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The major task of geodesy is to determine the size, shape and gravity field of the Earth as well as to locate and map the objects near the Earth surface. Here the size, shape of the Earth, we mean the physical and the mathematical surface of the Earth. The physical surface of the Earth is the border between the solid or fluid masses and the atmosphere. The irregular surface of the solid Earth is incapable of being represented by a simple mathematical model. Therefore, it is described point wise by the use of coordinates of the geodetic control points. On the other hand, the ocean surface takes about 70% of the total Earth's surface and an equipotential level surface of the Earth's gravity field that best fit the mean sea level MSL in the ocean can be used to represent the figure of the Earth. This level surface is called geoid. A defined mathematic model of the Earth is required for the computations in geometric geodesy. Because of its simple equation, a rotational ellipsoid flattened at the poles is better suited as a geodetic reference surface than the geoid. The optimal ellipsoid approximating the geoid is called as mean Earth ellipsoid. Figure 1. 1 shows the relationship among the surfaces related to geodesy. The body of the Earth and its gravity field are subject to temporal variations of secular, periodic, and singular nature, which can occur globally, regionally, and locally. The geodetic measurements and evaluation techniques can detect these changes. Geodesy contributes to the investigation of the dynamics of the terrestrial body. The figure of the Earth and the external gravity field are accordingly conceived as time dependent variables. The objectives of geodesy can be summarized as follows: 1 To determine the shape of the Earth and its external gravity field as well as their changes with time, to study the crust deformation, and to observe the polar motion and monitoring the ocean surface. 2 To set up the geodetic coordinate system and to maintain the national horizontal geodetic control network and the vertical leveling network. 3 To study the observation methods for geodetic instruments such as total stations, levels.

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