Course title: Art of Doing Science	**Neptun code: MAKDHN1EN**
Course coordinator: Dr. George Kaptay, DSc, member of HAS, professor	
type of lesson and number of lessons: **lecture (2)**	
method of evaluation: colloquium	
curriculum location of the subject: (autumn/spring semester): autumn and spring	
pre-study conditions *(if any)*: -	
The task and purpose of the subject:	
To teach general methodology of doing science, conducting research, publishing papers, presenting talks, filing patents and communicating with financing authorities, including TRL levels, ethics of science and sciento-metrics.	
Course description:	
Research, development, innovation. Types of researchers and research managers. Graduation and scientific degrees. Researchers and professors of different levels. Research institutions and financing of research, research projects. The process of doing research: literature search, identification of knowledge gap, setting the goal, creating hypothesis and research plan, performing and documentation of experiments, from primary results to generalizing models, the forms and criteria of scientific statements (claims). The forms of scientific communication: dissemination of new knowledge. Personal scientific works (BSc. MSc and PhD thesis). Journals and journal papers: how to write them, their submission, review and processing. Financing of publications: government, reader, author. Open Access, publishing licenses and predatory journals and conferences. Conferences and presentations: invited, plenary, oral and poster; conference proceedings. Books: monographs, encyclopedia, handbooks, technical books, textbooks. Intellectual property, patenting: its goal, the inventor, the owner, the lawyer, the patent office, the claims. The afterlife of scientific results: the life-time of papers. Evaluation of journals (impact factor and Q-index). Evaluation of individuals (cumulative impact factors, independent citations, h-index, Ioannidis best 100,000 reasearcher and the hh-index). Evaluation of research groups and institutions (QS, THE). Motivation of colleagues (NTL and HTL, shaking hands and cash). The ethics of doing science: the major ethical sins. TRL = technology readiness level = the way to communicate with money-men.	
Required literature:	
1. E.Garfield: Citation indexing. Wiley Interscience, 1979. 2. T.S.Kuhn: The structure of scientific revolutions. 1965. 3. D De Solla Price: Little science – big science. 1979 4. J.Gribbin: Science. A history. 1543-2001. Penguin Books, London, 2003.	
Recommended literature:	
1. Simonyi K.: The cultural history of physics. Budapest. 1986.	