SUBJECT DATASHEET

RESEARCH METHODOLOGY II

BMEGT41D400

I. SUBJECT DESCRIPTION

1. SUBJECT DATA

Subject name
RESEARCH METHODOLOGY II

ID (subject code)	BMEGT41D400

Type of subject
contact lessons

Course types and lessons

Type	*Lessons*
Lecture	2
Practice	0
Laboratory	0

Type of assessment
seminar grade

Number of credits
3

Subject Coordinator

Name	*Position*	*Contact details*
Dr. Héder Mihály	associate professor	heder.mihaly@gtk.bme.hu

Educational organisational unit for the subject
Department of Philosophy and History of Science

Subject website
www.filozofia.bme.hu

Language of the subject
magyar - HU

Curricular role of the subject, recommended number of terms
Programme: **Ph.D. Program in Mechanical Engineering**
Subject Role: **Compulsory**
Recommended semester: **0**

Direct prerequisites

Strong	None
Weak	None
Parallel	None
Exclusion	None

Validity of the Subject Description
Approved by the Faculty Board of Faculty of Economic and Social Sciences, Decree No: 580485/10/2023 registration number. Valid from: 28.06.2023.

2. OBJECTIVES AND LEARNING OUTCOMES

Objectives

The aim of the course is to teach students the theory of knowledge, philosophy of technology, and science ethics at the highest level. The subject includes the examination of meta-ethical questions, the exploration of the boundaries of knowledge, and the comparison of scientific methodologies. In the field of philosophy of technology, the course co-vers the concept of technical science and basic technical research, philosophical questions and theoretical possibili-ties of technical design, and the social control of technology. In the field of science ethics, we primarily focus on the anomalies and contradictions of scientific impact measurements, as well as emerging issues related to publication ethics.

Academic results

Knowledge

1. Understands advanced concepts and techniques in epistemology.
2. Knows theories of scientific development and their critiques.
3. Familiar with meta-scientific questions and underdetermination issues.
4. Knows knowledge acquisition and problem-solving methods applicable in their field.
5. Possesses confident methodological knowledge and understands the possibilities and perspectives of methodological innovation.
6. Has knowledge about the placement of their field in a broader system, recognizing connections to related fields, and utilizing opportunities and context provided by the broader system of influences.

Skills

1. Uses the professional vocabulary, scientific concepts, and specialized terminology of the field with confidence in professional communication.
2. Possesses the ability to approach science and its environment with an interdisciplinary perspective.
3. Capable of critical analysis and processing of information by applying a wide range of well-founded tech-niques.
4. Able to participate in lifelong learning processes.
5. Identifies specialized professional problems with a versatile, interdisciplinary approach, revealing and formulating the detailed theoretical and practical background necessary for their solution.

Attitude

1. Open to critical self-assessment, various forms of professional development, intellectual worldview self-improvement methods, and strives for self-development in these areas.
2. Possesses a problem-centric perspective and problem-solving thinking.

Independence and responsibility

1. Develops a historically and ideologically coherent individual position within their professional environment, which supports their own and their environment's development and awareness.
2. Independent, constructive, and assertive in collaboration within and outside the institution.
3. . Carries out publication tasks with the highest ethical integrity.

Teaching methodology

Seminars, case studies

Materials supporting learning

- Forrai Gábor Szegedi Péter (szerk.), Tudományfilozófia: Szöveggyűjtemény Budapest: Áron Kiadó, Budapest, 1999. Ford. Altreichter et. al.
- Ihde, Don. Philosophy of technology. Springer Netherlands, 2004.
- FRANSSEN, Maarten; LOKHORST, Gert-Jan; VAN DE POEL, Ibo. Philosophy of technology. 2009.

II. SUBJECT REQUIREMENTS

TESTING AND ASSESSMENT OF LEARNING PERFORMANCE

General Rules

A 2.2. pontban megfogalmazott tanulási eredmények értékelése.

Performance assessment methods

1. Részteljesítmény értékelés (aktív részvétel): Aktív részvétel az órai filozófiai diszkusszióban 2. Beadandó készítése (opcionális)

Percentage of performance assessments, conducted during the study period, within the rating

- **részteljesítmény értékelés (házi feladat) (opcionális)**: 20
- **részteljesítmény értékelés (aktív részvétel)**: 100
- **összesen**: 100

Percentage of exam elements within the rating

Conditions for obtaining a signature, validity of the signature

Issuing grades

Excellent	90
Very good	86-90
Good	71-85
Satisfactory	56-70
Pass	41-55
Fail	40

Retake and late completion

A kötelező feladatok közül egyik sem, a nem kötelező feladatok közül csak megjelölt feladat pótolható a kijelölt pótlási időpontig.

Coursework required for the completion of the subject

részvétel a kontakt tanórákon	28
kijelölt írásos tananyag önálló elsajátítása	62
összesen	90

Approval and validity of subject requirements

Consulted with the Faculty Student Representative Committee, approved by the Vice Dean for Education, valid from: 05.06.2023.

III. COURSE CURRICULUM

THEMATIC UNITS AND FURTHER DETAILS

Topics covered during the term

A 2.2. pontban megfogalmazott tanulási eredmények eléréséhez a tantárgy a következő tematikai blokkokból áll. Az egyes félévekben meghirdetett kurzusok sillabuszaiban e témaelemeket ütemezzük a naptári és egyéb adottságok szerint. 1. Meta-tudományos kérdések / Meta-scientific questions 2. A tudomány módszereinek fejlődése és korlátai / The development and limitations of scientific methods 3. Realizmus és antirealizmus / Realism and anti-realism 4. Oksági modellek 1 / Causal models 1 5. Oksági modellek 2 / Causal models 2 6. A technológia társadalmi kontrollja / The social control of technology 7. A mérnöki tervezés episztemológiája / The epistemology of engineering design 8. Funkcionális dekompozíció és más mérnöki tervezési módszerek / Functional decomposition
and other engineering design methods 9. A műszaki tudomány kihívásai a természettudománnyal szemben. Az MTA műszaki osztály problema-tikus válaszai a problémákra. / Challenges of technical science in the face of natural science. The problematic responses of the Hungarian Academy of Sciences' engineering division to the issu-es. 10. A tudomány kvantitatív robbanása és a generált problémák /The quantitative explosion of science and the generated problems 11. Tudományos impakt mérés: a magyar tudomány rossz gyakorlatainak körképe; pszeudo-objektív és felelősséghárító tudósértékelési minták; globális kihívások a tudósok számának sokszorozódásából kifo-lyólag / Scientific impact measurement: a survey of bad practices in Hungarian science; pseudo-objective
and responsibility-shifting scientist evaluation patterns; global challenges due to the multiplication of the number of scientists 12. Fenntartható
tudományos publikációs formák; a jövő publikációs formái – radikálisan nyílt bírálati rendszerek, overlay folyóiratok / Sustainable scientific publication formats; the future publication forms - radically open review systems, overlay journals

Additional lecturers

Danka István	egyetemi docens	danka.istvan@gtk.bme.hu
Kutrovátz Gábor	habilitált egyetemi docens	kutrovatz.gabor@gtk.bme.hu

Approval and validity of subject requirements