	Federal State Budgetary Educational Institution of Higher Education **«Volga State University of Technology»**
	Entrance examinations
	Master's degree Programme

APPROVED
Rector of Volga State University of Technology
_____ I.V. Petukhov
"28" октября 2021

CONTENT OF EXAMINATION
MASTER'S DEGREE PROGRAMME
35.04.01 «Forestry»

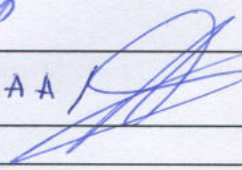
Mater's programme

"Geomatics in Forestry and Nature Management"

The document is reviewed at the meeting of the Examination Board for admission in 35.04.01 «Forestry», protocol No 1 from 28.10.2021

2021

	Job position	***Name / Signature***	***Date***
Developed by	*Chair of the Examination Board for admission to a Master's programme 35.04.01 «Forestry»*	*Konyukhova T.A. /*	28.10.2021
Agreed by	*Vice-Rector for University Development*	*Rozhentsov A.A. /*	28.10.21
Valid until re-approval			

Re-approval			
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Approved	*Chair of the Examination Board for admission to a Master's programme «35.04.01 Forestry», Protocol No 1 from «28». 10 2022, Chair of the Examination Board*		28.10. 2022г.
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Introduction

The document is designed for applicants to a Master's degree programme 35.04.01 "Forestry". Admission is competition-based on the results of entrance examinations.

Entrance examinations are carried out in writing.

The document contains a list of themes to be revised before the entrance examinations in the following courses:

- Forest Plantations;
- Forestry;
- Forest Management;
- Forest Pyrology.

The courses are aligned with the Bachelor's degree programme 35.03.01 "Forestry".

The programme includes sample examination questions and assessment criteria.

I. THE MAIN THEMES RECOMMENDED FOR REVISION BEFORE THE ENTRANCE EXAMINATIONS

1. Forest Plantations

1. Forest typology and forest-plantation production. Role of forest crops in the process of forest regeneration and forest production. Role of forest plantations.
2. Transfer of forest plantations into a forested area.
3. Forest reserve and its structure. Environmental assessment of logging sites and burned areas.
4. Methodology of forest production. Types of forest crops, methods of forest stand cultivation and establishment.
5. Preliminary and subordinate crops. Conditions for their practical application.
6. Coniferous forests. Environmental and silvicultural evaluation of coniferous forests, their distribution in forest zones. Types of forest crops, agricultural equipment and technology of their production.
7. Continuous cultures. Conditions for their practical application.
8. Oak forests. Types of forest crops, agricultural equipment and technology of their cultivation.
9. Partial forest plantations. Conditions for their practical application.
10. Scots Pine. Its meaning, choice of forest site, types of forest crops, agricultural equipment and technology of their production.
11. Reconstruction methods in low-value young stands to obtain valuable stands.
12. Spruce. Its meaning, choice of forest site, types of forest crops, agricultural equipment and technology of their production.
13. Types of forest crops. Their composition. System's approach and principles of plantation design.

14. Larch. Its meaning, choice of forest site, types of forest crops, agricultural equipment and technology of their production.
15. Density of forest crops. Quantitative and qualitative evaluation of forest density of the core forest-forming species from the point of view of typology and forest site.
16. Forest plantations. Concept and methods used in forest plantations.
17.Tillage. Theoretical foundations and zonal requirements, environmental assessment. Types of tillage for forest crops (continuous and partial tillage).
18. Establishment of forest plantations. Advantages and disadvantages of planting and sowing. Forest management and biological feasibility.
19. Forest inventory.
20. Technical reception of forest plantations.

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2. Forestry

1. Differentiation of trees in stands; Kraft's classification. Its advantages and disadvantages.
2. Natural age stages in one forest generation; their features and economic significance.
3. Regularities of natural thinning of stands (depending on the environment, species composition and age).
4. Formation and development of simple and complex stands, their comparative assessment.
5. Main components of forest; forest stand as the major component of forest, its distinctive forest management and forest inventory features.
6. Undergrowth and seed stands, their features. Diagnosis of origin.

7. Reasons for establishment of even and uneven age stands; their biological and economic evaluation.
8. Reasons for establishment of pure and mixed stands. Their biological and economic evaluation.
9. Role of ground cover in forest.
10. Properties of pioneer and forest forming species.
11. Stages of forest fruiting, conditions for their successful passage.
12. Excess and lack of moisture in the forest. Attitude of forest species to moisture.
13. Influence of light on the growth, structure and quality of wood; methods for determining photophily of forest species.
14. Harmful effect of high temperatures on woody vegetation and measures to combat them.
15. Change of pine to birch and aspen. Pine forest regeneration.
16. Horizontal and vertical precipitation, their role in the life of forest.
17. Forest leaf litter, its importance in the life of forest. Soil-improving species.
18. Practical application of "forest type" and "forest growing condition" indicators in forestry.
19. Principles of developing a typology of deforestation based on the dynamic classification of forest types by I. S. Melekhov. Practical significance of the types of cuttings.
20. Characteristics of red bilberry pine forest.

References

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2. Denisov S.A., Zakamskiy V. A., Malkov Iu. G. Lesovedenie: praktikum [Forest science: practical course]. M-vo obrazovaniya i nauki Ros. Federatsii, FGBOU VO "Povolzh. gos. tekhnol. un-t". [Ministry of Education and Science of the Russian Federation. Volga State University of Technology]. Yoshkar-Ola. VSUT. 2017. 131 p.
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3. Forest Management

1. Forest productivity. Methods of enhancing forest productivity.
2. Purpose-specific classification of forests.
3. In what order are the systems of forest management applied?
4. What are the characteristic features of logging operations?
5. How are logging sites cleared?
6. What are the features of thinning in specially protected forests.
7. List the methods of uniform sampling (thinning) and irregular sampling of trees.
8. Organizational and technical indicators of clear cuttings.

9. Goals and objectives of forest management.
10. What indicators are used to express intensity of thinning?
11. What degrees of thinning are allocated according to the Rules of Forest Management?
12. What is the return period? How does it change depending on the type of forest management?
13. How do inventory elements of the forest stand change after low thinning? What classification of trees is used in this case?
14. What are the reasons behind different methods of thinning?
15. How is felled timber measured in young forest?
16. What criteria are used to select trees for thinning in a medium-aged plantation?
17. Goals and objectives of thinning?
18. What is subject to verification on site after thinning?
19. How is the intensity of thinning determined? What determines the return period of thinning?
20. Clear-cut logging. Advantages and disadvantages. Peculiarities of using clear cuttings in different types of forests.

References

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2. Zakamskiy V.A., Loskutov S.P., Ivanova E.M. Lesovodstvo: praktikum. [Forest science: practical course]. Yoshkar-Ola. Volga State University of Technology. 2013. 216 p.
3. Zakamskiy V.A., Ivanova E.M. Lesovodstvo: vyborochnye rubki. Uhod za lesom: uchebnoe posobie [Forestry: selective logging. Forest management: student manual]. Yoshkar-Ola. Volga State University of Technology. 2015. 148 p.

4. Forest pyrology

1. What meteorological data are required when determining fire hazard class according to weather conditions?
2. The main causes of forest fires.
3. The most common violations of "Fire Safety Rules" by visitors to the forest.
4. What are the phases of combustion?
5. List the principles of flame suppression.
6. What is the classification of forest fires?
7. What methods (methods) of detecting forest fires are currently used?
8. What aircraft are used in forest fire protection?
9. Organization of aviation forest protection.
10. What are the advantages and disadvantages of aviation detection of forest fires?
11. Who controls the progress of extinguishing a large forest fire?
12. What does the term "restrictive fire-fighting measure" mean?
13. What is the purpose of fire-fighting forest roads?
14. What are the main ways to extinguish forest fires?
15. What are the tactical methods of extinguishing forest fires?
16. The main methods of blasting operations when extinguishing forest fires.
17. What is the reference strip for when extinguishing a forest fire?
18. What is the difference between annealing and starting an oncoming fire?
19. Regional dispatching service of forestry.
20. How to extinguish large forest fires?

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4. Melekhov I.S., Dusha-Gudym I., Sergeeva E. P. Lesnaya pirologiy: ucheb. posobie dlya studentov vuzov po spetsialnosti "Lesnoe hoz-vo" napravleniya "Lesnoe hoz-vo i landshaftnoe str-vo" [Forest pyrology: student manual majoring in "Forest management", "Forest management and landscape construction"]; GOU VPO "Mosk. gos. un-t lesa" [Moscow State Forest University]. Moscow. MGUL, 2007. 291 p.

II. SAMPLE EXAMINATION QUESTION

Volga State University of Technology

Examination question № 0

Entrance examination

Master's degree programme in 35.04.01 «Forestry»

1. Transfer of a forest plantation into a forested area.

2. Stages of forest fruiting, conditions for their successful passage.

3. Goals and objectives of forest management.

Chair of the Examination Board
_____(_____) «__» _____ 202

III. Assessment criteria

The results of the entrance examination are evaluated on a 100-point scale.

Students deserve a mark of 90-100 points provided they have demonstrated a comprehensive, systematic and in-depth knowledge of the educational and programme material: knowledge of forest science and forest management, forest crops, forest inventory and forest management, their role in forestry science; knowledge of morphology of forest communities, ecology, forest typology; principles of protective and environmental forests, knowledge of primary and secondary literature sources used in the programme; knowledge of forest morphology, ecology, and typology.

As a rule, a mark of 100 points is given to students who have gained knowledge of the basic concepts of courses necessary for profession, who have demonstrated creative abilities in understanding, presenting and using educational and programme material.

Students deserve a mark of 75-89 points provided they have demonstrated sufficient knowledge of the programme material acquired in the process of learning: knowledge of forest science and forest management, forest crops, forest inventory and forest management, their role in forestry science; knowledge of morphology of forest communities, ecology, forest typology; principles of inventory-based forest classification, capable to do assignments stipulated in the programme.

As a rule, a mark of 75-89 is given to students who have demonstrated systematic knowledge of the programme material and are capable to update their skills and knowledge in their professional activity.

Students deserve a mark of 60-74 points provided they have demonstrated sufficient knowledge of the programme material to continue their studies in a master's degree programme and professional activity, they are capable to answer examination questions, have basic knowledge of forest science and forest management, forest crops, forest inventory and forest management, their role in forestry science; basic knowledge of morphology of forest communities, ecology, forest typology; principles of inventory-based forest classification, capable to do assignments stipulated in the programme.

As a rule, a mark of 60-74 points is given to students who have a number of errors when answering examination questions.

A mark below 60 points is given to students who have demonstrated certain gaps in the knowledge of the essential programme material, who have made fundamental errors when answering examination questions.

The minimum entry requirement is 60 points.