

COURSE TITLE:

## BOUNDARY LAYER METEOROLOGY

COURSE DESCRIPTION:

*Main goals:* description of the structure, turbulence exchange processes and measuring techniques in the planetary boundary layer (PBL). Fundamentals of the mathematical modeling of PBL for environmental problems (air pollutions, wind energy resources, etc.)

*Main subjects:* Structure and daily variation of PBL, governing equations, turbulence, similarity theory in the surface layer and the whole PBL; 1D PBL models, Ekman-layer; turbulence transport of different properties (momentum, energy trace gases), local and nonlocal mixing; structure of the stable and unstable PBL; special PBL-s (above inhomogeneous surfaces, cities, ocean, orography, etc.); PBL - free atmosphere interactions. Daily variations of trace gases in PBL. Parameterization of PBL and turbulence mixing in numerical weather prediction and air pollution transport models. PBL processes in the meteorological preprocessors and National Ambient Air Quality Standards.

LITERATURE:

Compulsory literature:

Arya, S. P., 2001: Introduction to micrometeorology. Academic Press, 420 p.

Optional literature:

Stull, R. B., An Introduction to Boundary Layer Meteorology. Kluwer, 666 p

Fisher, B.E.A., Erbrink, J.J., Finardi, S., Jeannet, P., Joffre, S., Morselli, M.G., Pechinger, U., Seibert, P., Thomson D.J. (Eds.), 1998. COST Action 710-Final Report. Harmonisation of the pre-processing of meteorological data for atmospheric dispersion models. L-2985 European Commission, Luxembourg, EUR 18195 EN (ISBN 92-828-3302-X).

TEACHER:

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