



## SUBJECT DATASHEET

<b>Semester:</b>	2011/12/1
<b>Subject:</b>	Cleaner Technologies
<b>Code:</b>	VEMLKVM411T
<b>Responsible department:</b>	Department of Environmental Engineering
<b>Responsible department code:</b>	MKKV
<b>Responsible lecturer:</b>	dr. József Kovács

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### Educational objectives:

The active environmental engineers should have ability the environmental damaging potential of the wastes produced by different technologies. The subject is a theoretical summary of the processes and methods developed to minimise environmental impact during the product production processes.

### Detailed content of the subject:

1. Principle of the cleaner technology (CT). Connection to low waste technologies, cleaner production. Limits of use. 2. Theory of Best Available Technics (BAT) developing cleaner technologies. Case study. 3. Correlation the data acquisition systems of technological parameters and cleaner technology. 4. Equipments and their development used in cleaner technological processes as basic items. 5. Connections equipments to each other: technological materials transport forms as a fact of CT. 6. Analogy and difference between waste minimization and cleaner technologies. 7. Economical demand for cleaner technologies: Case study. 8. Life cycles of production technological processes. Case studies for technology high environmental impact and develop to cleaner technology nowadays. 9. Spread out on Hungary of the Cleaner technologies and company's management systems 10. Applying of the Integrated Pollution Prevention and Control (IPPC) for Cleaner technologies. Environmentally friend products

### Requirements:

Individual case study and introduction, written examination

### Required and suggested references:

Chohey V.: Environmental Engineering in the Process Plant. McGraw Hill Inc. 1993 ISBN Harry M. Freeman: Hazardous Waste Minimalization , McGraw Hill Inc. 1990, ISBN 007-022043-3 C McGrath, M Anderson: Waste minimisation on a construction site, 2000, ISBN: 186081400X D. Huisingh: Cleaner Production: Theories, Concepts and Practice; Erasmus University Rotterdam, 1993 Nelson L. Nemerow: Zero Pollution for Industry: Waste Minimization Through Industrial Complexes, John Wiley & Sons 1995, ISBN: 0-471-12164-9