



## **“FORESTS GENETIC” SYLLABUS**

| <b>Basic data of the subject</b> |  |
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| <b>Academic Unit:</b>            | <b>Faculty of Life and Environmental Sciences</b>  |
| <b>Course title:</b>             | <b>Forests genetic</b>   |
| <b>Program:</b>                  | <b>Forest and Environmental Sciences</b>   |
| <b>Level:</b>                    | <b>Bachelor</b>  |
| <b>Course status:</b>            | <b>Mandatory</b>   |
| <b>Study year:</b>               | <b>Second year; third semester</b>   |
| <b>Number of hours per week:</b> | <b>3+2</b>   |
| <b>Credit value – ECTS:</b>      | <b>6</b>   |
| <b>Time / location:</b>          | <b>To be announced</b>   |
| <b>Lecturer:</b>                 | <b>Prof. asoc. dr. Albana Plaqiqi Milaimi</b>  |
| <b>Contact details:</b>          | <b>Tel: +383/44 187 368</b><br><b>E-mail: <a href="mailto:albana.milaimi@umi-prizren.com">albana.milaimi@umi-prizren.com</a></b>   |
| <b>Course description:</b>       | <p>At the beginning of the course will be explained the subject of the study of the science of genetics analyzing both cell construction and its multiplication (mitosis and meiosis). Then, we will include the structure of chromosomes, morphology and their role during the cell cycle, also the importance of DNA and RNA as carrier of genetics information. Will be discussed and analyzed about the vital processes, such as: Replication of DNA and the rules for transmitting parental traits to the offspring; chromosomal theory of inheritance, Cross over; Genetic map; sex inheritance, as well as the processes of transcription and translation. Will, also recognized the mutations and their classification; Extra nuclear inheritance and the inheritance in reproduction process. Also, will be given the importance to Variability, relationships between inheritance and environment. Special emphasis will be given to the genetics of Quantitative features and Population Genetics; Hardy-Weinberg law and modification of population genetic structure.</p> |
| <b>Course objectives:</b>        | <p>The main objective of this course is that the students will be provide the basic knowledge of genetic processes and impact of environmental factors on genetic features. The goal is based on the recognition of the genetics structure and population.</p>   |
| <b>Learning outcomes:</b>        | <p>Upon completion of this course, students will be able to:</p> <ol style="list-style-type: none"><li>1. To know the object of the science of genetics as well as the study methods in genetics.</li><li>2. To describe the rules of transmission of parental traits to the offspring, according to Mendelian analysis.</li><li>3. Know nucleic acids as carriers of genetic information, as well as chromosomes as forms of DNA organization.</li><li>4. To analyze the transmission of the genetic information for the synthesis of proteins.</li><li>5. To know about mutations and extra nuclear inheritance.</li></ol>   |



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|  | 6. To know the heredity-environment relationships, the genetics of quantitative traits as well as the genetics of populations.   |                  |              |
| <b>Contribution on student load (must correspond with learning outcomes)</b> |  |                  |              |
| <b>Activity</b>  | <b>Hours</b>   | <b>Days/week</b> | <b>Total</b> |
| Lectures   | 3  | 15               | 45           |
| Exercise theoretical/laboratory  | 2  | 15               | 30           |
| Practice work  |  |                  |              |
| Contact with lecturer/consultations  | 5/semester   | -                | 5            |
| Field exercises  |  |                  |              |
| Mid-terms, seminars  | 4/semester   | -                | 4            |
| Homework   | 6/semester   | -                | 6            |
| Individual time spent studying (at the library or home)                      | 3  | 15               | 45           |
| Final preparation for the exam   | 6/semester   | -                | 6            |
| Time spent in evaluation (tests, quiz, final exam)                           | 4/semester   | -                | 4            |
| Projects, presentations, etc.  | 5/semester   | -                | 5            |
| <b>Total</b>   |  |                  | <b>150</b>   |
| <b>Teaching methods :</b>  | Lectures, discussions, laboratory activities, consultations, seminars, individual research and teaching, partial exam, final exam.   |                  |              |
| <b>Evaluation methods:</b>   | First evaluation: 15%, Second evaluation: 15%, Laboratory activities, seminars and other activity: 10%, Regular attendance: 5%, Final exam: 55%. Total: 100%   |                  |              |
| <b>Literature</b>  |  |                  |              |
| <b>Basic Literature:</b>   | <ol style="list-style-type: none"> <li>1. Albana Milaimi, 2017. Gjenetika e pyjeve, Skriptë me përmbledhje ligjëratash për nevojat e studentëve të Shkencave të pyjeve dhe mjedisit.</li> <li>2. Laçej, F., Lako, Th. (2007): Gjenetika Pyjore.</li> <li>3. Salillari, A., Hoxha, S. (2004): Gjenetika. Lilo, Tiranë/ Albania.</li> </ol>  |                  |              |
| <b>Additional Literature:</b>  | <ol style="list-style-type: none"> <li>4. Marinković, D. (1987): Gjenetika. Enti i teksteve dhe oi mjeteve mësimore i Krahinës Socialiste Autonome të Kosovës, Prishtinë.</li> <li>5. Eriksson, G., Ekberg, I., Clapham, D., 2006. An Introduction to Forest genetics. Uppsala, 186 s.</li> <li>6. Dano, K., Mine. V. (2005): Konservimi i burimeve gjenetike pyjore.</li> </ol> |                  |              |



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|  | 7. El-Kassaby, Y.A., Prado, J.A., (2010). Forests and genetically modified trees. Food and agriculture organization of the united nations. |
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| Designed study plan:   |   |   |
|--|---|---|
| Week   | Lectures  | Exercises   |
| <i>First week:</i>   | Introduction to genetics. Basic principles of science of heritage.  | Terminology and symbolism in genetics.                      |
| <i>Second week:</i>  | Interaction forms between genes.  | Nucleic Acids.  |
| <i>Third week:</i>   | Cytogenetics; Cell division.  | Theory of probability and statistical methods in genetics.  |
| <i>Fourth week:</i>  | Genetic material; Nucleic Acids; Transcription and Translation.   | Gene Marking Symbols.                                       |
| <i>Fifth week:</i>   | Basic of chromosomal heredity; sex determination and sex-linked inheritance.  | Interactions between alleles of the same locus.             |
| <i>Sixth week:</i>   | Crossing over and genetic maps.   | Interactions between non-allele genes.                      |
| <i>Seventh week:</i>   | Basic of molecular genetics and genes function.<br><b>First intermediary assessment</b>                               | Legacy of forest trees.                                     |
| <i>Eighth week:</i>  | Genetic recombination.  | Changes in the structure of the chromosomes.                |
| <i>Ninth week:</i>   | Mutations and modifications.  | Related genes, Crossing over and chromosome maps.           |
| <i>Tenth week:</i>   | Extra nuclear heredity.   | Crossing over in the plants.                                |
| <i>Eleventh week:</i>  | Genetic of populations.   | Mutations - mutation analysis.                              |
| <i>Twelfth week:</i>   | Determination of quantitative genetic properties.   | Dominant and recessive inheritance.                         |
| <i>Thirteenth week:</i>  | Genetic modification as component in the forest biotechnology.  | Biochemical genetics.                                       |
| <i>Fourteenth week:</i>  | Genetic control of forest plantations.  | Multiplication of plants and the method of their selection. |
| <i>Fifteenth week:</i>   | Integration of genetically modified traits in the tree improvement programs.<br><b>Second intermediary assessment</b> | Transcription and translation.                              |
| Academic policies and rules of conduct:  |   |   |
| Regular and active participation of students in lectures, exercises (practical part) and seminar work. Keeping the peace in learning, the disconnection of mobile phones, entry hall time learning, etc. |   |   |