

Land reclamation (IInd Year of study, IIIrd SEMESTER)

Credit value (ECTS) 4

Course category

Domain (Imposed)

Course holder:

Prof. Dr. Daniel BUCUR

Discipline objectives (course and practical works)

The aim of the course is to provide students with the knowledge and skills required on agricultural water management field and the rational use of land through responsible management of natural resources and environmental protection. Students will also study the modalities of the protection and restoration of lands that are damaged by natural phenomena, such as soil erosion and land sliding. The classical technical options of water storage and flood protection will be analyzed from a technical and economic point of view. General concepts of hydraulics and hydrology, necessary to understanding specific problems of the land reclamation works will be presented.

Practical works aim to familiarize students with the design of agricultural irrigation systems, and surface and sub-surface drainage works. Students will be able also to design the categories of agricultural land use and to establish the soil erosion control measures.

Contents (syllabus)

Course (chapters/subchapters)
Importance and necessity of agricultural land arrangement with land improvement works.
Notions of Hydraulic: notions of hydrostatic; notions of hydrodynamics; hydraulics applications in land reclamation works.
Notions of hydrology, hydrography and hydrometry: The Water Cycle; hydrographic network; hydrometry of surface waters.
Notions of hydrogeology: classification and distribution of groundwater; groundwater regime on irrigated and drained lands.
Irrigation system: water sources and irrigation water quality; water intakes for irrigation; ditch irrigation systems; pressure piped irrigation system; irrigation techniques; operation and maintenance of irrigation systems.
Surface drainage of agricultural land: excess moisture on agricultural land; network channels design; drainage network building.
Subsurface drainage systems: subsurface pipes; mole drainage; subsurface drainage on irrigated lands; operation and maintenance of the drainage works.

Soil erosion control: factors influencing erosion; consequences of soil erosion; quantitative estimation of soil erosion; quantitative estimation of the soil erosion; soil erosion control techniques.

Landslides: causes and effects of landslides; prevention and control of landslides; landslide mitigation measures.

Practical works
Dimensioning of channels and pipes.
Meteorological and hydrological data processing.
Establishment of irrigation regime elements.
Drawing and dimensioning of irrigation network.
Drawing of the longitudinal and cross-sectional profile of a channel.
Calculation of embankment of the irrigation channel.
Dimensioning a pumping station.
The design and sizing of surface drainage network.
The design and sizing of subsurface drainage network.
Quantitative estimation of soil erosion on agricultural land.
Agricultural terraces design.
Check dams design.
Final colloquium of knowledge evaluation

Bibliography

1. Bucur D., 2007 - *Preserving agricultural land through land improvement works* (in Romanian). Ion Ionescu de la Brad Publisher, Iasi, 314 p, ISBN 978-973-7921-85-2.
2. Cîmpeanu S., Bucur D., 2006 - *Soil erosion control* (in Romanian), Relal Promex Publisher, Bucuresti, 245 p, ISBN 973-85863-6-4.
3. Savu P., Bucur D., 2012 - *Land use planning for sustainable agriculture* (in Romanian), Ion Ionescu de la Brad Publisher, Iasi, 502 p, ISBN 973-8014-62-X.
4. Bucur D. ed., 2016 - *River Basin Management*, InTech, Rijeka, ISBN 978-953-51-2604-1, DOI: 10.5772/61557, 316 pages, - <http://dx.doi.org/10.5772/61557>).
5. Bucur D., Jitareanu G., Ailincăi C., 2011 - *Soil Erosion Control on Arable Lands from North-East Romania*, In: *Soil Erosion Issues in Agriculture*, Godone D., Stanchi Silvia eds., InTech, 295-314, ISBN 978-953-307-435-1.
6. Bucur D., Moca V., 2012 - *Tile drainage on agricultural lands from North-East Romania - experimental variants and technical efficiency*, In: *Drainage systems*, Javaid M. S. ed., InTech, 211-240, ISBN978-953-51-0243-4

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Oral examination	70%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	30%

Contact

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