

Course Annotation

Course Title: **Cleaning of gas and dust emissions**

ECTS Credits: 4.5 (162 h.)

Course Objective

To provide insight into theoretical knowledge and practical skills regarding assessment and management of air pollution emissions by gas and dust emissions caused by technological processes.

Course Tasks

To gain knowledge about the sources of air pollution and its analysis on techno-economic characteristics as well as qualitative and quantitative assessment of gas and dust mixtures; substantiation for equipment implementation aimed at gas and dust emission control in technological processes and the integrated processes of gas emissions purification; the calculation of gas cleaning devices efficiency.

Course main chapters

Structure and gaseous compounds of atmosphere. Permanent and variable atmospheric components. Topicality of the air pollution problem and atmosphere protection. Global issues related to air pollution: mechanism and preventive measures aimed at negative impact minimization. Control and normalization of harmful emissions.

Methods of dry gas cleaning from dust, their effectiveness and fields of application (gravitational devices, centrifugal dust collectors etc.) Means of wet gas cleaning from dust, mist and gaseous compounds, their effectiveness and fields of application (wet cyclones, scrubbers, Venturi tubes etc.). Filtration: basic principles, advantages and disadvantages, effectiveness of purification from dust. Means of dust removal by electrostatic precipitation. Complex schemes of harmful emissions purification in mining. Means of purification from gaseous compounds: sorption, thermal and catalytic processing.

Learning outcomes

After attending the course students will be able to:

- compute the parameters of basic equipment aimed at cleaning gas and dust emissions which is used in various industries;
- evaluate the feasibility and effectiveness of their application;
- justify the complex schemes of gas purification and environmental measures to protect the air from pollution;
- simulate the complex schemes of gas emissions purification of various origin based on the standard operating procedures;
- analyze the dynamics of emissions-pollutants to be guided by the requirements of the project of maximum permissible emissions (MPE) of industrial enterprises as well as to control the processes of air pollution.

Teaching methods used:

- lectures and practical training sessions.

Final **assessment** of student's knowledge and practical skills is **examination**.

**Head of the Ecology Department,
Professor**

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