

Course: Water treatment

Lectures: physical and chemical properties of groundwater and surface waters. Drinking water standards. Physical and chemical quality of water. Microbiological quality of water. Physical, chemical and biological processes of treatment water. Groundwater and surface waters treatment - technological systems. Chemical Oxidation and Reduction. Advanced Oxidation. Mechanism of the coagulation process. Coagulants: aluminium sulphate, aluminium chloride, sodium aluminate, ferric sulphate, ferrous sulphate, ferric chloride, prepolymerized aluminum and iron coagulants. Chemistry of metal coagulants. Treatment with metal coagulants. Effect of: coagulant dosage, pH, temperature, colloid concentration and preoxidation on the effectiveness of the coagulation process. Residual aluminium. Treatment with polymers. Sedimentation or flotation processes. Filtration processes. Mechanism of the filtration process. Removal of pollutants in the process of slow and fast filtration through various filter beds. Air stripping and aeration. Adsorption. Adsorption of organic pollutants on activated carbon. Methods of iron removal from groundwater depending on its form of occurrence. Methods of manganese removal from groundwater. Disinfection: physical and chemical methods. Disinfection/oxidation by-products.

Laboratory: effect of pH and dose of coagulant on the effectiveness of pollutants removals from water. Removal of iron and manganese from groundwater in the filtration process. Water deacidification. Water softening. Removal of micro pollutants from water by sorption on activated carbon.

Project: groundwater and / or surface water treatment plant design.

Responsible person: Izabela Krupińska, PhD Eng.

More info:

<https://webapps.uz.zgora.pl/syl/index.php?/course/showCourseDetails/1221807>