



COURSE DATASHEET

Semester:	2016/17/1
Course:	Modern calculation methods in the water chemistry and process technology
Code:	NKMKFTT212S
Responsible department:	
Department code:	MKNK
Responsible instructor:	Dr. Rita Szakácsné Földényi

Course objectives:

Lectures provide a systematic summary of the chemical knowledge required by the engineers working in the field of water treatment technology. After completing the course participants will be able to apply the fundamental relationships occurring in the design and operation of the water treatment processes.

Course content:

In order to supply the proper quality of water for a particular application the raw water must be treated by appropriate methods. The treatment processes are usually based upon the well known equilibrium principles of the acid – base, solubility, complexation, redoxi and interfacial reactions. Lectures are concerned with the presentation of the calculation methods typically occurring in the design and operation of the following treatment processes: calculation and use of the various indices to assess the stability of water (Langelier, Stiff-Davis, Risner), calculation of the amount of reagents required for softening and neutralization reactions, removal of fluoride ions by precipitation, elimination of cyanide ions by chemical oxidation, ammonium removal by break point chlorination, basic calculations occurring in the design of ion exchange operations (removal of nitrate- and heavy metal ions), design of GAC adsorbent column by the Bohart – Adams equation for the removal of organic contaminants Input data required by the calculations are the analytical, stoichiometric and the thermodynamic information of the system (for packed column calculations mass transfer and flow characteristics are also considered). For the calculations both numerical and graphic methods are presented.

Requirements, evaluation and grading:

Oral examination

Required and recommended readings: