

## ASSIGNMENT

### MSc THESIS (FINAL PROJECT BMEGEÁTMWD2)

Title:	<b>Investigation of the rheological properties of wastewater sludge</b>
Author's name (code):	<b>Zoltán SZEMÁN (E8TTNX)</b>
Curriculum:	MSc in Mechanical Engineering Modelling / Fluid Mechanics
Curriculum's code:	„2N-MW0-FM“
Supervisor's name, title:	Dr. Gergely KRISTÓF, associate professor
Affiliation, address:	Department of Fluid Mechanics / BME H-1111 Budapest, Bertalan L. 4-6., AE Bld
Advisor's name, title:	-
Affiliation, address:	-
Handed out / Deadline:	<b>10th of February 2014. / 16<sup>th</sup> of May 2014.</b>
Curriculum subjects (code), credits:	1. Computational Fluid Mechanics (BMEGEÁTMW02), 5 cr 2. Flow Measurements (BMEGEÁTMW03), 5 cr 3. Building Aerodynamics (BMEGEÁTMW08), 3 cr 4. Aerodynamics and its Appl. for Vehicles (BMEGEÁTMW09), 3 cr
Title of the Major Project (BMEGEÁTMWD1):	Numerical modelling of a settling tank
Description / refinement of the Major Project (BMEGEÁTMWD1):	1. To review the literature of modelling methodologies; 2. To create 2D geometrical model of the present state of the experimental device; 3. To identify the parameters of the two-phase flow model on the basis of existing experimental data; 4. To investigate the effect of discretisation error by running a series of simulations; 5. To investigate modified designs; 6. To prepare a written report about literature survey, applied modelling methodology and results.
Description of the Final Project (BMEGEÁTMWD2):	1. To prepare literature survey about wastewater sludge rheology; 2. To design and construct viscometer applicable to $Al(OH)_3$ sludge; 3. To prepare CFD model of the measuring device; 4. To identify rheological characteristics of the sludge; 5. To implement the advanced rheological model into the CFD model of the settling tank; 6. To prepare English language summary about the results of the above tasks (including the Major Project tasks).



Budapest, 10<sup>th</sup> of February 2014.

(L.S.)

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supervisor

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Dr. János VAD, associate professor  
Head of Department

Approved by:  
Budapest, 10<sup>th</sup> of February 2014.

(L.S.)

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Prof. Tibor CZIGÁNY  
Dean of Faculty

Received by:  
Budapest, 10<sup>th</sup> of February 2014..

The undersigned declares that all prerequisite subjects of the Final Project have been fully accomplished. Otherwise, the present assignment for the MSc Thesis and the subject's registration for BMEGEÁTMWD2 are considered to be invalid.

.....  
student

<b>Supervisor's declaration of acceptance:</b>	The submitted MSc Thesis fulfils all requirements of the Department of Fluid Mechanics, Budapest University of Technology and Economics. The MSc Thesis is accepted for review process and public defence.
<b>Supervisor's proposal for final grade of the MSc Thesis:</b>	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     The proposed final grade* of the MSc Thesis:                      .....                 </div> <p>* Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)</p>
<b>Date:</b>	Budapest, 16 <sup>th</sup> of May, 2014.
<b>Name / Signature:</b>	..... supervisor

<b>Reviewer's proposal for final grade of the MSc Thesis:</b>	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     The proposed final grade* of the MSc Thesis:                      .....                 </div> <p>* Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)</p>
<b>Date:</b>	.....
<b>Name / Signature:</b>	..... reviewer

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