

0403261 Engineering Geology

Geology is the study of the earth and the processes which form it. Recognized branches of geology are: crystallography, mineralogy, petrology and geochemistry, all of which are concerned with materials; structural geology and geophysics which are concerned with the physical relationships of various components; stratigraphy which concerns the historical development of a locality; paleontology, which concerns the study of ancient life; and physical geology, including geomorphology, which involves the study of landforms. As engineers, we are most concerned with structural geology, stratigraphy, and physical geology. The 'materials' branches are of course of interest to us, but we tend to be concerned mostly with physical properties and weathering, so we do not look at them in quite the same way that a geologist would. A key to understanding geology is to appreciate the age of the Earth, which is about 4000 million years old. Over that timescale, such slight effects as the physical weathering of rock by rainfall become very significant, and if the processes of weathering and erosion were left to operate the earth's surface would be extremely uniform. Until geologists accepted an explanation for the obvious lack of uniformity of the Earth's surface, geology was a subject only understood in little bits, with the central question unresolved. The explanation lies in knowledge of the theory of plate tectonics. This explains why the earth's surface is divided into continents and deep oceans, why the edges of the continental shelves match up, and why there are mountains, earthquakes and volcanoes.