

# ECOLOGICAL RECONSTRUCTION AND LANDSCAPE MANAGEMENT - Specialization in Environmental Engineering, Year IV, Semester VII

**Nr. transferable credits: 4**

**Specialized discipline (required)**

**Discipline holder:**

**Chief of doctor works SANDU TATIANA**

## **The objectives of the discipline (course and applications):**

The course and practical applications have the following objectives:

- the acquisition of the knowledge to ensure the application of the best methods of ecological reconstruction;
- the use of information on the best technologies for the use of ornamental plants in ecological reconstruction projects;
- identification and application of technical solutions in solving some problems related to the ecological reconstruction in situ and ex situ of the natural landscapes;
- analysis of ecological reconstruction technologies applied to the protected areas in order to diminish the human impact on the environment.
- knowledge of the methods of analysis and valorization of landscapes;
- application of modern methods of investigating landscape assemblies in order to eliminate / reduce the dysfunctions and critical states that affect the landscape structures and elaborate strategies focused on ecological reconstruction, protection and conservation of protected areas.
- training of communication skills and operationalization of the knowledge acquired through the elaboration and support of reports focused on the in-depth study of case studies presented in the thematic related to the course

## **Content of the discipline**

<b>COURSE (Chapters / Subchapters)</b>
<b>Head. 1. Definition and purpose of ecological reconstruction.</b> The concept of ecological reconstruction. Definition of ecological reconstruction. Purpose and objectives of ecological reconstruction. Research methods.
<b>Head. 2. Brief history of environmental protection in Romania. The need to protect the environment. The objectives of environmental protection. Strategies regarding environmental protection.</b>
<b>Head. 3. Protecting the biosphere.</b> The importance of protected natural areas. Strategies regarding biosphere protection. Types of protected areas.
<b>Head. 4. The MAB program.</b> Definition, origin and purpose of the MAB program. Biosphere reserves. Creation of the World Biosphere Reserves Network. Scheme of operation of the biosphere reserves.
<b>Head. 5. The Natura 2000 European Ecological Network.</b> Definition, purpose, functionality and implementation of the Natura 2000 Network in Romania.
<b>Head. 6. Landscapes and their ecological reconstruction. Generalities regarding landscapes.</b> The notion of landscape. Landscape types. Landscape features. Landscape states. Typology of landscapes.
<b>Practical work</b>
Generalities regarding ecological reconstruction in the world. Examples and case studies
Activities of ecological geological reconstruction of natural landscapes.
Examples of ecological forest reconstruction activities applied in our country.
Activities of ecological reconstruction of the natural landscapes degraded by activities of the industry
Activities of ecological reconstruction of natural landscapes degraded by agriculture.
Activities of ecological reconstruction of the natural landscapes degraded by anthropic activities.
Examples of ecological reconstruction activities in the protected natural areas of our country.

## **Bibliography**

1. **Muntean O.L., 2005** - *Environmental impact assessment*, House of Science Book, Cluj-Napoca.
2. **Sandu Tatiana, 2011** - *National, natural parks and biosphere reserves*, Ion Ionescu Publishing House from Brad, Iasi.
3. **Sandu Tatiana, 2015** - *Ecological Landscape Reconstruction*, Ion Ionescu Publishing House from Brad, Iasi.
4. **Vîntu V., 2000** - *Ecology and environmental protection*. "Ion Ionescu de la Brad" publishing house, Iasi.

### **Final evaluation**

<b>Forms of evaluation</b>	<b>Modalities of evaluation</b>	<b>Percentage of the final note</b>
Written exam	Acquiring knowledge presented at lectures and from the supplementary bibliography	60%
	Attendance monitoring	20%
Practical works	Individual study on a subject imposed	20%

### **Contact**

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**ECOLOGICAL RECONSTRUCTION AND LANDSCAPE DESIGN  
(ENVIRONMENT ENGINEERING, IV th Year of study, VIII th Semester)**

**Credit value (ECTS): 3**

**Course category: mandatory**

**Course holder: PhD, Lecturer Roberto Renato BERNARDIS**

**Discipline objectives (course and practical works)**

- Transmission of knowledge, formation of skills and competences for ecological reconstruction and landscaping.
- Use of information on the best ecological reconstruction technologies for landscaping.
- Acquiring the necessary knowledge for landscape conservation and reconstruction, as an integral part of environmental protection.
- Understanding how to execute a landscape development project and drafting the related documentation.
- Drafting complete and correct ecological reconstruction and landscape planning documentation.

**Contents (syllabus)**

<b>Course (chapters/subchapters)</b>
<b><u>1. Ecological reconstruction and landscaping. Concept, purpose and objectives.</u></b>
1.1. Concept of ecological reconstruction
1.2. Purpose of ecological reconstruction
1.3. Objectives of ecological reconstruction
<b><u>2 Creation and preservation of landscapes, as an integral part of environmental protection</u></b>
2.1 Landscape concept.
2.2. The importance of conserving natural ecosystems and landscapes.
2.3. Functions of green areas
<b><u>3. Principles of landscaping used in ecological reconstruction</u></b>
3.1. Functional principles
3.2. Aesthetic-compositional principles
3.3. Technical and ecological principles
3.4. Economic principles
<b><u>4. Characterization of the main types of degraded and polluted landscapes</u></b>
4.1. Industrial sites.
4.2. Deposits of urban and industrial waste.
4.3. Sterile stockpiles from coal, iron, lead, zinc, sulfur, manganese, limestone mines etc.
4.4. Urban sites.
4.5. Weathered, washed and rocky lands; excess water lands.
<b><u>5. Vegetation - element in the ecological reconstruction of degraded and polluted landscapes</u></b>
5.1. Role of vegetation in the ecological reconstruction of landscapes
5.2. Species of plants used in the ecological reconstruction of degraded and polluted lands.
<b><u>6. Structure and necessary equipment for ecological reconstruction landscaping</u></b>
6.1. Landscaping programs
6.2. Landscaping structure related to social-cultural endowments, housing, industries, areas of harmfulness
6.3. Urban and road traffic landscaping
6.4. Green spaces for specialized profile landscaping

Practical works
1. Construction techniques for site landscaping (infrastructure, facilities, access roads)
2. Recultivation methods for degraded and polluted lands.
3. Special landscaping in the urban area (green roofs, vertical gardens, etc.)
4. Stages of project drafting for ecological reconstruction and landscaping on ecological principles
5. Elaboration of a project of ecological reconstruction and landscaping

### Bibliography

1. **Bernardis R., 2010** - *Arboricultură ornamentală. Vol.1.* Editura „Ion Ionescu de la Brad”, Iași.
2. **Bernardis R., 2011** - *Arboricultură ornamentală. Vol.2.* Editura „Ion Ionescu de la Brad”, Iași.
3. **Bernardis R., 2012** - *Arboricultură ornamentală. Vol.3.* Editura „Ion Ionescu de la Brad”, Iași.
4. **Cherecheș D., 2000** – *Reîmpădurirea ca o posibilă strategie pentru reabilitarea ecologică a hălzilor de mină.* Editura Univ. de Nord, Baia-Mare.
5. **Cristea V., Hodișan I., Pop I., Bechis Emilia, Groza G., Galan P., 1990** - *Reconstrucția ecologică a haldelor de steril minier.* Univ. din Cluj-Napoca.
6. **Iliescu Ana-Felicia, 2001** - *Îndrumător pentru inițierea în proiectarea peisagistică,* USAMV, București.
7. **Malschi Dana, Stan Gh. 2006** - *Reconstrucția ecologică - principii, noi orientări, perspective.* Environment&Progress 7/2006.
8. **Oros V., 2002** - *Reabilitare ecologică a siturilor degradate industrial.* Editura Univ. Transilvania Brașov.
9. **Ozunu Al., Teodosiu Carmen, 2002** - *Prevenirea poluării mediului .*Editura Univ. Transilvania Brașov
10. **Sonea V., Palade L., Iliescu Ana-Felicia, 1979** - *Arboricultură ornamentală și arhitectură peisageră.* Edit. Didactică și Pedagogică București.
11. **Traci C., Costin E., 1966** - *Terenurile degradate si valorificarea lor pe cale forestieră.* Editura Agrosilvică, Bucuresti.

### Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Course	Exam	80 %
	presence	10 %
Practical works	Tests + cours and practical	10 %

### Contact

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