

## ETG5220 Theory of Processing Geodetic Measurements

ECTS credits 3,00

Assessment form: Exam

### Course aims:

To give the students cognitive skills on determining the measurement accuracy criteria and applying it in practice.

### Learning outcomes in the course:

1. Defines concepts and rules of the measurement processing theory
2. Selects methods of solutions depending on the input data types
3. Estimates accuracy and precision of the geodetic measurements
4. Practices different kinds of adjustment's methods (incl. division of the surveying procedure into parts and finding the partial corrections) and the accuracy estimations

### Grading method of subject

Grading method	Evaluation criteria	Description of the course
Exam: structured written test in three parts  Part A: Computation of written tasks	3 tasks. For correct solving each task the student can get from 10 to 20 points (depending on heaviness). The outcome corresponds to criterion "A" on condition that the task is solved correctly, in logical order, using right units and without miscalculations. Student is awarded maximum points. The outcome corresponds to criterion "B" or "C" if there are a few miscalculations. Every miscalculation decreases 10% of points. The outcome corresponds to criterion "D" if student 1. has used the proper set of formulas, 2. and the proper units, but 3. one of the components is solved principally erroneously. Student is awarded 60-70% of points. The outcome corresponds to criterion "E", if in addition to criterion "D" take place miscalculations or in place of point 3 of criterion "D" the point 2 is broken.	Classification of the measurement deviations. Basics of the measurement uncertainty and accuracy. Mean square deviation of the observed function and rounding error. Accuracy estimation by means of deviations from the arithmetic mean and by means of discrepancies. Weights of measurements. Correlation and regression. Tolerances. Principles of least square method. Adjustment by means of reduction to minimum number of unknowns and method of correlates.

<p>Part B1 Fundamental concepts Extended short answers to 4 questions. Grading</p> <p>Part B2 General concepts, Extended short answers to 6 questions. Grading</p>	<p>If student has broken point 1 of criterion “D”, he/she is awarded 0 points.</p> <p>“A” - Extensive level achieving of study outcomes. Constructive using of knowledge. - 5 points; “B” - Purposeful using of knowledge, but some not principal errors can exist. - 4 points. “C” - As criterion “B”, but there exist some uncertainties and inaccuracies, - 3 points. “D” - As criterion “B”, but there exist some deficiencies. - 2 points. “E” - Substantial deficiencies and uncertainties take place. - 1 point. “F” - The answer is absent or is wrong. Minus 5 points.</p> <p>As Part B1, but criterion “F” gives 0 points.</p>	
<p><b>Presumption for final grading:</b> Grading of all the home-works. Results of part A and part B of exam must have both 50% of maximum points.</p>		
<p><b>Formation of final grade:</b> If the sum of points is: 51 – 60, the mark is “1”, 61 – 70, the mark is “2”, 71 – 80, the mark is “3”, 81 – 90, the mark is “4”, 91 – 100, the mark is “5”</p>		