



## COURSE DATASHEET

<b>Semester:</b>	2016/17/1
<b>Course:</b>	Natural and artificial radiations
<b>Code:</b>	VEMKRKSV12S
<b>Responsible department:</b>	Institute of Radiochemistry and Radioecology
<b>Department code:</b>	MKRK
<b>Responsible instructor:</b>	dr. Zoltán Németh

---

### Course objectives:

To give basic principle of natural and artificial radiations

### Course content:

Nonionizing radiations. The structure of the nuclei, elementary particles, isotope effects. Radioactivity, the laws of radioactive decay. Nuclear radiations. Interaction of nuclear radiations with matter. Basic principles of dosimetry. Basic principles of radiation protection. Nuclear detectors. Metrology of nuclear radiations. Design and operation of nuclear reactors. Technology of nuclear materials. Main applications of radioisotopes. Radiation technologies. Nuclear weapons.

### 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 the 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:

Németh Zoltán: Radiokémiai és izotóptechnikai alapismeretek (VE 1996) Nagy Lajos György: Radiokémia és izotóptechnika, Tankönyvkiadó, (Bp., 1989) W.D. Ehmann, D.E. Wance: Radiochemistry and Nuclear Methods of Analysis, J.W. & Sons, New York 1991.