ASSIGNMENT

MSc THESIS (FINAL PROJECT BMEGEÁTMWD2)

Title:	**Method development for analysing water ingression into electronic control unit (ECU) housings by means of CFD tool**
Author's name (code):	**Márton Miklós, STIBRÁNYI (Y0TQMP)**
Curriculum:	MSc in Mechanical Engineering Modelling / Fluid Mechanics, Solid mechanics
Curriculum's code:	2N-MW0-FM, 2N-MW0-SM
Supervisor's name, title:	László NAGY, assistant research fellow
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Advisor's name, title:	Marcell KISZELY
Affiliation, address:	Simulation engineer Robert Bosch Kft., 1103 Budapest, Gyömrői út 120. marcell.kiszely@hu.bosch.com
Handed out / Deadline:	**8th of September 2014. / 12th of December 2014.**

Curriculum subjects (code), credits:	1. Computational Fluid Dynamics	(BMEGEÁTMW02), 5 cr
	2. Flow Measurements	(BMEGEÁTMW03), 5 cr
	3. Building Aerodynamics	(BMEGEÁTMW08), 3 cr
	4. Aerodynamics and its Appl. Vehicles	(BMEGEÁTMW19), 3 cr

Title of the Major Project (BMEGEÁTMWD1):	**Method development for analysing water ingression into electronic control unit (ECU) housings by means of CFD tool**
Description / refinement of the Major Project (BMEGEÁTMWD1):	1. Literature survey (description of IP standards). 2. Analysing possible root causes of water penetration. 3. Investigation of state-of-the-art simulation methods which are relevant in capturing the problem (multiphase and free surface fluid modelling and capillary effect).
Description of the Final Project (BMEGEÁTMWD2):	1. Development of appropriate simulation model(s) for a given product and test case, in order to predict the test result and possible locations and causes of water ingression. 2. Definition of validation test cases, parameters of validation. 3. Investigation of the effect of various geometrical modifications, comparing the simulation outputs with test bench results. 4. Elaborate direct/indirect evaluation method and simulation workflow for indicating water ingression, highlight restrictions and limitations of the method. 5. Summarize the results in the appropriate format requirements and make a brief summary in English and in Hungarian.

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Budapest, 8th of September 2014.

(L.S.)	………………………….. supervisor	…………………………………. Dr. János VAD, full professor Head of Department

Approved by:
Budapest, 8th of September 2014.

(L.S.)	………………………………. Dr. Tibor CZIGÁNY Dean of Faculty

Received by:
Budapest, 8th of September 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.

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student

Supervisor's declaration of acceptance:	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.
Supervisor's proposal for final grade of the MSc Thesis:	The proposed final grade* of the MSc Thesis: …………………………... * Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)
Date:	Budapest, 12th of December 2014.
Name / Signature:	…………………………… supervisor

Reviewer's proposal for final grade of the MSc Thesis:	The proposed final grade* of the MSc Thesis: …………………………... * Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)
Date:	
Name / Signature:	…………………………… reviewer