



## COURSE DATASHEET

<b>Semester:</b>	2015/16/1
<b>Course:</b>	Industrial Technologies and Pollution
<b>Code:</b>	VEMKKVB114I
<b>Responsible department:</b>	Department of Environmental Engineering
<b>Department code:</b>	MKKV
<b>Responsible instructor:</b>	Dr. Szilárd Törös

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### Course objectives:

Basic and special knowledge of the protection of the different phases of the environmental, and technology to waste minimalization, recycling, BAT using with case studies (primary and secondary alternatives) and realize/minimalize the industrial risks at all.

### Course content:

1. Technology and the environment. Integration of Sustainable development in industrial production. Integrated pollution prevention and control (IPPC) Technological basic- and develop enachments, directions. Presentation of technological processes. Technology producing. 2. Mining and their environmental impact. Strip mining and deep working. Recultivation. Mining in Hungary. Coal mining, coal composition and preparation. Bauxite mining. 3. Metallurgy, process and grouping. Producing methods of metal. Primary commodity of metal and steel production, technology. Environmental impact of metallurgy. 4. Oil and natural gas mining. Oil process, atmospheric and vacuum distillation. Product of petroleum processing. 5. Alum earth production and aluminium metallurgy. Bauxite processing, products. Red mud formation, features, deposition, alternatives of utilization. Metallic-aluminium product technology, electrolysis. Environmental impact of aluminium metallurgy. 6. Nirtogen industry, nitrogen chemmical fertilizers production. Synthesis gases production, ammonia synthesis. Nitric acid production, ammonium-nitrate and urea production. Environmental impact of nirtogen industry, Denoxation of nitric acid outlet gases. 7. Application of nuclear energy sources in energy production. Nuclear power plant, nuclear waste management, and storage alternatives. Plant visitation. 8. Products of organochemical industry, most important technologies producing intermediates. The technology of nitration. 9. Synthetic surface-active materials, detergents (emulsifiers, dispersives, anionactive-, cationactive- and nonionic surface-active products, optical brighteners and enzyme preparations). The technology of sulfonation. 10. The application of herbicides, fungicides and insecticides, threats - the technology of halogenation. 11. Use of plastics - the esterification technology. 12. The advantages of homogeneous catalytic processes, the technologies of hydroformylation. 13. Use of homogeneous enantioselective technologies - as low-waste procedures - in the production of biologically active compounds. 14. Case study: "How do we make antibiotics from benzene?" (Impurities in the process). 15. The basics of biotechnology and food industries (food contaminants).

### Requirements, evaluation and grading:

According to the requirements of fulfillment.



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### Required and recommended readings:

Az előadó által összeállított és a hallgatók részére az interneten hozzáférhető oktatási segédletek. Stocchi E.: Industrial chemistry, Ellis Horwood, London, 1990. Dr. Szenes Endréné: Környezetvédelem az élelmiszer-ipari kis- és középüzemekben, Integra-Projekt Kft., Budapest, 1995. Káldi P. – Mészáros P. – Sziklai G.: Szervetlen kémiai technológia I, egyetemi jegyzet, Veszprémi Vegyipari Egyetem, 1983. Várhegyi Gy. – Scholtz J. – Szűcs F.: Szervetlen kémiai technológia II, egyetemi jegyzet, Veszprémi Vegyipari Egyetem, 1985. Vajta-Szebényi-Czencz: Általános Kémiai Technológia, Tankönyvkiadó, Bp. 1989. Várhegyi Gy.: Alumíniumipar I-II. MAT, 1980. Tamás F.: Szilikátipari kézikönyv, Műszaki Könyvkiadó, Bp. 1982. Gerecs Árpád: Bevezetés a kémiai technológiába, NTK, Budapest