LABORATORY BMEGEÁTAM06, Semester 2015/2016/2

Information and requirements related to Fluid Mechanics measurements

- Date: The 1st, 3rd, 5th and 7th weeks of the semester, Fridays 8.15 to 12 am (4 X 4 hours)
- Venue: Department of Fluid Mechanics, Ae Building, Laboratory
- All information related to the fluid mechanics section of the subject can be downloaded from http://www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEATAM06/.
- At the first meeting, the students receive the safety instructions, and provide a signature acknowledging this. Students not providing a signature are not eligible for the measurements.
- At the first meeting, the students are acquainted with the basic measuring principles and instrumentation.
- Prior to the first meeting, laboratory groups of 3 to 4 students are formed. Each student acts once as a Laboratory Leader, in groups of two. The Laboratory Leaders are responsible for leading the group through the measurement, verifying their knowledge of the measurement to be made in an oral evaluation preceding, as well as during, the measurement and submitting a Report on the actual measurement. The other group members act as assistant personnel and are also required to fully understand the measurement prior to beginning the measurement.
- The basic aspect during the preparation of a Report should be that it has to include all information necessary for the **reproducibility of the measurement** and for the **verifiability of the calculations** used. The Report has to be prepared by computer and is limited to a required cover page, a 6 page long body and a mandatory annex. When submitting the report, an excel file in which the calculations were made also needs to be included in a zipped file together with the report.

1. The first page of the report should be the properly filled out “Lab report cover”, which is downloadable from the webpage of the department (http://www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEATAM06/). **Without this, the Report is unacceptable.**
2. The Report has to contain the aims of the measurement, and the summary of existing information pertaining to the measurement.
3. The Report has to incorporate an illustration of the measurement which should contain:
    - The **actual** shape of the measurement setup /sketch of the facility/
    - All dimensions which are important for the measurement and the Report
    - Designations and information necessary for the overview of the system operation
    - Designation, type, and product number (if applicable) of the instruments and devices used, the density of the measuring fluid (e.g. air, as calculated from the ideal gas law), etc.
4. The Report has to provide a description of the measurement objectives, the equations used, and the explanations of the symbols used in the equations including the dimensional units.
5. The Report has to enumerate all data which has to be measured or observed (e.g. room ambient temperature, barometric pressure, etc.).

6. The Report has to present the collected measurement data and the results calculated from them in **tabular form**. The table header should state the letter symbol and the dimensional unit of a given column. The Report should include all the equations used for the calculations. It has to be clearly declared how all data was collected, or observed, and which equation(s) have been used for the calculations.
7. All information necessary to understand the diagrams, has to be included (e.g. the letter symbols and the dimensional units on the axes, different markers for different data sets). The diagram type has to be selected carefully (typically "XY-type" charts on which both the X and the Y axis is scaled). A diagram is acceptable only if prepared by computer on blank paper.
8. At the end of the Report, an evaluation of the results should be provided, which should include the conclusions, remarks and suggestions gathered.
9. The mandatory annex should be placed at the end of the report (e.g. scanned tables and charts used during the measurements).
10. Bibliography, if applicable, should be placed after the annexes.

- Submission of laboratory report: **midnight of the second Sunday following the measurement, through the Poseidon system (** http://www.ara.bme.hu/poseidon/ **).**
- **Delayed submission of the Report is unacceptable, except in the case of an officially justified health problem.**
- **Presence at the Laboratory measurement is obligatory, and no additional opportunity is provided for its execution, except in the case of officially justified health problems.**
- Oral Evaluation: The oral evaluation preceding, as well as during, the lab will be deemed acceptable or unacceptable by the supervisor introducing the measurement, or the faculty member supervising the measurement session. In the case of an acceptable evaluation, the group may continue with the measurement. In the case of an unacceptable evaluation, the group will be sent away. During the evaluation the hand written outlines will also be evaluated.
- Report Evaluation: Prior to submitting the reports, the laboratory evaluation control tools must be used, with the calculations being deemed acceptable (http://www.ara.bme.hu/lab). Once the report calculations are deemed acceptable, the report and the excel file must be uploaded in one zip file to the poseidon network. The reports will be deamed acceptable or unacceptable, with a percentage grade being given for the work which is submitted. In the case of an unacceptable report, which is submitted on time, the student has one chance to fix the report by midnight of the third Sunday following the measurement. In the case that the measurement is deemed unacceptable, the measurement must be repeated. Please check the Poseidon system frequently after submitting the report, in order to gaurantee that you are notified about the status of the report. Reports will be checked within two days of the due date.
- Presentation: All Laboratory Leaders will be required to hold PowerPoint presentations of the measurements they lead at the laboratory (one presentation per measurement per group). These will be held on the 7th week.
- Grades: The fluid mechanics section of the subject is worth $2/7^{ths}$ of the total grade. The fluid mechanics grades will be determined based on the quality of the reports and the presentations.
- Contact : Dr. Csaba Horváth, assistant professor, BME Department of Fluid Mechanics.

Dr. Csaba HORVÁTH, horvath@ara.bme.hu