UNIVERSITY OF PANNONIA

COURSE DATASHEET

Semester:	2012/13/2
Course:	Environmental Modelling
Code:	VEMKKVA212K
Responsible department:	Department of Environmental Engineering
Department code:	MKKV
Responsible instructor:	Viola Somogyi

Course objectives:

Understanding of basics of environmental modelling, the mathematical description of environmental processes. Students should be able to carry out air dispersion, hydraulic and transport, sound models with the aid of special softwares and to interpret the results properly.

Course content:

1. Basics of environmental modelling. Mathematical, scientific models. 2. Basic theory. 3. Transport equation and similarity. 4. Transport equation. Analitical solution without convection. 5. Transport equation. Analitical solution with convection. 6. Non –linear modells. 7. Modelling of hydraulics of aquifer. (vadose and saturated zones) 8. Modelling of hydraulics of aquifer. (steady state solution) 9. Modelling of hydraulics of aquifer. (determination of impact zone) 10. Modelling of hydraulics of aquifer. (pumping tests) 11. Modelling of hydraulics of aquifer and transport modelling. 12. Modelling of surface waters. Eutrofisation. 13. Modelling o fair pollution dispersion. 14. Global climate models. 15. Ecological models. RISK analysis and modelling.

Requirements, evaluation and grading:

Successful paper exam at the end of the semester.

Required and recommended readings:

Szűcs Ervin: Hasonlóság és modell. Műszaki K., Bp., 1972. Bear, J., Verrujit, A.: Modelling Groundwater Flow and Pollution. D. Reidel Publ. Co., 1987. Benedek P., Literáthy P.: A vízminőség-szabályozás a környezetvédelemben. Műszaki Kiadó., 1979. Stern, A. C.: Air Pollution. Volume I.: Air pollutants, their transformation and transport. Academic Press, New York, 1976. Haken, H.: Szinergetika. Műszaki Kiadó., Bp. 1984. Modelling Change in Environmental Systems. Szerk.: Jakemann, A. J., Beck, M. B., McAleer, M. J. , John Wiley & Sons, 1993.