UNIVERSITY OF PANNONIA

COURSE DATASHEET

Semester:	2016/17/1
Course:	Radiations and radionuclides in the nature
Code:	VEMKRKR113S
Responsible department:	Institute of Radiochemistry and Radioecology
Department code:	MKRK
Responsible instructor:	Edit Tóth-Bodrogi

Course objectives:

Isotopes and radiations in the environment

Course content:

Radioactive processes in the Universe. Cosmic radiation, cosmogene radionuclides. Source and occurrence of terrestrial isotopes. Source and effects of radon, radon protection. Technologically increased natural origin radioactive materials, handling and storing. Exposition from building materials, qualification of buliding materials. Radioactive aerosol contamination in the atmosphere. Geological dating from the respect of the radioactive waste storing. Water dating nad other dating with radiocarbon method. Other radionuklides in archeological research. Classification of environmental radiations, electro-magnetic spectrum, sources, effects and measurement of ultraviolet radiation. Sources, effects and measurement of infrared radiation. Main applications and safety of laser radiation. Usage and health effects of radiofrequency and microwave radiation. Characteristic of low frequency fields, other non-ionizing radiation sources (supersound). Rules of applicating non-ionizing radiations.

Requirements, evaluation and grading:

In the course of an oral examination two overall questions on the issues of the lectures are provided to each student. A short period of time (maximum 30 minutes) is supplied to the students to prepare some drafts of their answers. The exam is qualified in the following ways: - If draft and the answers provided by the student are clear, correct and explains every important relationship on the subject, the record is marked as excellent one (5). - If he student is able to make an overall analysis on the issue solely by the directions of the teacher, he (she) is assessed with a good record (4). - If the student is not able to give clear description on the main relationships of the subject but he (she) can define the fundamental conceptions, his grade is a fair (medium) (3). - If the student can define the fundamental conceptions of the issue by the directions of the teacher, he gets a pass (2). - Without having studied the fundamental conceptions the student is qualified with an unsatisfactory (fail) record (1).

Required and recommended readings:

Marx Gy.: Atommag-közelben. Mozaik Kiadó, Szeged, 1996 M. Eisenbud: Environmental Radioactivity. London, 1987 D. Aitken: Fizika és régészet. Budapest, 1989 Koltay E. (szerk.): Fejezetek a környezetfizikából. KATE-ATOMKI, Egyetemi jegyzet, Debrecen, 1994 H. Moseley: Non-ionising radiations, Medical physics

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Required and recommended readings:

handbooks, 18, Bristol, Great Britain 1988. Duchene A.S., Lakey J.R.A.,Repacholi M.H.: IRPA Guidelines on Protection against Non-ionising radiations, Pergamon Press, USA 1991. Szabo, L.D.: Standards and Guidelines on Protection against Non-ionising Radiations. Central European J. on Occupational and Environmental Medicine, 1, 266-285, 1995.