

Physical Geodesy and Gravimetry I. (MSc)

Detailed course programme
2023/24 Fall semester

Scheduled lectures

L1 09.05	<i>The gravity field generated by gravitation, centrifugal and tidal forces. Gravity field and acceleration. The relevance of gravity field in geodesy.</i>
L2 09.12	<i>Absolute and relative gravimetry. Calibration of gravimeters. Gradiometry.</i>
L3 09.19	<i>Air-borne and satellite-borne gravimetry and gradiometry (CHAMP, GRACE, GOCE), basic concepts.</i>
L4 09.26	<i>Processing and adjustment of terrestrial gravimetric measurements.</i>
L5 10.03	<i>Temporal non-tidal variations of the gravity fields.</i>
L6 10.10	<i>Mathematical and physical background of physical geodesy. Physical geodetic methods of geoid determination.</i>
L7 10.17	<i>Geodetic reference frames. Determination of the parameters of a geodetic reference frame.</i>
L8 10.24	<i>Description of the geoid by spherical harmonics, Stokes' series, calculation of the absolute deflection of the vertical.</i>
L9 10.31	<i>Application of the measurements of gradiometry.</i>
L10 11.07	<i>Combined methods of geoid determination. Fundamentals of the gravimetric levelling.</i>
L11 11.14	<i>Application of the Fast Fourier Transformation (FFT) method in physical geodesy.</i>
L12 11.21	<i>Inversion methods of gravity field determination.</i>
L13 11.28	<i>Basics of space-borne quantum gravimetry.</i>
L14 12.05	<i>Geodetic projections. National control networks. Geodetic informations: point descriptions, maps, etc.</i>

Scheduled Practicals

<i>P1</i> 09.14	<i>Terrestrial gravimetry measurement.</i>
<i>P2</i> 09.28	<i>Measurement with torsion balance.</i>
<i>P3</i> 10.12	<i>1st mid-term test.</i>
<i>P4</i> 10.26	<i>Determination of the parameters of a geodetic reference frame using gravity data.</i>
<i>P5</i> 11.09	<i>Interpolation of the deflection of the vertical.</i>
<i>P6</i> 11.23	<i>Overview of the software used in physical geodesy.</i>
<i>P7</i> 12.07	<i>2nd mid-term test.</i>

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