



HYDROGEOLOGY OF HUNGARY

Hydrogeology Engineer MSc mesterszak

2018/19 II. félév

TANTÁRGYI KOMMUNIKÁCIÓS DOSSZIÉ

Miskolci Egyetem
Műszaki Földtudományi Kar
Környezetgazdálkodási Intézet

Tartalomjegyzék

1. Tantárgyleírás, tárgyjegyző, óraszám, kreditérték
2. Tantárgytematika (óraóra lebontva)
3. Minta zárthelyi

1. Tantárgyleírás, tárgyjegyző, óraszám, kreditérték

Course Title: Hydrogeology of Hungary Hydrogeology of Hungary Instructor: Dr. Enikő Darabos, assistant lecturer	Code: MFKHT720026 Responsible department/institute: Institute of Environmental Management Type of course: Compulsory																						
Position in curriculum (which semester): 2	Pre-requisites (if any):-																						
No. of contact hours per week (lecture + seminar): 2+0	Type of Assessment (examination/ practical mark / other): exam																						
Credits: 2	Course: full time																						
Course Description: To familiarize students with the hydrogeological structure of Hungary. A detailed overview of being a hydrological basin country. To prepare student how to solve basic hydrology-based design problems. The short curriculum of the subject: Water supplies of Hungary, major outlines of water supply management. Regional tectonics parts of Hungary. The hydrological division of Hungary and the basis of division; their comparisons. Water bodies. Utilization and its possibilities, quantity and areas of different water types (shallow ground water, bank-filtered water, deep ground water, water of fissure rocks, karst water. Thermal water reserves in porous and karstic rocks. Mineral and medicinal waters. Matters of regional water production. Water supply protection. Competencies to evolve: Knowledge: T1, T2, T6, T7 Ability: K8, K10 Attitude: A4 Autonomy and responsibility:F3, F5, F6																							
Assessment and grading: Students will be assessed with using the following elements. <table border="0" style="width:100%"> <tr> <td>Attendance:</td> <td style="text-align:right">15 %</td> </tr> <tr> <td>Short quizzes</td> <td style="text-align:right">10 %</td> </tr> <tr> <td>Midterm exam</td> <td style="text-align:right">40 %</td> </tr> <tr> <td>Final exam</td> <td style="text-align:right">35 %</td> </tr> <tr> <td>Total</td> <td style="text-align:right">100%</td> </tr> </table> Grading scale: <table border="0" style="width:100%"> <tr> <td>% value</td> <td>Grade</td> </tr> <tr> <td>90 -100%</td> <td>5 (excellent)</td> </tr> <tr> <td>80 – 89%</td> <td>4 (good)</td> </tr> <tr> <td>70 - 79%</td> <td>3 (satisfactory)</td> </tr> <tr> <td>60 - 69%</td> <td>2 (pass)</td> </tr> <tr> <td>0 - 59%</td> <td>1 (failed)</td> </tr> </table>		Attendance:	15 %	Short quizzes	10 %	Midterm exam	40 %	Final exam	35 %	Total	100%	% value	Grade	90 -100%	5 (excellent)	80 – 89%	4 (good)	70 - 79%	3 (satisfactory)	60 - 69%	2 (pass)	0 - 59%	1 (failed)
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- C.W., Fetter Jr.: Applied hydrogeology; Mitsch, W. J., Gosselink, J. G.: Wetlands - J. M. Sharp: Fractured Rock Hydrogeology; B. B. S. Singhal – R. P. Gupta: Applied Hydrogeology of Fractured Rocks; S. Eslamian: Handbook of Engineering Hydrology - Fundamentals and Applications - Freeze, R. A., Cherry, J. A.: Groundwater, Prentice Hall, 1979; Fetter Jr., C. W.: Applied Hydrogeology (4th Edition), Pearson, 2014; Kreitler, C. W.: Hydrogeology of sedimentary basins. Journal of Hydrology, 1989, 106, 29-53; Hubbert, M. K.: The Theory of Ground-water Motion. The Journal of Geology, 1940, 48, 785-944; Tóth, J.: A Theory of Groundwater Motion in Small Drainage Basins in Central Alberta, Canada. Journal of Geophysical Research, 1962, 67, 4375-4387; Tóth, J.: A theoretical analysis of groundwater flow in small drainage basins. Journal of Geophysical Research, 1963, 68, 4795-4812) - M. Karamouz – A. Moridi – S. Nazif: Urban Water engineering and management, CRC Press; E. Vázquez-Sune – X. Sanchez-Vila – J. Carrera: Introductory review of specific factors influencing urban groundwater, an emerging branch of hydrogeology, with reference to Barcelona, Spain, Hydrogeology Journal, 2005 13, pp. 522-533)																							

2. TANTÁRGYTEMATIKA

Hydrogeology of Hungary.
Tantárgytematika (ÜTEMTERV)
Aktuális tanév tavaszi félév
Hidrogeológus mérnök MSc mesterszak 2. félév, törzsanyag tárgy

Hét	Előadás
Február 14.	Introduction of course material, syllabus, requirements and deadlines
Február 21.	Geological foundations (teacher: Rita Miklós)
Február 28.	Hydrogeology of coastal and wetland regions (teacher: Márton Tóth)
Március 7.	Urban hydrogeology (teacher: Csaba Ilyés)
Március 14.	Test from the curriculum of previous training Basin hydrogeology (teacher: Zsombor Fekete)
Március 21.	Karst Hydrogeology and other case studies (teacher: PhD Attila Kovács)
Március 28.	Test from the curriculum of previous training Transboundary water resources (teacher: Prof. Péter Szűcs)
Április 4.	Hydrogeology of river surroundings (teacher: PhD Andrea Kolencsikné Tóth)
Április 11.	Student presentations: “Hydrogeology of Own Country”
Április 18.	Student presentations: “Hydrogeology of Own Country”
Április 25.	Fractured rock hydrogeology (teacher: Enikő Darabos)
Május 2.	Test from the curriculum of previous training Student presentations: “Hydrogeology of Own Country”
Május 9.	<i>Holiday by Dean’s Decision</i>
Május 16.	Replacement option to every tests

3) MINTA ZÁRTHELYI

Regional Hydrogeology

Exam 1.

1. What are the mechanisms of fresh water discharge of coastal aquifers? (3 points)
2. What is the difference between passive and active encroachment? (you can draw) (2 points)
3. What are the elements of water budget in case of a wetland? (sign the inflow with ,+' and the outflow with ,-') (3 points)
4. Name at least 3 processes which affect the "original" permeability of rocks/sediments! (6 points)
5. Indicate whether the following features characterize the recharge or discharge areas: (6 points)
 - i. topographically higher zones
 - ii. topographically lower zones
 - iii. upward gradient and flow
 - iv. downward gradient and flow
 - v. shallow water table
 - vi. deep unsaturated zone
 - vii. convergent flow
 - viii. divergent flow
 - ix. relatively fresh water
 - x. relatively saline water
 - xi. recent water
 - xii. older water
6. Please arrange the following pollutants into groups! (2 points)

Pollutants: Pharmaceuticals; Endocrine disrupting chemicals; Gasoline constituents; Personal care products (PPCP); Chlorinated solvents; Polycyclic aromatic hydrocarbons (PAH)

Groups: Micropollutants; Macropollutants

7. In creating a flow and solute transport model for an urban environment, what are the considerations which must be taken into account? (3 points)

8. Drainage basin terms (4 points)
 - i. Transpiration
 - ii. Throughflow
 - iii. Percolation
 - iv. Surface runoff

9. What affects the shape of a hydrograph? (5 points)

10. The calculation of exchange flow rate between river and GW based on Darcy's law! (3 points)

11. What can cause that a gaining river becomes losing one? (3 points)

12. How rocks can be classified from geological aspects? List the different types and describe some sentences. (3 p)

13. What is the difference between primary and secondary porosity? (2 p)

Miskolc, 13. June 2018

Teacher: Csaba Ilyés

Time available: 60 minutes, maximum points: 45

(0-27=1; 28-31=2; 32-36=3 37-40=4; 41-45=5)