

DISCIPLINE DESCRIPTION

1. Information on the study programme

1.1 Academic institution	UNIVERSITY OF ORADEA
1.2 Faculty	FACULTY OF ENVIRONMENTAL PROTECTION
1.3 Department	FORESTRY AND FORESTRY ENGINEERING
1.4 Field of study	FORESTRY
1.5 Cycle of study	LICENSE
1.6 Study programme/Qualification	FORESTRY / FOREST ENGINEERS

2. Information on the discipline

2.1 Name of discipline	GENETICS						
2.2 Course holder	CONF. DR. LAZĂR ANDRA NICOLETA						
2.3 Seminar/Laboratory/Project holder	CONF. DR. LAZĂR ANDRA NICOLETA						
2.4 Year of study	III	2.5 Semester	V	2.6 Type of evaluation	E	2.7 Regime of discipline	DF

(C) Compulsory; (O) Optional; (E) Elective

3. Total estimate time (hours per semester of didactic activities)

3.1 Number of hours per week out of which:	2	3.2. course	1	3.3. laboraty/project	1
3.4 Total hours in the curriculum out of which:	28	3.5. course	14	3.6. laboratory/project	14
Time allotment					hours
Study assisted by manual, course support, bibliography and notes					25
Additional documentation in the library/ on specialised electronic platforms and in the field					20
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					10
Tutorship					10
Examinations					7
Other activities.....					-
3.7 Total hours of individual study		72			
3.9 Total hours per semester		28			
3.10 Number of credits		4			

4. Prerequisites (where appropriate)

4.1 curriculum	Botany, Plant Physiology
4.2 competences	Microbiology, Biochemistry

5. Conditions (where appropriate)

5.1. related to course	Projector
5.2. related to seminar	Microscopes, laboratory kits, field trip

6. Specific competences acquired

Professional competences	<p>C1. Background sustainable management of forests, of hunting, conservation and biodiversity salmonids</p> <p>C2. Develop and implement technical and economic projects on forestry production process control, hunting and salmonids</p> <p>C4. Application of protection, improvement and increase in productivity of forest ecosystems</p>
Transversal competences	<p>CT1. Developing and following a schedule and achieve their tasks with professionalism and rigor</p>

7. Objectives of discipline (coming from the specific competences acquired)

7.1 General objective	<p>Description of the theoretical and practical aspects of genetic processes, characteristic of the hunting, salmonids and biodiversity Develop innovative designs, adapted to the concrete economic and ecological sustainable management of forests, hunting and conservation of biodiversity. The course aims to give students basic knowledge of general genetics, with examples, if possible, in plant genetics of the species subject to improvement and production of plus trees of species of high biological value and high performance rays productive. It makes the presentation of hereditary phenomena and variability are entries in quantitative genetics, population genetics and ecological genetics and teach basic information on the use of modern biotechnology, including genetic engineering and tree improvement.</p>
7.2 Specific objectives	<p>Acquiring practical and theoretical knowledge to students, necessary for the implementation of modern technologies of reproduction, growth, improvement and operation of various tree species existing in our country. Selection, improvement, production and exploitation of biological material reproduction.</p>

8. Content*/

8.1 Course	Methods of teaching	No. of hours/Remarks
1.Genetics - the science of heredity and variability of living organisms (definition, the subject, purpose and importance of genetics, genetics branches and research methods used short history)	Modern lecture for student in accessible forms, combined with discussion followed by explanations that clarify the phenomena presented Active and participative methods	1
2.Mendelian laws of heredity (Mono-hybridism and gametes purity law, the law of segregation and independent Di-hybridism pairs of characters)	Idem	1
3.Other types of segregation (partial dominant, over dominant, co-dominant, pleiotropic genes, lethal gene complementarity, interaction between genes, epistasis, polygenic, transgression)	Idem	1
4.Heredity quantitative and qualitative characters (heredity characteristics quantitative characters)	Idem	1
5.Cytological bases of heredity (organization of eukaryotic cell, chromosomes of eukaryotic organisms, eukaryotic chromosome morphology, chemical composition, characteristics eukaryotic karyotype)	Idem	1
6.Cellular Reproduction (mitotic cell cycle and genetic significance, meiotic cell cycle and genetic significance, genetic recombination in higher plants, genetic and biological significance)	Idem	1
7. Chromosomal theory of heredity (genes on chromosomes linear placement, the phenomenon of gene linkage (linkage) gene recombination between chromosomes pair (crossing-over) - exchange of genes, factors that alter the frequency of crossing-over, chromosome maps)	Idem	1

8.Heredity of sexual characteristics (types of determinism chromosomal gender, type <i>Drosophila</i> , <i>Abraxas</i> type, type of determinism of the haploid male gender, other factors influencing the genetic determinism of gender, sex-linkage phenomenon)	Idem	1
9.Notions of molecular genetics (genetic nucleic acids and their role, the chemical structure of nucleic acids, deoxyribonucleic acid (DNA), ribonucleic acid (RNA), genetic code features of the genetic code, the functions of the genetic material and protein synthesis).	Idem	1
10. Gene structure and function (gene functions and the central dogma of genetics, genes overlapped jumping genes). Heredity extra-nuclear (extra-nuclear heredity peculiarities and ways of pointing, manifestation of extra-chromosomal heredity, male sterility and fertility restoration).	Idem	1
11. Reproduction of crop plants (reproductive systems and their genetic implications). Variability (units' diversity of the living world classification, classification units of intraspecific genetic diversity, types and levels of genetic variability causes genetic variability).	Idem	1
12. Introduction to quantitative genetics (genetic effects distribution and quantitative characters, heredity quantitative characters, the properties of a population in relation to quantitative characters, relations between genetic and environmental influences determine the expression of phenotype, <i>genotype x</i> environment interaction, stability, staple characters - quality).	Idem	1
13. Elements of population genetics (Mendelian genetic structure of populations, genetic balance, equilibrium modifiers genetic factors).	Idem	1
14. Introduction to Ecological genetics (basic concepts of ecological genetics, genetic system, reproductive system and ecological niche, adaptation, variability in relation to environmental gradients, Co-evolution in ecosystem).	Idem	1
<p>Bibliography:</p> <ol style="list-style-type: none"> 1. Ceapoiu N. 1976 "Genetica și evoluția populațiilor biologice" Editura Academiei Române, București 2. Crăciun T. 1970 "Genetica" Editura Didactică și Pedagogică, București; 3. Daniela Neagos, 2013 „Genetica umană. Suport de curs” Editura All, București 4. Drăcea I. 1973 „Genetica” Editura Didactică și Pedagogică, București; 5. Enescu V. 1985 "Genetica ecologică" Editura Ceres, București; 6. Pamfil C. 1974 "Genetica" Editura Didactică și Pedagogică, București; 7. Savatti M., Andra Ienciu 2003 "Genetica agro-silvică" Editura AcademicPres, Cluj-Napoca; 8. Savatti M., Andra Ienciu, Savatti M. jr. 2004 „Genetica” Editura AcademicPres, Cluj-Napoca. 		
8.3. Laboratory	Methods of teaching	No. of hours/Remarks
1.Usual laboratory methods in cytogenetics. Usual laboratory techniques in cytogenetics	Exposure, talks with students working at the laboratory (interactive activities). Field	1

	trip	
2. Micrometer and microscopic elements. Highlighting microscope hereditary component functions	Idem	1
3. Nucleic acids - chemical substrate of heredity. Phenomena of mitosis and meiosis genetic nature	Idem	1
4. Cytological methods for highlighting chromosomes in plants. The study of chromosomes in plants. Cell division.	Idem	2
5. Study of eucromatins and heterochromatin. Impact of karyotype plants.	Idem	1
6. Crosses between individuals that differ by a single character (mono-hybridising). Crosses between individuals who differ by a second or more characters (mono-hybridising and poli-hybridising)	Idem	1
7. Characters with polygenic control	Idem	1
8. Linkage. Crossing-over	Idem	1
9. The genetic structure of populations. Hardy-Weinberg law. Genetic parameters of variability.	Idem	1
10. Variance analysis. Heritability coefficient (h^2). Evaluation of genetic gain (DG).	Idem	2
11. Genotype correlations due to the environment. Phenotypic correlations due to the environment.	Idem	1
12. Organ and cell cultures "in vitro". Tissue culture "in vitro"	Idem	1

Bibliography:

1. Ceapoiu N. 1976 "Genetica și evoluția populațiilor biologice" Editura Academiei Române, București
2. Crăciun T. 1970 "Genetica" Editura Didactică și Pedagogică, București;
3. Drăcea I. 1973 „Genetica” Editura Didactică și Pedagogică, București;
4. Enescu V. 1985 "Genetica ecologică" Editura Ceres, București;
5. Pamfil C. 1974 "Genetica" Editura Didactică și Pedagogică, București;
6. Savatti M., Andra Ienciu 2003 "Genetica agro-silvică" Editura AcademicPres, Cluj-Napoca;
7. Savatti M., Andra Ienciu, Savatti M. jr. 2004 „Genetica” Editura AcademicPres, Cluj-Napoca.
8. Wells S. 2009 „Omul. O aventura genetică” Editura CD Press, București

* The content, respectively the number of hours allocated to each course / seminar / laboratory / project will be detailed during the 14 weeks of each semester of the academic year.

9. Corroboration of discipline content with the expectations of the epistemic community, professional associations and representative employers from the field corresponding to the study programme

- By learning the theoretical concepts and practical aspects included in discipline approach Genetics, students acquire knowledge that consistent with partial competencies required for possible occupations provided in Grid 1 - NRQHE
- The course curriculum exists also, in universities and faculties in Romania.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Course	Exam scheduled session	Written exam	90%
10.6. Laboratory	Evaluation of laboratory work is under continuous evaluation.	Test, practical test	10%

10.8 Minimum standard of performance

Knowledge and learning the basics correct encountered in genetic variability and understanding of hereditary phenomena, acquiring basic information on the use of modern biotechnology, including genetic engineering in plant breeding horticultural

Date of completion

Signature of course holder

Signature of seminar holder

17.09.2020

Conf. univ. dr. biol. **Lazăr Andra Nicoleta**

Şef lucrări dr.ing. Burescu Laviniu

Date of approval in the department

Signature of the Head of Department

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Prof. univ. dr. ing. Timofte Adrian Ioan

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Dean signature

Prof. dr. ing. Chereji Ioan

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** - Name, first name, academic degree and contact details (e-mail, web page, etc.) will be specified.
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