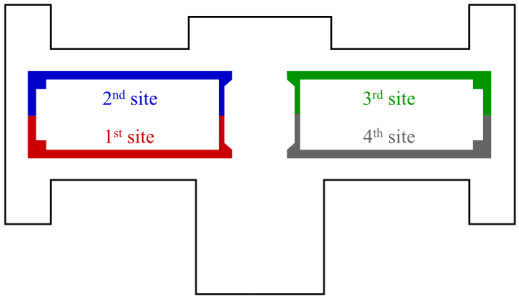
5th practice: Creating a floor plan

Measurement

The fieldwork takes place in the building 'K' (central building) of the BME, on the 1st or 2nd floor. Students work in teams of four. The floor to be surveyed is dividend into four, connected sites. The task of one team is to survey one of those sites.



The sites to be surveyed

The detail level of the survey should correspond to the detail level of an 1:100 scale floor plan. We work in metric units. A sketch of the floor plan should be created on the site, on which the distances should be written to centimetre precision. The equipment used for survey are:

- long measuring tape (50 metres);
- short measuring tape (3 to 5 metres);
- laser distomat (electronic distance meter);
- flashlight and other equipment, if needed.

The measurements should be done 1 metre above floor level. Sometimes, e.g. in case of windows, measurements should be taken at an other, appropriate level. On the floor plan the followings should be drawn:

- walls (their width should also be considered!),
- windows and doors (the height and width of the clearance should also be measured, in case of arches, three heights should be measured, in case of windows, the height of the internal window sill above floor level should also be considered),
- setbacks of the corridor should be also surveyed in detail,
- please be careful at the connecting parts of the measurement sites (it is advised to have some overlapping with the neighbouring teams).

The final floor plan should be drawn in the coordinate system of the building. This can be achieved by measuring some points by total station. This task is carried out by the supervisor. The coordinates of these points, to be used as control points on the drawing, will be available for download on the internet, some hours after the practice. In case the team finishes the work quickly, please be patient and wait for the supervisor to measure these control points!

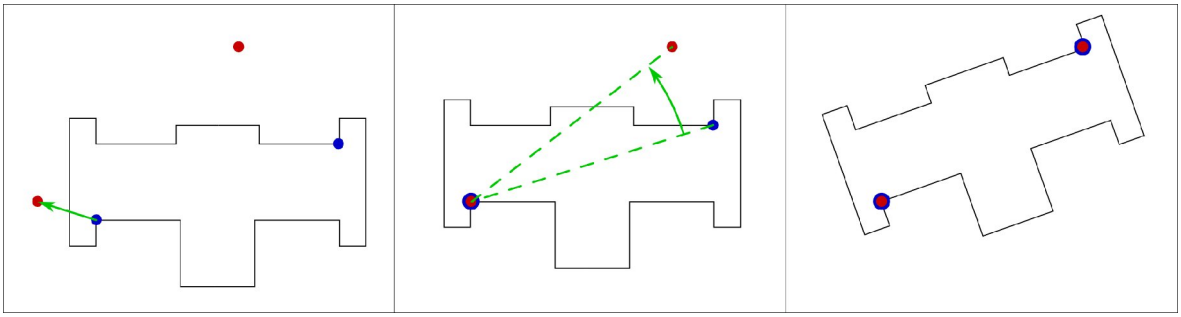
Creating the digital drawing of the floor is to be done by the measuring teams, as a homework. The deadline of the submission of the homework is to be announced by the supervisor on the practice. Before this deadline, in case it is revealed that any critical measurements are missing, additional measurements are to be done. These measurements can be carried out after negotiation with the supervisor.

Drawing the floor plan

The floor plan should be created based on the field measurements, in digital form. The usual symbols of the 1:100 scale floor plans should be used. Some details should be taken care of:

- The walls in 1:100 scale should be drawn with their real width, using the correct hatching depending on their material.
- Please be careful when drawing the doors and windows. Do not forget to write the size of the clearance on the drawing. In case of arches, three clearance heights should be represented. In case of windows, please do not forget to write the height of the internal window sill above the floor level.
- Do not forget to draw the stairs.
- Dimensioning should be done in metre units, to centimetre accuracy. The size of the window and door clearances should be written in centimetre units.
- Be careful to use the appropriate line widths.
- Structural elements, dimensioning, and control points should be placed on different layers.
- Do not use any colours, apart from black and white, on the drawing.
- The unit of the drawing should be metre (i.e. 1 drawing unit should correspond to 1 metre).
- Do not forget about the information field in the corner of the drawing! The name of the subject, the current semester, the title of the drawing, the scale, the list of the creators and their NEPTUN codes should be listed.

The drawing, as stated before, should be placed in the coordinate system of the building, using the measured control points. The control points should also be used to show the accuracy of the measurements. The insertion of the drawing into the coordinate system can be done e.g. by using two distant control points, performing translation and rotation.



Inserting the floor plan into the coordinate system in two steps: a) translation, b) rotation. The blue points are the control points on the floor plan, the red ones are the real places of the control points given by their coordinates.

The control points should also be used to show the accuracy of the measurements. If the inconsistency after inserting the drawing into the building's coordinate system is more than 15 centimetres, the suspicion of some gross measurement error arises.

Technical description

The length of the documentation should be 1 or 2 pages. This should mention:

- the assignment,
- the place, date and time, and circumstances of the measurement,
- the equipment used,

- the brief description of the measurement process (NOT step-by-step description!),
- the inaccuracies of the insertion of the drawing into the building's coordinate system, and their evaluation,
- list of documents, standards, etc. used as reference,
- any other event or circumstance, that influenced the quality of the floor plan, or by any other mean, can have consequences with regard to the users of the drawing.

At the end of the technical description the date, signature of the creators, and the list of drawings and other appendices should be listed.

Submission

The documents (drawing and technical description) should be sent by e-mail to the supervisor. Please be aware, that we can accept only the following file formats:

- drawings: DWG or DXF (in both cases the drawing must be saved in AutoCAD 2000 or earlier format);
- text documents: DOC, ODT, RTF, PDF or PS;
- spreadsheets: XLS or ODS.

In case of submission in any other format, the homework can not be accepted.

Timing of the practice

- Introduction: 45 minutes
- Measurement: 135 minutes

Accident prevention

Please be careful when working in the staircase. Do not lean over the bar, do not throw anything upwards or downwards! Do not target anyone's eye with the laser beams, and do not look into the laser beams!