

<<大地测量学基础>>

图书基本信息

书名：<<大地测量学基础>>

13位ISBN编号：9787503023200

10位ISBN编号：7503023201

出版时间：2011-6

出版时间：郭际明、王建国 测绘出版社 (2011-06出版)

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页数：117

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内容概要

《普通高等教育“十一五”国家级规划教材：大地测量学基础（英文版）》是普通高等教育“十一五”国家级规划教材，专门为测绘工程专业必修课《大地测量学基础》双语教学编写，以系统讲授大地测量学的专业知识为主，结合作者多年的国外教学工作经验，按照国际化的课程设置和教学体系进行组织和规划，强调大地测量学的基本概念、基础理论、主要观测方法和数据归化方法，以及大地测量计算和大地测量国际组织等。

《普通高等教育“十一五”国家级规划教材：大地测量学基础（英文版）》可作为普通高等教育测绘工程专业的教材，也可作为遥感科学与技术、地理信息系统专业的教学参考书。

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章节摘录

版权页：插图：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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