Detailed Requirements and Informations

Physics Laboratory Exercise for Civil Engineers

General Informations

Three measurements have to be accomplished during the semester according to a predefined schedule. There are five measurement setups for each exercises, so 2 (or 3) students will form a group. Every student can measure only at the assigned time, changing is not permitted.

Every student is obligated to read and learn the lab notes before each of the measurements which are based on the physics studies of the BSc. Consultation can be held for students' request.

In order to check students' preparedness, at the beginning of every exercise a short, *25 minutes test will be written*. During the test only calculator and pen can be used. With the test at most 25 points can be reached (three questions for 5-10-10 points). During the measurement the *data has to be recorded and the answer sheet must be filled by every group*. The answer sheet will be collected by the instructor at the end of the measurement. Copy of the answer sheet will be provided to the groups. Some parts of the answer sheet can be answered later after evaluating the recorded data (these are indicated as homeworks). *The answers of these parts have to be sent in a pdf document to the instructor by every group in e-mail with the deadline of one week (next Tuesday midnight)*. With the answer sheet at most 25 points can be acquired. In total 50 points can be reached by a measurement.

To accomplish a measurement at least 10 points on the test and 10 points with the answer sheet have to be acquired but at least 25 points altogether. If a measurement is failed (one reaches less than the required amount of points, or one does not appear for the measurement), it must be repeated (both test and measurement), but only once during the semester. The time of the repetition has to be discussed with the instructor. In case of repetition the points of the failed measurement are overwrited by the points of the repeated measurement.

Marks obtained from the points are as follows:

- 0-74: Mark 1 (insufficient)
- 75-94: Mark 2 (sufficient)
- 95-112: Mark 3 (ordinary)
- 113-130: Mark 4 (good)
- 131-150: Mark 5 (excellent)

If one student of a group cannot attend the measurement, the other(s) still have to perform it. If somebody remains alone, they may join another group of 2 students. If a non-attendance is foreseen, the instructor must be informed in advance by e-mail.

Sending of homework can be delayed with one week maximum but only once. In case of delay, after every started day 1 point penalty will be considered.

Additional Informations

Three measurements are:

- *Mechanics*: Standing waves in stretched elastic string and study of oscillation of spring-mass system

  In this measurement computer will be used for collecting the data, please have a pendrive.

- *Thermodynamics*: Calorimetry, measuring heat of solution

- *Optics*: Focal length of lenses, refraction index of a prism, polarization, Michelson interferometer

Safety informations (accident prevention and fire protection)

In case of accident, the instructor must be informed immediately. There are no dangerous measurements, but

- take care of yourself and watch out for the others and the equipments;
- do not eat in the laboratory;
- take care with hot water, pour water far from the devices only, in case of hot water accident, the burning skin must be put under cold water and then use Irix spray;
- do not let the laser light get into the eyes;
- wall socket: 230 V, do not put banana plug into it (in this case at the other end of the plug 230 V could be obtained) banana plug can be used only for low voltages, in case of electric shock: do not touch that person, as soon as possible turn off the main power switch belonging to the workplace (one workplace means one room, red one turns off, green turns on) and we should call the ambulance, in serious shock we have to give first aid;
- always put back the seat under the desk if you do not sit during the measurement;
- potassium-salt: not dangerous, similar to salt (NaCl) but bitter;
- in case of fire: turn off the power, use fire extinguisher, call the fire fighters, escape the room;
- if an equipment/device goes bad (or does not work properly) it should be told the instructor immediately, do not connect an ammeter directly to a voltage supply (short circuited) this breaks the ammeter and /or the safety fuse;
- no break will be held during the measurement (however students can take break if they want for a short time but the exercise must be finished by 17:15). In other cases the corresponding section of the TVSZ (Regulation of Studies and Exams) has to be referred.