



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 |
|---------------------------------------------------|---------|-------------|------------------|
| Restoration and Conservation of Forest Ecosystems | DRC28 | Fifth | 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 | Independentstudy | Total hours | Credits |
| 2 | 2 | 2 | 6 | 6 |

| 7. Person responsible for the DRC28. |
|--------------------------------------|
| José Ramón Alvarado |

II. DATA SPECIFIC LEARNING UNIT

| 8. Objectives |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Introduce students to the philosophy of protection and restoration of ecosystems, focusing on the development of concepts and their implications, familiarizing students to the importance of preserving different ecosystems and their genetic diversity. |
| Distinguish between the meanings of the different types of alpha diversity, beta and gamma. And the importance in different ecosystems, to understand the dynamics of different types of ecosystems and how interrelated ecological processes with the physical environment. |
| Understand how natural disturbances affect the natural dynamics of ecosystems as well as the diagnosis of prevention and mitigation of environmental impacts; by analyzing the effects on the distribution and abundance of species in different ecosystems and their maintenance or recovery. |
| Analyze the physical and chemical conditions of soils with different uses to establish the relevant protection or restoration measures, recognizing the importance and necessary to manage populations for the purpose of promoting the diversity of species and that they serve as wildlife habitat techniques. |



Learning Unit Modules
Focused in Integral Professional Competences

9. Presentation.

The importance of protecting and restoring forest ecosystems derived from the widespread existence of various forms of degradation of natural resources and environmental conditions, which are manifested in areas such as loss of vegetation and soils, contaminated water; air pollution; loss of genetic resources; loss or destruction of vital parts of habitat; genetic erosion; mortality and low reproduction of the species; climatic, geological and evolutionary changes; extinction of the species and, in general, the progressive deterioration of various types of systems: natural, modified, cultured and constructed.

This course aims to describe the importance of the processes of protection and restoration of various ecosystems in response to the deterioration thereof, and to describe the different mechanisms that can lead to the restoration of an area, its principles, its problems and the results obtained in specific experiences. All this in the context of conservation biology as a discipline that provides principles and tools for preserving biological diversity through the understanding of the nature of the species and its place in the ecosystem.

10. Professional competences to develop in students.

| Knowledge | Skills | Attitudes | Values |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------|
| Trees and bushes constitute structures and applying an efficient use of their parts for human benefit. | Knowing and handling the constitutive structures of trees and bushes, and promoting an efficient use of their parts for human benefit. | Interest in preserving nature. | Respect. |
| Ecological links among beneficial and harmful organisms that make up the ecosystems. | Designing present and reliable methodologies for quantifying forest resources. | Collaboration and participation in team works. | Honesty. |
| Complex ecosystem that provides environmental and economical benefits for society. | Identifying the ecological links among beneficial and harmful organisms that make up the ecosystem. | Interest in self learning and continuous learning. | Responsibility. |
| Interaction between society and forest resources. | Understanding the ecosystem as a complex that provides environmental and economical benefits for society. | Open to criticism and with availability to accept them | Commitment. |
| Information Geographic Systems as tools of the present technology for supporting in decision | | Proactive in decision making strengthening the forest sector. | Ethics. |
| | | Availability for learning from errors. | Unity |
| | | Availability for collaborating in the profession tasks. | |



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



Learning Unit Modules
Focused in Integral Professional Competences

| | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <p>making that carry a sustainable management of forest resources.</p> <p>Forest use techniques that carry a sustainable management of forest resource.</p> | <p>Perform investigation of forest aspects, using forest lands as laboratories.</p> <p>Promote the interaction between society and forest resources for proposing viable solutions for the benefit of both society and ecosystems.</p> <p>Implement techniques for modifying, innovating and applying modern technology for increasing the sustainable production of forest ecosystems.</p> <p>Developing diagnosis, planning and assessing the way forest activity affects social, economical political and cultural society needs.</p> | <p>Being objective in the handling of information</p> <p>Participating in multidisciplinary scientific and technical teams aimed to the solution of problems that the forest sector has.</p> | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

11. Course topics

Unit I: Introduction and basic concepts.
Unit II: Genetic Considerations.
Unit III: Composition and structure of the ecosystem.
Unit IV: Ecosystem processes.
Unit V: Natural disturbance.
Unit VI: Fragmentation.
Unit VII: Soils.
Unit VIII: Plantation management design and restoration purposes.
Unit IX: Exotic species.
Unit X: Facts in the restoration.
Unit XI: Case studies.
Unit XII: Restoration planning.



Learning Unit Modules
Focused in Integral Professional Competences

12. Evaluation criteria

Formative evaluation
Summative evaluation
Self assessment
Co-evaluation
Hetero-Evaluation

13. Informationsources

Basic

- Agee, J. K. 1995. Management of greenbelts and forest remnants in urban forest landscapes. In Bradley, G. A., ed. Urban forest landscapes. University of Washington Press. Seattle. pp. 128-138.
- Bell, S. 1995. New woodlands in the landscape. In Ferris-Kaan, R., ed. The ecology of woodland creation. John Wiley and Sons. Chichester. pp. 27-47.
- Chávez León, G. 1996. Principios, conceptos y consideraciones de restauración ecológica. Ciencia Forestal en México 21(80):3-24.
- Harris, J. S. and Hill, T. C. J. 1995. Soil biotic communities and new woodland. In Ferris-Kaan, R., ed. The ecology of woodland creation. John Wiley and Sons. Chichester. pp. 91-112.
- Jones-Sauer, L. 1998. The once and future forest. Island Press. Washington D. C. 381 p.

Complementary

- Vallejo, R., Cortina, J., Vilagrosa, A., Seva, J. y Alloza, J.A. 2003. Problemas y perspectivas de la utilización de leñosas autóctonas en la restauración forestal. En Restauración de ecosistemas mediterráneos (eds. J.M. Rey Benayas; T. Espineros Pinilla; J.M. Nicolau Ibarra), pp. 11-42, Universidad de Alcalá de Henares, Madrid.
- Zamora, R., Gómez, J.M. y Hódar, J.A. 2001. Las interacciones entre plantas y animales en el Mediterráneo: importancia del contexto ecológico y el nivel de organización. En Ecosistemas Mediterráneos. Análisis Funcional (eds.: R. Zamora y F. Pugnaire), pp. 237-268, CSIC - Asociación Española de Ecología Terrestre, Madrid.
- http://www.consumer.es/web/es/medio_ambiente/urbano/2006/05/
- <http://www.redlan.org/>
- <http://www.revistaecosistemas.net/articulo.asp?Id=305>