REPUBLIC OF UZBEKISTAN
MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION

SAMARKAND STATE UNIVERSITY

REGISTERED
№ _____
2020___y. «____» _____

"I APPROVE"
Vice Rector for Academic Affairs:
_____ prof. A.Soleev
"_____" _____ 2020

Dendrology

WORKING CURRICULUM

2nd year for masters

FIELD OF KNOWLEDGE:	100,000 - HUMANITIES
FIELD OF EDUCATION:	140,000 - NATURAL SCIENCES
COURSE OF STUDY:	5A 140101 - BIOLOGY

SAMARKAND - 2020

The working curriculum of the subject was developed in accordance with the curriculum and the standard curriculum.

COMPOSER: SamSU, Faculty of Biology, Professor of Botany, **bfd XQ Haydarov**

REVIEWER: Samarkand State University, Faculty of Biology, associate professor of the department of botany **bfn Namazov ZB**

The working curriculum of the subject was discussed at the meeting of the Department of "Botany" on June __, 2020 and recommended for discussion at the Academic Council of the Faculty.

Chair holder: prof. XQ Haydarov

Approved by the protocol of the Educational and Methodological Council of the Faculty of Biology on June __, 2020 № __.

Chairman of the Educational and Methodological Council dots. NA Allanazarova

The working curriculum of the subject was discussed and recommended for use by the Academic Council of the Faculty of Biology (Minutes of the meeting of June __, 2020 № __).

Chairman of the Academic Council of the Faculty: prof. Keldiyorov XO

" **AGREED** "
Head of the educational and methodical department:
_____AliqulovB.

INTRODUCTION

Dendrology is the science of trees and shrubs. Due to the further development of forestry, forest reclamation, landscaping and botany in botany, a comprehensive study of trees and shrubs has become one of the most important tasks.

It is known that the systematic composition of trees and shrubs makes up a very small fraction of the total composition of plants. For example, in the Central Asian republics there are about 6,500 plant species, of which no more than 500 species of trees and shrubs. Although trees and shrubs are structurally small, their importance in human life is enormous, as almost everything a person needs is derived from plants. For example, the industry produces cellulose, paper, plywood, matches, furniture, bags, rope products.

Goals and objectives of the subject

The purpose of teaching science is to study the systematics, life forms, morphology, biology, life span, reproduction, relationship with the environment, and evolutionary development of trees and shrubs.

The tasks of the science are to teach students to identify trees and shrubs, their botanical description, distribution, composition and application in ***practice*** .

Requirements for knowledge, skills and qualifications of students in science

Within the framework of the mastering of the subject "Dendrology" the master:

- Peculiarities of dendrology; must know the structure, reproduction and origin of woody plants, the interdependence of trees and shrubs, systematics, morphology, life forms and laws of reproduction **.**

- The student ***must*** have the ***skills to*** know and use modern research methods in the field, such as the classification, biology, life span, relationship with the environment and evolutionary development of trees and shrubs .

- Herbarium collection of student trees and shrubs and their quality drying; study of beneficial or harmful properties of plants; use of microscopic techniques: preparation of cuts, painting, drawing; preparation of permanent and temporary drugs; ***have the skills to*** collect samples from the vegetative and generative organs of plants in nature **.**

The interrelationship and methodological coherence of science with other disciplines in the curriculum

Dendrology is a professional subject taught in the fourth semester. The subject of dendrology is required to have sufficient knowledge and skills in the study of Central Asian plants, tall plants, medicinal plants, floriculture general and specialized disciplines planned in the curriculum.

The role of science in production

The basis of the economic sector of the republic is agriculture. Agricultural crops: Raw materials from cultivated crops such as cotton, wheat, barley, corn are the main part of the production chain. In addition, herbal medicines are widely used in pharmaceutical plants and pharmacies. Plants are also widely used in the treatment of wastewater from various wastes. The flora of Uzbekistan includes many endemic species, relict plants and rare plant phytocenoses. Therefore, it is necessary to determine the natural resources of these plants, to know their rational use and reproduction. Therefore, this science is a basic general science and an integral part of the technological system of production.

Modern information and pedagogical technologies in science teaching

"Dendrology" science students to wear modern and advanced teaching methods, the use of new information technologies is crucial to implement. The development of science textbooks, and manuals, lecture notes, handouts, electronic materials. The themes of science training program in the form of lectures, practical exercises. as well as a thorough knowledge of the students in order to ensure an independent business topics. Visual learning, codoscopes using multimedia. Lectures and seminars in accordance with the lessons of science using advanced technologies.

The following basic conceptual approaches are used in the study of the course "Dendrology":

- Person-centered education;
- Systematic approach;
- Activity-oriented approach;
- Dialogic approach;
- Organization of joint education;
- Problem-based education;

Application of modern means and methods of presenting information - the **use of** new computer and information technologies in the educational process;

Teaching methods and techniques - lectures, problem-based learning, small group work, discussion lessons;

Forms of organization of training - dialogue, polylogue, frontal, collective and group based on interaction;

Teaching aids - traditional forms of teaching (textbooks, lecture notes) and new information technologies;

Methods and means of feedback - analysis based on the results of blitz surveys, current, interim and final assessments;

Methods and means of control - control of classroom hours and extracurricular independent work by assigning tasks;

Monitoring and evaluation - the results of students' knowledge acquired in the classroom are determined and evaluated on the basis of test assignments, written work options and oral questions.

Distribution of lessons on the subject "Dendrology" by topics and hours

T/r	Name of topics	Jami hour	Lecture	But liy	Mus knock education
1	Introduction. Subject, tasks, methods of dendrology. Life forms of woody plants, peculiarities in their reproduction.	14	4	4	6
2	Natural vegetative propagation of woody plants. Introduction and acclimatization of woody plants.	16	4	6	6
3	Pine, Archadosh, Toxodial families, families, important species, importance.	16	4	6	6
4	Families of nieces, nephews, nieces and nephews. wild and cultivated species, importance.	14	4	4	6
5	Families of Blackbirds, Blackbirds, Chinordos, Tutdoshs, wild and cultural species, importance.	12	2	4	6
6	Family of rhinoceroses, cultural and wild species, importance.	16	4	6	6
7	Trees and shrubs of the Torandosh family	16	4	6	6
8	Angular, Zarangdosh, Zirkdosh, Jiydadosh families, cultural and wild species, importance.	16	4	6	6
	Jami	**130**	**30**	**42**	**48**

THE MAIN PART

Introduction. Subject, tasks, methods of dendrology. History of Dendrology. Dendrological examinations in Central Asia and Uzbekistan. The importance of dendrology.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*

References: A1; A2; A 3: A4: Q5; Q6. Q7; Q9.

Life forms of woody plants, peculiarities in their reproduction.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*

References: A1; A2; A 3: A4: Q5; Q6. Q8; Q13.

Natural vegetative propagation of woody plants. Methods of vegetative propagation. Life expectancy.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*

References: A1; A2; A 3: A4: Q5; Q7. Q8; Q11.

Introduction and acclimatization of woody plants.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*

References: A1; A2; A 3: A4: Q5; Q 6. Q9; Q10.

Pine, Archadosh, Toxodial families, families, important species, importance. Wild open amphibians growing in Uzbekistan.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*

References: A1; A2; A 3: A4: Q5; Q 6. Q7; Q 8.

Families of nieces, nephews, nieces and nephews. Wild and cultural species, importance.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*

References: A1; A2; A 3: A4: Q5; Q6. Q7; Q9.

Families of Blackbirds, Blackbirds, Chinordos, Tutdoshs, wild and cultural species, importance.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*

References: A1; A2; A 3: A4: Q5; Q7. Q9; Q13.

Family of rhinoceroses, cultural and wild species, importance. Scientific work in the field of study of family species in the Botanical Garden of the Academy of Sciences of the Republic of Uzbekistan.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*

References: A1; A2; A 3: A4: Q5; Q6. Q8; Q12.

Trees and shrubs of the Shoradosh, Torondosh families.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*

References: A1; A2; A 3: A4: Q5; Q 7. Q9; Q 10.

Angular, Zarangdosh, Zirkdosh, Jiydadosh families, cultural and wild species, importance.

Applied educational technologies: *problem-based learning , discussion, blitz-questionnaire*
References: A1; A2; A 3: A4: Q5; Q 6. Q7; Q 8.

Distribution of hours allocated for lectures on dendrology

Tr	Department, subject and scope of science	Clocks
1	Introduction. Subject, tasks, methods of dendrology.	2
2	Life forms of woody plants, peculiarities in their reproduction.	2
3	Natural vegetative propagation of woody plants.	2
4	Introduction and acclimatization of woody plants.	2
5	Pine family, families, important species, importance.	2
6	Archadosh family, categories, important species, importance.	2
7	Toxins, Families of relatives, wild and cultural species, importance.	2
8	Wild and cultivated species of walnut families, importance.	2
9	Blackbirds, Blackbird families, wild and cultural species, importance.	2
10	Plantain, Tutdosh families, wild and cultural species, importance.	2
11	Family of rhinoceroses, cultural and wild species, importance.	2
12	Trees and shrubs of the Torandosh family	2
13	Burchoqdoshlar, Zarangdoshlar families of the importance of cultural and wild species.	2
14	Barberry, family, cultural and wild species, importance.	2
15	Jiydadosh family, cultural and wild species, importance.	2
	Jami	**30**

Recommendations and guidelines for the organization of practical training

Practical classes are held in the classroom and in the field, depending on the type of topic. The systematic and ecological composition of the flora of Uzbekistan, as well as topics related to endemic and relict species are conducted in the auditorium. Books and manuals for practical training, handouts, electronic data, lecture notes, tables and other additional materials are used.

PRACTICAL TRAINING

Climated trees and shrubs in Uzbekistan. Rare trees in Samarkand. Get acquainted with the species, herbariums.

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q1; Q1; Q2; Q4; Q5.

Vegetative reproduction of woody plants in nature. Methods of vegetative propagation.

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q3; Q4; Q5; Q7; Q8.

Varieties of wild and cultivated species of the Ranodosh family distributed in Uzbekistan (work with herbariums).

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q6; Q7; Q8; Q9; Q10.

Varieties of wild and cultivated species of the Shoradosh family distributed in Uzbekistan (work with herbarium).

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q1; Q2; Q3; Q4; Q5.

Varieties of wild and cultivated species of the Torondosh family in Uzbekistan (work with herbariums).

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q2; Q3; Q4; Q5; Q7.

Wild and cultural species of Toldoshlar, Tutdoshlar families distributed in Uzbekistan (work with herbarium).

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q5; Q6; Q8; Q9; Q10.

Wild and cultural species of the In-laws family distributed in Uzbekistan (work with herbariums).

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q5; Q6; Q8; Q9; Q10.

Varieties of wild and cultivated species of the pepper family distributed in Uzbekistan (work with herbarium).

Applied educational technologies: *brainstorming discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q4; Q6; Q8; Q9; Q10.

Wild and cultural species of pine and Chinordosh families in Uzbekistan (work with herbariums).

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q1; Q2; Q3; Q4; Q5.

Pine trees, forests, spruce species in the mountains of Uzbekistan, their biological properties. Species composition and importance of archazors.

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q1; Q3; Q4; Q6; Q8.

Walnut-fruit tree forests of Uzbekistan, species composition, importance.

Applied educational technologies: *brainstorming, discussion, blitz-questionnaire*

References: A1; A2; A3; A4; Q1; Q2; Q3; Q4; Q5.

Distribution of hours allocated for practical training in dendrology

№	The subject of practical training	Clocks
1	Climated trees in Uzbekistan.	2
2	Varieties of wild and cultivated species of the Ranodosh family distributed in Uzbekistan (work with herbariums).	4
3	Varieties of wild and cultivated species of the Shoradosh family distributed in Uzbekistan (work with herbarium).	2
4	Varieties of wild and cultivated species of the Torondosh family in Uzbekistan (work with herbariums).	4
5	Wild and cultural species of the Toldosh family distributed in Uzbekistan (work with herbariums).	2
6	Wild and cultural species of the Tutdosh family distributed in Uzbekistan (work with herbariums).	4
7	Wild and cultural species of the In-laws family distributed in Uzbekistan (work with herbariums).	2
8	Varieties of wild and cultivated species of the pepper family distributed in Uzbekistan (work with herbarium).	4
9	Wild and cultural species of the pine family in Uzbekistan (work with herbariums).	2
10	Wild and cultural species of the Chinordosh family in Uzbekistan (work with herbariums).	4
11	Spruce forests in the mountains of Uzbekistan, spruce species, their biological properties.	4
12	Walnut groves in the mountains of Uzbekistan are forests, walnut species, their biological properties.	2
13	Walnut-fruit tree forests of Uzbekistan, species composition, importance.	2
14	Getting acquainted with the trees in the Botanical Garden of SamSU.	2
15	Getting acquainted with the trees growing in Samarkand.	2
	Jami	**42**

The form and content of the organization of independent work.

Students work independently without taking into account the specific characteristics of science in the preparation of the following forms of independent study recommended:

- preparation for practical training;
- study of science chapters and topics in textbooks and manuals;
- mastering the part of reports on handouts;
- work on science sections or topics in special literature;
- learning to work with new techniques, technologies;
- in-depth study of departments and topics related to the student's research work;
- use of active and problem-based learning methods.

List of recommended topics for independent work:

1. History of dendrological research in Uzbekistan. It is studied from scientific sources.
2. Getting acquainted with the trees and shrubs in the flora of Uzbekistan, their life forms and collecting samples from them.
3. To get acquainted with pine forests in Zarafshan oasis, to determine their species composition.
4. Forests of wild walnut-fruit trees, their species composition, distribution, importance.
5. Identification of wild trees and shrubs growing in the tugai forests of Uzbekistan. Their importance.
6. Dry crop fields, trees and shrubs used to fence around highways. Their species composition, ecological significance.
7. Economic and scientific significance of wild fruit trees and shrubs.
8. Trees and shrubs included in the "Red Book" of the Republic of Uzbekistan, their distribution in the territory of the country, protection measures.
9. The Archazor the importance of forests, species composition, their spread.
10. The yong'oqzor fruit trees, forests, species composition, distribution, and significance.
11. Trees and shrubs planted in the organization of enclosures.
12. Trees and shrubs of the tugai forests of Uzbekistan.

Distribution of hours allocated to independent study topics in dendrology

№	Independent study topics	Assignments given	Completion time	Hour

1.	History of dendrological research in Uzbekistan. It is studied from scientific sources.	Summarizing from the literature and materials. Completion of individual tasks	1.2 - weeks	4
2	Getting acquainted with trees and shrubs in the flora of Uzbekistan, their life forms and collecting samples from them.	Summarizing from the literature and materials. Completion of individual tasks	1.2 - weeks	4
3	Getting acquainted with the spruce forests of the Zarafshan oasis, determining their species composition.	Summarizing from the literature and materials. Completion of individual tasks	3.4 - weeks	4
4	Forests of wild walnut-fruit trees, their species composition, distribution, importance.	Summarizing from the literature and materials. Completion of individual tasks	5.6 - weeks	4
5	Identification of wild trees and shrubs growing in the tugai forests of Uzbekistan. Their importance.	Summarizing from the literature and materials. Completion of individual tasks	7.8 - weeks	4
6	Dry crop fields, trees and shrubs used to fence around highways. Their species composition, ecological significance.	Summarizing from the literature and materials. Completion of individual tasks	9, 10 - weeks	4
7	Economic and scientific significance of wild fruit trees and shrubs.	Summarizing from the literature and materials. Completion of individual tasks	11.12 - weeks	4
8	Wild trees and shrubs of Uzbekistan included in the "Red Book" of Uzbekistan, their distribution in the territory of our country, protection measures.	Summarizing from the literature and materials. Completion of individual tasks	13.14 - weeks	4
9	Spruce forests of Uzbekistan, their distribution, species composition, importance.	Summarizing from the literature and materials. Completion of individual tasks	14, 15 - weeks	4
10	Walnut fruit forests of Uzbekistan, species	Summarizing from the literature and	15-16 - weeks	4

	composition, distribution, importance.	materials. Completion of individual tasks		
11	Trees and shrubs planted in the organization of hedgerows.	Summarizing from the literature and materials. Completion of individual-dual tasks	1.2 - weeks	4
12	Trees and shrubs of the tugai forests of Uzbekistan.	Summarizing from the literature and materials. Completion of individual-dual tasks	1.2 - weeks	4
	Total			**48**

*** Independent study topics were selected based on the requirements of the standard curriculum in accordance with the number of hours in the curriculum.*

Criteria for assessing students' knowledge of the subject "Dendrology" on the basis of a rating system

Students' knowledge is based on the following criteria :

- the student is able to make independent conclusions and decisions, think creatively, make independent observations, apply the acquired knowledge in practice, understand, know, express, tell the essence of the science (topic) and have an idea about the science (topic) - 5 (excellent) grades;
- the student is able to observe independently, apply the acquired knowledge in practice, understand, know, express, tell the essence of the science (topic) and when it is found that he has an idea about the science (topic) - 4 (good) grade;
- the student is able to apply the acquired knowledge in practice, understands, knows, expresses, tells the essence of the science (subject) and has an idea of the science (topic) - 3 (satisfactory) grade;
- If the student has not mastered the science program, does not understand the essence of the science (topic) and has no idea about the science (topic) - 2 (unsatisfactory) .

Transfer the rating from a 5-point scale to a 100-point scale
SCHEDULE

5 price scale	100 point scale	5 price scale	100 point scale	5 price scale	100 ballik scale
5 , 00-4 , 96	100	4 , 30-4 , 26	86	3 , 60 - 3 , 56	72

4 , 95-4 , 91	99	4 , 25-4 , 2 1	85	3 , 55-3 , 51	71
4, 90-4 , 86	98	4 , 20-4 , 1 6	84	3 , 50-3 , 46	70
4, 85- 1, 4, 8	97	4 , 15-4 , 11	83	3 , 45-3 , 41	69
4 , 80-4 , 76	96	4 , 10-4 , 06	82	3 , 40-3 , 36	68
4 , 75-4 , 71	95	4 , 05-4 , 0 1	8 1	3 , 35-3 , 31	67
4 , 70-4 , 66	9 4	4 , 00-3 , 96	80	3 , 30-3 , 26	66
4 , 65-4 , 61	93	3 , 95-3 , 91	79	3 , 25-3 , 21	65
4 , 60-4 , 56	9 2	3 , 90-3 , 86	78	3 , 20-3 , 1 6	64
4 , 55-4 , 5 1	9 1	3 , 85-3 , 81	77	3 , 1 5-3 , 11	63
4 , 50-4 , 46	90	3 , 80-3 , 76	76	3 , 10-3 , 06	62
4 , 45-4 , 41	89	3 , 75-3 , 71	75	3 , 05-3 , 01	61
4 , 40-4 , 36	88	3 , 70-3 , 66	74	3 , 00	60
4 , 35-4 , 31	87	3 , 65-3 , 6 1	73	**3.0 and less**	**Less than 60**

List of used textbooks and manuals:
Basic

1. Usmanov AU "Dendrology". Tashkent, 1974
2. Usmanov AU "Wild trees and shrubs in Central Asia." T, 1972 y.
3. Sakhobiddinov SS «Plant systematics» 2 volumes, Flowering plants. Tashkent, 1966
4. Sulaymanov ES, Kobulov JT, Mukumov HM "Green shields of our city". Tashkent, 1982

Additional

5. Plant cover of Uzbekistan Volumes I-IV, Tashkent, 1971-1984 OTV. ed. Granitov I.I., Zakirov K.Z. and dr.
6. II-III editions of the Red Book of Uzbekistan. Tashkent, 1998-2006
7. Gorodetskiy V.D. "Possession of dendrology for Central Asia". M. L. 1934g.
8. Dendrology of Uzbekistan, Volume IX, Monograph under red.F.N. Rusanova, A.U. Usmanova, T.I. Slavkinoy et al., 1965-1980.
9. Tulaganova M. «Zirklari O'zbekiston», Tashkent, 1975.
10. Grozdov B.V. «Dendrology» Goslesbumizdat, M-2, 1960

11. Keldiyorov XA, ES Sulaymanov. Botanical natural monuments of Samarkand. Samarkand 2009
12. Shimanyuk A.P. "Dendrology: Lesnaya promыshlennost" Izd-vo. Moscow, 1967
13. Yaskina LV "Dendrology", Teacher, Tashkent, 1980

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