

**ETG5400**

Engineering-geodetic surveys

ECTS credits: **6 EAP**

assessment form: **graded assessment**

### **Course aims**

To provide a review on specialized engineering-geodetic surveys, their relation with other fields of civil engineering. Familiarizing with methods of the engineering-geodetic surveys.

### **The content of the course:**

Types and principles of engineering-geodetic surveys, their relevance to related subjects. Surveys of non-standard engineering constructions. Fundamentals of deformation monitoring. Reasons, characteristics and symptoms of deformations of different types of buildings. Methods of determining deformations, incl. necessary measurements and calculations. Geodetic evaluation models for deformation processes. Requirements for the technical report on the performed engineering-geodetic surveys. Quantity surveys. Calibration and certification of specific engineering structures (such as crane rails, reservoirs, railways, etc).

Practical assignments:

1. Inspection of a building with deformations
2. Measurements on a survey site: high accuracy leveling, "horizontal" leveling
3. Computations of results, calculating the range of deformations.
4. Graphical representation of deformations, assembling the technical report on the surveys performed.

### Learning outcomes (basic level):

A successful student :

1. Knows the tasks and purpose of engineering-geodetic surveys;
2. Knows the engineering-geodetic surveys methods and is able to determine appropriate methods in different situations.
3. Performs the following common methods for engineering-geodetic surveys: high precision leveling, “horizontal leveling”, laser scanning etc.

Learning outcomes	Grading method	Evaluation criteria
1. Knows the tasks and purpose of engineering-geodetic surveys	Evaluation of oral answering to topical questions	Pass/fail assessment <i>The threshold corresponds to the basic level</i> Participation in $\frac{3}{4}$ of classes
2. Knows the engineering-geodetic surveys methods and is able to determine appropriate methods in different situations	Evaluation of oral answering to topical questions	Pass/fail assessment <i>The threshold corresponds to the basic level</i> Participation in $\frac{3}{4}$ of classes
3. Performs the following common methods for engineering-geodetic surveys: high precision leveling, “horizontal leveling”, laser scanning etc.	Field exercises in small teams (surveying), followed by individual data processing in the computer class, adequate assessment of the follow-on home assignment	Pass/fail assessment <i>The threshold corresponds to the basic level</i> Active participation in the tem work, correctness of the data processing and home assignment.
	<b>Preconditions of the assessment</b>	Passing of the home and practical assignments is the prerequisite for the final assessment. Presence in $\frac{3}{4}$ of the classes.
	<b>Formation of final grade</b>	The grade (0 to 5) of the graded assessment depends on the adequacy of the answers. The assessment result forms 100% of the overall grade The written final assessment comprises practical computations and the theoretical questions. Flawless solution of each task provides the maximum amount of points (that is noted on the examination sheet). Insignificant shortages and miscalculations mistakes in answers are allowed, however, these reduce the amount of points proportionally.  However, failed or less than 50% complete answers yield 0 points for the examination task in question.  The graded assessment is passed if both of

		<p>the following conditions are fulfilled:</p> <ul style="list-style-type: none"><li>a) At least 50% of computational tasks have been solved</li><li>b) At least 50% of textual/theoretical tasks have been answered</li></ul> <p>Thereafter the points are added up and the final grade is calculated as follows.</p> <p>If the sum of points is:</p> <p>50 – 60, the mark is “1”;</p> <p>61 – 70, the mark is “2”, (corresponds to the basic threshold)</p> <p>71 – 80, the mark is “3”,</p> <p>81 – 90, the mark is “4”,</p> <p>91 and more, the mark is “5”.</p>
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