

WATER COURSES REGULARIZATION AND SOIL EROSION CONTROL (IIIrd Year of study, VIth SEMESTER)

Credit value : 4

Course category:

Domain (Imposed)

Course holder: Lecturer Ph.D.Eng. ESMERALDA CHIORESCU

Discipline objectives:

According to the analytical program, the discipline suggests the deepening of the theoretical and practical knowledges in the application of hydraulics, hydrology and hydrogeology in the works of watercourses regularization, the revaluation of these knowledges in engineering purposes, the knowing of designing, execution and exploitation of watercourses regularization, as well as the appreciation of the importance of these things and the evaluation of the material and financial effort regarding the rational use of the area, mentenance and uprising the potential of soil preservation, while under the conditions of environment protection.

Contents (syllabus)

Course (chapters/subchapters)
1. Water course bed's regularization
1.1. Definitions, introductory notions
1.2. The characteristics of the natural watercourse beds
1.3. Watercourse bed's transformation causes
1.4. The movement, transportation and deposition of drift
1.5. Studies and fundamental elements of watercourses regularization design
1.6. Watercourses regularization works
1.7. Banks defence works
1.8. Local areas regularization works
1.9. General rules for watercourses regularization work's designs
2. Defence against flooding through dams
2.1. General points for floods
2.2. The effect of dams on the hydrologic regime of the river
2.3. The classification of dams
2.4. Planning of dams
2.5. The execution of dams
2.6. Anexe constructions for the dam workings
2.7. Exploitation and maintenance of the dam workings
2.8. The placement and usage of the area where the dams are located

3. The regulation of the course's flow of water within the accumulation works
3.1. General points regarding the regulation of the flow
3.2. The classification of the accumulation lakes
3.3. Studies and researches needed for the regulation of water flow through the accumulation works
3.4. The placement conditions for the lake containing a dam
3.5. The stabilisation of the volume of tributary water and the volume of water which can add up in the accumulation
3.6. The levels and corresponding volumes in an accumulation lake with a complex function
3.7. The estimation of volume of water corresponding to the accumulation
3.8. The dam of the accumulation lake
3.9. Hydrotechnical buildings for the evacuation fo water from the accumulation lake
3.10 The exploitation and maintenance of the accumulation lakes
4.1. The erosion of soil: classification and effects
4.2. Natural factors, artificial factors
4.3. Methods for preventing and battling the erosion of the soil

Practical works
The topographic base for the water course regulation
The prelucration of the necessary hidrological data for the making the water course regulation
The elements of regularized bed
Setting the courses of the dams (longitudinal and remuu, transversal and partitioning)
The determenation of the infiltration flows in the dam
The determenation of the depression curve for the dams
The protection of the slopes of the dams and the specific proiection elements of the dams in barred regime
The setting of the emplacement of the dam of the accumulation lake and the calculation of the affluent water volume
The drawing of the specific curves and the calculation of the volumes characteristic for the accumulation lake
Sizing a accumulation lake dam
Sizing of the hydrotechnical constructions for the evacuation of the water of the accumulation lake
The establishment of the nivelitic profile through the dam axis and the calculation of the embankment volume
Designing of the transversal works on the holes of the depth erosion
Laboratory colloquium.

Bibliography:

- Băloiu V.- Combaterea eroziunii solului și regularizarea cursurilor de apă, E.D.P.București, 1982
- Băloiu V, Amenajarea bazinelor hidrografice și a cursurilor de apă, Ed. Ceres 1980

- Chiriac V. ș.a. – Prevenirea și combaterea inundațiilor, Ed. Ceres 1980
- Giurma I. Viituri și măsuri de apărare, Ed. Gh. Asachi Iași 2003
- Giurma I, Crăciun I, Giurma R, - Hidrologie, Editura “Politehniun”- Iași, 2009
- Savu P., Bucur D., – Regularizarea cursurilor de apă, Editura “Ion Ionescu de la Brad”- Iași, 2008

Evaluation:

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	written examination	60%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	40%

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