SZÉCHENYI EGYETEM
UNIVERSITY OF GYŐR

Tárgytematika / Course Description
Methodology of research

N_DMA40

Tárgyfelelős neve /
Teacher's name: dr. Varga Zoltán

Félév / Semester: 2022/23/1

Beszámolási forma /
Assesment: Vizsga

Tárgy heti óraszáma /
Teaching hours(week): 0/0/0

Tárgy féléves óraszáma /
Teaching hours(sem.): 30/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

The objective of this course is to teach the PhD students about the theoretical, practical and methodological questions of scientific research. The students get up-to-date knowledge of the most important issues of science and research methodology and of the forms of scientific activity; and they can know the conceptual and methodological tools of their own field of science. They can also understand the methods to solve a problem (observation, experiment), and be able to design and carry out the research.

The course gives information about the special methodological issues of plant cultivation sciences; the principles and basic concepts of arable experiments; the methods of designing, setting and evaluating experiments.

The following issues are also important parts of the course: the different types of plant cultivation experiments (single-factor-, bi- and multifactorial experiments, factorial experiments, experiment sequences, duration experiments, technological development experiments); the principles and models of analysis of variance, correlation calculations and regression analyzes (linear and non-linear, multiple); and use of special computer programs (GenStat, SPSS, MSTAT-C) in designing and evaluating experiments. Students of the course should understand the use of multivariate biometric methods (main component analysis, cluster analysis, discriminant analysis) and they are able to decide on the use of different analytical and synthesizing methods.

The students can learn the steps to make scientific publications. They have to be able to distinguish between scientific and non-scientific work, and to recognize the pseudo-scientific activity. They must be aware of the ethical rules of making scientific publications and the important parameters of scientometrics.

TANTÁRGY TARTALMA / DESCRIPTION

1. The importance and history of science and the methodology of research

2. Comparative analysis of common knowledge and scientific knowledge

3. Parallel examination of theoretical knowledge and empirical knowledge

4. Practice of scientific research; the basic steps of scientific knowledge; designing and conducting scientific research

5. Principles and basic concepts of arable experiments; experimental layouts and computer design of experiments; types, advantages, disadvantages and use of plant cultivation experiments

6. The principles, models of analysis of variance (ANOVA) and use of computer programs to evaluate different types of experiments

7. Use of non-parametric probes, correlation calculations and regression analysis in the evaluation of crop experiments

8. Use of multivariate biometric methods in the synthesis of experimental results

9. Basic rules of searching for scientific literature, use of internet databases; search for articles and quotations, query techniques

10. Types of scientific and non-scientific publications, conditions of publication; strategies for publishing and selecting journals; ethical issues of scientific research and publishing

11. Creating scientific publications (from title to references; content and form requirements)

12. Scientometrics, measurement of scientific performance; interpretation of the used performance rating factors, their advantages and disadvantages (impact factor, quotation, Hirsch index, etc.)

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SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Meeting the conditions set by the supervisor.

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Mezőgazdasági Intézet, Martonvásár.

Bujdosó E. (1986): Bibliometria és tudománymetria, Budapest, MTA Könyvtára

Csermely P., Gergely P., Koltay T., Tóth J. (1999): Kutatás és közlés a természettudományokban. Budapest. Osiris Kiadó

Ireland, C.l. (2010): Experimental Statistics for Agriculture and Horticulture. CABI, Cambridge.

Popper, K. (2002): The logic of scientific discovery. Routledge Classics, Taylor and Francis Group. 513 oldal.

Sváb, J. (1981): Biometriai módszerek a kutatásban. Mezőgazdasági Kiadó, Budapest.

Varga-Haszonits Z., Varga Z. (2006): Kutatásmódszertani ismeretek. Oktatási segédanyag. NYmE-MÉK, Mosonmagyaróvár, 159 oldal.