UNIVERSIDAD JUÁREZ DEL ESTADO DE DURANGO
FACULTY OF FORESTRY SCIENCES
Forestry Sciences Engineering

Learning Unit Modules
Focused in Integral Professional Competences

I.   GENERAL LEARNING UNIT

1. Identification		2. Code	3. Semester	4. Training area
Forest Genetics		DGF34	SIXTH	DISCIPLINE

5. Mode					
Compulsory	X	**Elective**			
Classroom	X	**Non-Attendance**		**Mixed**	
Laboratory		**Field practices**	X	**Guided tours**	

6. Class shedule (hours per week)				
Theory	**Practice**	**Independent study**	**Total hours**	**Credits**
2	2	0	4	4

7. Person responsible for the subject.
Dr. Christian Anton Wehenkel

II.   DATA SPECIFIC LEARNING UNIT

8. Objectives
Understand the importance of genetics to forest ecosystems.
Know the different genetic resources.
Know the types of the purposes of protection and conservation.
Know the options and restrictions preservation processes, regeneration and utilization (Playback Mode).
Know and apply genetic status indicators and their evolution.
Understand the control measures for the sustainable treatment of genetic resources.

9. Presentation.
Forests are complex ecosystems that cover more than 30% of the total surface of the planet and provide a habitat for many terrestrial species. Forests are vital to livelihoods and economic and social development, to provide food and raw materials for shelter, energy and manufacturing. The conservation of forest genetic resources is essential. Genetic variation is the basis of evolution and the catalyst for species to adapt to environmental changes. Forest genetic resources contained in populations and genes from the thousands of tree species in the world are unique and irreplaceable. When genetic variation by habitat destruction or intensive production is lost, successive generations are less able to respond to adverse conditions such as air pollution, climate change, pests and diseases.

The maintenance of evolutionary processes and genetic diversity in populations of forest species requires an approach of "dynamic conservation of genes" (FAO, 2011 (http://www.fao.org/forestry/fgr/es/)).

10. Professional competences to develop in students.

Knowledge	Skills	Attitudes	Values
Trees and bushes constituve structures and applying an efficient use of their parts for human benefit. Present and reliable methodologies for quantifying forest resources. Forest use techniques that carry a sustainable management of forest resource.	Knowing and handling the constitutive structures of trees and bushes, and promoting an efficient use of their parts for human benefit. Designing present and reliable methodologies for quantifying forest resources. Implement techniques for modifying, innovating and applying modern technology for increasing the sustainable production of forest ecosystems.	Interest in preserving nature. Collaboration and participation in team works. Interest in self learning and continuous learning.	Respect Honesty Responsibility Commitment Ethics Unity

11. Course topics

Unit I.   Natural variation

Unit II. Hybridization

Unit III. Provenance trials and exotic taxa

Unit IV. Selection methods in forest trees

Unit V. Evaluation of selected trees

Unit VI. Practical activities

12. Evaluation criteria

Formative evaluation
Summative evaluation
Self assessment
Co-evaluation
Evaluation hetero

13. Information sources
Basic
Frankham, *Richard*, J. D. Ballou, and David A. Briscoe 2010.*Introduction to conservation genetics*. Cambridge, UK: Cambridge Univ. Press   Fred W. Allendorf, Gordon H. Luikart, Sally N. Aitken 2013. Conservation and the Genetics of Populations, 2nd Edition. Wiley-Blackwell
Complementary
Behm A, A Becker, H D¨orflinger, A Franke, J Kleinschmit, GH Melchior, H-J Muhs, HP Schmitt, BR Stephan, U Tabel, H Weisgerber, Th Widmaier 1997. Concept for the conservation of forest genetic resources in the Federal Republic of Germany. Silvae Genetica 46(1): 24-34.   Boyle JB, B Boontawee (eds) 1995. Measuring and Monitoring Biodiversity in Tropical and Temperate Forests;   Gregorius H-R 1995. Measurement of genetic diversity with special reference to the adaptive potential of populations. Pp. 145-175 in: Boyle & Boontawee (eds.)