. 1.3. Symbols used in the structure:

GC – General Cultural Competencies

PC – Professional Competencies

2.Characteristics Specialty 060510 – Ecology

2.1. The standard duration for the completion of the Educational Program in the specialty **060510 – Ecology**, as well as the academic degree conferred upon graduates, is defined as follows:

İxtisasın şifri və adı	**Verilən elmi-ixtisas dərəcəsi**	**Əyani forma üzrə təhsil müddəti**	**Kreditlərin sayı**
060510 – Ecology **Specializations:** *-Methods of Environmental Protection and Restoration* *-Environmental Protection in the Agricultural Sector*	Master	The duration of the education is 2 years (with an additional 6 months for part-time study)	120

3. Graduate's specialization characteristics and competencies.

3.1 Master's degree qualification characteristics

A master's degree holder must have a general understanding and extensive knowledge of theoretical principles and research methods, be prepared to conduct research and pedagogical activities that require professional training, and be able to solve unexpected and complex issues within the framework of their professional activities.

3.2 Requirements for the graduate's competence as a result of mastering the program

3.2.1 The graduate must possess the following general cultural competencies (**CC**):

- work in a team (**CC-1**);
- the ability to communicate with specialists from other fields (**CC-2**);
- active social mobility (**CC-3**);
- work in the international arena (**CC-4**);
- have legal knowledge and ethical norms (**CC-5**);
- put forward new ideas (**CC-6**);
- work independently (**CC-7**);
- have habits and skills in organizing scientific research and scientific production work, managing a team (**CC-8**);
- set an example in terms of one's own knowledge, skills and personal initiative (**CC-9**);
- have the ability to organize and plan work (**CC-10**);

3.2.2. The graduate must acquire the following **professional competencies** (**PC**):

In the field of scientific research:

- use mathematical modeling methods based on deep knowledge in the field of fundamental and computer sciences (**PC-l);**

- use mathematical and algorithmic methods in the analysis of problems in the field of nature conservation and restoration (**PC-2**);

- conduct scientific research and scientific searches (**PC-3**);

- conduct independent analysis of aspects of the main directions of development of ecological science (**PC-4**);

- present the results of their own scientific research (**PC-5**);

- independently build a general picture of the disciplines (**PC-6**);

In the field of production and technology

- organize the technological process according to the technical parameters provided for in the projects of ecosystem technology (**PC-7**);
- implement nature restoration based on the results obtained through the development of ecological science (**PC-8**);
- use natural technologies and laws in the field of nature restoration (**PC-9**);

In the field of organizational and administrative affairs:

- identify general connections and regularities across subject groups (**PC-10**);
- apply advanced technologies in the field of natural-technological processes (**PC-11**);
- correctly select and predict knowledge and landscape types in the field of nature restoration (**PC-12**);
- apply the results of scientific research into practice (**PC-13**);
- briefly and honestly express non-specialized knowledge (including humanitarian) (**PC-14**);
- solve unexpected and complex issues within the framework of professional activity (**PC-15**);
- propose and plan appropriate activities and methods, analyze their short and long-term results (**PC-16**);
- be able to creatively identify and pose problems related to the field of activity or education, and solve them within a specific time frame and in conditions of limited information (**PC-17**);
- be able to select and use appropriate technologies and methods when solving problems related to the field of activity and education, as well as identify and/or evaluate potential outcomes (PC-18);
- critically evaluate personal behavior when solving problems related to the field of activity and education (**PK-19**);
- be able to present and justify problems related to the field of activity and education orally and in writing in Azerbaijani and a foreign language, as well as participate in relevant discussions with specialists and non-specialists (**PC-20**);
- act independently in complex and unpredictable conditions that require an innovative approach (**PC-21**);

- to take responsibility for the strategic activities of organizations or groups (**PC-22**);
- to be able to behave ethically in complex situations, to understand the ethical aspects, opportunities, limitations and social role of personal behavior, to make a reasoned assessment of issues related to the field of activity and education (**PC-23**);
- to assess the needs of oneself and others for continuous training and professional development, as well as to use effective methods necessary for independent learning (**PC-24**);

In the pedagogical field:

- to teach ecology and nature conservation subjects at the bachelor's level of higher education **(PC-25);**
- to obtain relevant scientific and technical information in the specialty from electronic libraries and reference journals **(PC-26);**
- to be able to transfer their knowledge to others through teaching, training or other methods **(PC-27).**

4.Minimum requirements for the level of preparation for professional activity and the content of education

4.1 Characteristics of professional activity

4.1.1. **060510 – Ecology** Main directions of professional activity of masters in the specialty:

- scientific research;

- pedagogical;

- production-technological;

- organizational-administrative

- service, etc.

4.1.2 Requirements for the level of preparation:

In the field of scientific research:

- to apply advanced technologies in solving scientific, organizational and applied issues in the study of real processes and objects in the field of ecology;
- to analyze scientific research work carried out in the field of ecology and to summarize the results using the achievements of science and technology, the advanced experience of Azerbaijan and foreign countries;
- to prepare and hold conferences, seminars, symposiums;
- to prepare and edit scientific publications.

In the pedagogical field:

- give lectures;
- conduct training and seminar classes.

In the production-technological field:

- use modern computing technologies and software in the field of ecology;
- organize direct control over technological processes according to the technical parameters specified in projects carried out in the ecological field;
- ensure efficient work modes by promptly analyzing data from resources reflecting events and processes occurring in individual fields of ecological science;

In the organizational-administrative field:

- organize the work of scientific-research groups;
- apply scientific innovations to predict the results of activities;
- evaluate the results of scientific research quantitatively and qualitatively;

4.2. Minimum requirements for the content of education

□ Subject sections for the specialty, credits for subjects, the results of their mastery (in terms of knowledge, skills and habits) and the codes of the competencies to be acquired.

Course unit code	Subject sections, results of their mastery (in terms of knowledge, skills, habits)	Number of credits by couse section	Course code and title	Number of credits	Competency codes
Təhsil hissəsi					
MHF – B00	**Humanities Section** As a result of studying the subjects included in this section, the Master's student should: *In the field of Foreign Language:* Understand the peculiarities of neutral sound information and rhythm in the foreign language, Recognize the stylistic features of pronunciation typical for the field of mathematics, Master a lexical minimum comprising 4,000 academic lexical units of both general and terminological nature, Understand the main characteristics of the scientific style, Be familiar with the culture and traditions of the countries where the studied language is spoken, Know the rules of speech etiquette.	14	**MHF – B01** *Foreign Language* **MHF – B02** *Pedagogy of Higher Education* **MHF – B03** *Psychology* **MHF – B04** *Elective Subject**	**6** **4** **2** **2**	**ÜK-1** **ÜK-3** **ÜK-4** **ÜK-5** **ÜK-6** **ÜK-7** **ÜK-8** **ÜK-9** **ÜK-10** **PK-15**

	In the field of Higher Education Pedagogy: Understand the higher education system in Azerbaijan, Know the duties of university students and instructors, Be familiar with the teaching process and the content of education in higher education institutions, Understand didactics and its current issues, Be aware of the structure of lectures and modern requirements for them, Grasp the concepts of upbringing and self-education, leadership and management issues, Master the methodology of scientific research work (for both instructors and students). *In the field of Psychology:* Understand the object, subject, and methods of psychology, Know the main directions of psychology, Comprehend the structure of the psyche, Recognize the interrelation between consciousness and the unconscious, Understand student psychology, etc. *In elective subjects:* Be acquainted with the innovations emerging in the fields of economics or philosophy through scientific research and understand their application to mathematics, computer sciences, and economics.Should be able to: (Please continue with the required competencies if available)				

	Should be able to: *In the field of Foreign Languages:* Read texts related to the field of mathematics, Translate texts from the internet related to the specialty, Write annotations, summaries, theses, résumés, etc. *In the field of Higher Education Pedagogy:* Prepare and deliver lecture texts, Plan and conduct seminar sessions, Carry out scientific research in the field of mathematics, Formulate hypotheses, conduct experiments, and apply the results. *In the field of Psychology:* Understand the object, subject, and methods of psychology, Know the main directions of psychology, Comprehend the structure of the psyche, Recognize the interrelation between consciousness and the unconscious, Understand student psychology, etc. *In elective subjects:* Conduct scientific research in these fields using computer technologies and international internet networks. Should acquire: Skills in reading and writing in a foreign language with the help of a dictionary;				

	Competencies in conducting teaching and research activities at higher education institutions, and pedagogical and psychological approaches to students; Skills in applying modern methods in the fields of economics or philosophy, and so on.				
MİF – B00	**Specialization Courses Section** **Should know:** As a result of studying the subjects included in this section, the Master's student **should have knowledge of:** -Modern requirements of environmental restoration methods and environmental protection science, as well as its development perspectives and trends. -The historical development, methodology, and current issues of discipline, and the characteristics of natural and technogenic processes. -Conducting research on ecotechnological processes under conditions of information deficiency. -Understanding ecological processes and environmental restoration, evaluating their indicators, and making forecasts for management purposes; -Constructing models of specific types of ecological systems; -The dynamics and cyclical changes of ecosystems within a specific framework; -The formulation, definition, and solution of ecological problems; -The criteria for assessing the ecological condition of landscapes and the importance of landscape restoration in biodiversity conservation; -Studying ecological problems at the	**76**	**MİF – B01** *Contemporary problems of Ecology* **MİF – B02** *The History and Methodology of Ecologyı* **MİF – B03** *Course stipulated by the university* **MİF –B04** *Courses allocated for specialization*** **MİF – B05** *Elective Subject**	**4** **2** **4** **42** **24**	**ÜK-2** **PK – 1** **PK – 2** **PK – 3** **PK – 4** **PK – 5** **PK – 6** **PK – 7** **PK – 8** **PK – 9** **PK – 10** **PK – 11** **PK – 12** **PK – 13** **PK – 14** **PK – 15** **PK – 16** **PK – 17** **PK – 18** **PK – 19** **PK – 20** **PK – 21** **PK – 22** **PK – 23** **PK – 24** **PK – 25** **PK – 26** **PK – 27**

	landscape level, and the ecological essence of the factors contributing to landscape biodiversity; Anthropo-ecosystems and human ecology, as well as social and domestic ecology; The significance of ecogeographical zoning in management; The regional and local ecological consequences of global processes; The assessment and optimization of the environment and ecological systems; The role of GIS systems in managing ecological and socio-economic processes; The ecology and protection of coastal zones, assessment and cadastre of natural conditions and natural resources; The interaction between nature and society, their role in regulating the environment, the ecological and geographical aspects of human impact on nature, and the ecogeographical assessment and monitoring of natural conditions and resources; The role of reclamation measures in the restoration of natural landscapes, and the assessment of ecological risks and				

	environmental impacts; The organization and systematic implementation of environmental protection, and the conservation of the biosphere and natural monuments; The methods of conducting environmental impact assessments and the satellite monitoring of environmental pollution; The significance of project and organizational matters, and regulatory standards in the study of ecological processes; The use of landscape maps for agricultural culture and environmental protection purposes; The use of landscape maps in ecogeographical research; Managing complex (geographical-ecological) processes based on acquired knowledge, organizing environmental protection and improvement activities, and making geographical forecasts. **Skills** **The master's student should be able to:** -Develop constructive proposals concerning geographical landscapes and their individual components, compile databases relevant to their specialization, and analyze and translate texts obtained from the internet; -Prepare presentations, summaries, annotations, etc., related to their specialization, and synthesize information.				

	Competencies **The Master's student should acquire:** Skills in assessing the environment and ecological systems; Skills in conducting research on ecotechnological processes under conditions of information deficiency; The ability to use landscape maps for purposes of agricultural culture and nature protection, and to perform their ecological analysis; The ability to use and evaluate landscape maps in ecogeographical research.				
MET – B00	**Scientific Research Work** The Master's student, by carrying out scientific research work, **should know and be able to:** -Plan scientific research work; -Choose a research topic; -Prepare a list of references; -Conduct scientific research; -Analyze the results of the research and compare them with the findings of other authors; -Determine the practical significance of the obtained results and their potential applications; -Identify possibilities for further continuation of the research; -Defend the completed research work; -Prepare the results of the research for publication; -Participate in scientific research and scientific-pedagogical practices,	**30**	Scientific Research Practice Scientific-Pedagogical Practice Preparation and Defense of the Master's Thesis	**6** **6** **18**	**ÜK-7** **ÜK-8** **ÜK-10** **PK – 3** **PK – 4** **PK – 5** **PK – 8** **PK – 11** **PK – 12** **PK – 13**

	summarize their results, and use them in the Master's thesis, etc.				
	Total number of credits	**120**		**120**	

**In all sections, elective courses are determined by higher education institutions in accordance with the relevant competencies.*

***Competencies for specializations and the corresponding courses are determined by higher education institutions.*

4.2. Duration of the Master's Program in the Specialization:

Total number of weeks – 94

Including:

-Theoretical training – 45 weeks

-Practical training (scientific research and scientific-pedagogical) – 8 weeks

-Examination sessions – 15 weeks

-Preparation and defense of the Master's thesis – 12 weeks

-Holidays – 14 weeks

5. Material and Technical Base, Educational Infrastructure, and Human Resources

5.1. The higher education institution should have a material and technical base, including classrooms, laboratories, computer rooms, workshops, and other facilities equipped with the necessary ICT tools, to conduct lessons, practical training, and scientific research as outlined in the curriculum for the **060510 – Ecology program**. Access to the university's local network, the internet, databases, electronic libraries, and search systems must be provided for students.

5.2. The teaching of courses is generally conducted by the university's academic staff holding scientific degrees or titles. Individuals from other institutions and organizations who meet the relevant qualifications may also be involved in this activity.

5.3. Scientific supervision of master's theses is generally carried out by faculty members holding scientific degrees or titles from the higher education institution, or by individuals from other institutions and organizations who meet these qualifications.

6. Forms and Methods of the Educational Process

6.1. The theoretical training and pedagogical preparation of the Master's student are conducted in the form of lectures, classes, seminars, consultations, independent work, pedagogical practice, and other similar formats.

6.2. In the Master's program, the teaching process may involve oral explanations, interviews, interactive learning, independent work, discussions, round tables, illustrations, research, laboratory and practical work, and other methods.

6.3. In the **060510 – Ecology** Master's program, scientific research and scientific-pedagogical practices are included (the goals and objectives of the practices are defined depending on the specialization). Depending on the type of practice, they may be conducted in relevant organizations or in university departments and laboratories.

7. Requirements for the Final State Certification and Evaluation

7.1. The final state certification consists of the defense of the Master's thesis. The requirements for the content, volume, and structure of the thesis, as well as the rules for its defense, are determined by the Ministry of Education of the Republic of Azerbaijan.

7.2. The assessment of students' knowledge is conducted based on the rules approved by the Cabinet of Ministers of the Republic of Azerbaijan.

7.3. As a result of the final state certification, graduates are awarded a Master's degree in the relevant scientific field and a state-standard diploma.

Agreed:

Director of the Institute of Educational Problems of the Republic of Azerbaijan

_____ A. Mehrabov

«____» _____ 2012

Head of the Higher and Vocational Education Department of the Ministry of Education of the Republic of Azerbaijan

_____ I. Mustafayev

«____» _____ 2012

Chair of the Working Group for the Preparation of State Educational Standards in the Field of Education Specializations

_____ V. Babazadeh

«____» _____ 2012

Chair of the "Military, Physical Training, and Occupational Safety" Section of the Scientific-Methodical Council of the Ministry of Education of the Republic of Azerbaijan

_____ H. Ojagov

«____» _____ 2012