



## SUBJECT DATASHEET

<b>Semester:</b>	2009/10/2
<b>Subject:</b>	Environmental Modelling
<b>Code:</b>	VEMKKVA212K
<b>Responsible department:</b>	Department of Environmental Engineering
<b>Responsible department code:</b>	MKKV
<b>Responsible lecturer:</b>	Imre Magyar

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### Educational 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.

### Detailed content of the subject:

1. Basics of environmental modelling. Mathematical, scientific models. 2. Basic theory. 3. Transport equation and similarity. 4. Transport equation. Analytical solution without convection. 5. Transport equation. Analytical solution with convection. 6. Non-linear models. 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 of air pollution dispersion. 14. Global climate models. 15. Ecological models. RISK analysis and modelling.

### Requirements:

Successful paper exam at the end of the semester.

### Required and suggested references:

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.