

Integrating Engineering and Humanities in Higher Education

Darmstadt, 6th – 7th March 2008

Philosophy for Mechanical Engineers



TECHNISCHE
UNIVERSITÄT
DARMSTADT

Outline

- **Why Philosophy for Mechanical Engineers?**
- **The Department of Philosophy**
- **What is Philosophy for Mechanical Engineers?**
- **Aims and learning outcomes of the course**
- **Conclusion**

▪ Why Philosophy for Mechanical Engineers?

- Recognition of the socially relevant consequences of the own profession
- Recognition of the responsibility of engineers
- Understanding different scientific disciplines and cultures
- Reflection of the self-image of engineers
- Improvement of the reflective skills

▪ The Department of Philosophy I

➤ 3 full Professors

➤ practical philosophy

➤ theoretical philosophy

➤ philosophy and history of science

➤ Assistant Professors, lecturers, and teaching assistants

▪ The Department of Philosophy II

- Areas of interest and specialization with a focus on science and technology:
 - Philosophy of technology, technology and society, language, knowledge and information-technologies, philosophical, scientific, and technological aspects of indeterminacy, technology and responsibility
 - Biopolitics, technology and power, situating ethical discourses within society
 - Technology and nature, epistemology of natural sciences and techno-sciences, reciprocal relationships between science and technology

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- **So far the Department of Philosophy has contributed to the following interdisciplinary cooperation:**
 - Participation in the interdisciplinary Graduate Schools *Technology and Society* (up until 2007) and *Topology of Technology* (since 2007)
 - Interdisciplinary MA course *Technology and Philosophy*
 - Philosophy as an optional subject in many study-programs of the natural- and engineering sciences
 - Regular cooperation with the interdisciplinary centers of the TUD

▪ Faculty

- Prof. Gerhard Gamm (Philosophy)
- Prof. Petra Gehring (Philosophy)
- Prof. Alfred Nordmann (Philosophy)
- Prof. Mikael Hard (History of Technology)
- Student tutors

▪ Forms of teaching

- Two hours of lecture per week (13/14 lectures per semester)
- Tutorials (accompanying readings based on a reader)
- Individual learning as well as learning in smaller groups (preparation of the poster-presentation)
- Poster-presentation in the last session of the lecture

▪ Lecture Description I

The lecture will be divided into four main parts

- Fundamental concepts: *Philosophy, Technology, and Techno-Science*
 - The modern philosophical sight on technology; theories of technology and machines

- Technology and its relationship to nature and society
 - Nature and technology; technology and society; traditional forms of criticism of technology

▪ Lecture Description II

The lecture will be divided into four main parts

- Theory of techno-sciences and Philosophy of Design
 - The Social Construction of Technology; knowing and not-knowing in engineering science; decision-making and responsibilities
- Political and ethical aspects of technological development
 - The concept of security; control and complexity; risk and security; society as a laboratory; engineering ethics and politics

▪ Learning Outcomes I

After the completion of the course students will be able to:

- ... differentiate between basic tenets of engineering science, natural Science and the humanities;
- ...recognize the ethical challenges involved with new technological developments and be able to analyze these by applying approaches deriving from engineering ethics to those issues, as well as possess the ability to reflect upon these in a differentiated manner in both written and oral form;
- ...think about the consequences of technological policies, their political impact and the influence of technological developments within the general context of a future society and express these thoughts in both written and oral form;
- ...evaluate the relevance of theoretical knowledge of engineering and of the history of engineering for one's own professional context;

▪ Learning Outcomes II

After the completion of the course students will be able to:

- ...think critically about specialist literature about basic tenets of science and the ethics of engineering;
- ...recognize the relevance of approaches from basic tenets and ethics to the analysis of concrete problems;
- ...express oneself in a differentiated way but yet to be clearly understood both in oral and written form when dealing with questions involving the basic tenets of science in an interdisciplinary context.

Thank you for your attention!

Mens agitat molem - Mind drives matter