

# ADNOC Scholarship Engineering Descriptions

## Mechanical Engineering

Mechanical engineering is concerned with the design and making of machines. It covers a wide range of areas including the manufacture of small parts to large-scale systems. It includes all stages in the process of design and building such machines or parts. Another way of understanding mechanical engineering is to see it as a practice that uses mathematics and physics in the design and making of mechanical systems, and in improving and servicing such systems.

## Chemical Engineering

Chemical engineering involves the design and development of processes to do with producing and transforming materials. It includes both experimental laboratory-based work and large-scale transformation and processing of materials. Chemical engineering is an applied science, and involves the practical and theoretical understanding of chemistry, biochemistry and physics for furthering a variety of human interests. Chemical engineering can be applied to a wide range of industries from food production to aerospace.

## Petroleum Engineering

Petroleum engineering concerns the initial development and subsequent design of ways to extract oil and gas from beneath the surface of the earth. The primary focus is upon the processes involved in moving fluids through a production system. It includes a range of disciplines including the exploration for and discovery of oil and gas, engineering of reservoirs, drilling and production, and geology. Like chemical and mechanical engineering, it includes both theoretical and practical elements.

## Geoscience

Geoscience “includes all the sciences (geology, geophysics, geochemistry) that study the structure, evolution and dynamics of the planet Earth and its natural mineral and energy resources”. It looks at the historical factors that have influenced the current state of the earth and is a practical discipline with social relevance. It developed from the theoretical basis of plate tectonic theory, and assumes that all geological processes are related to shift in the plates that make up the outer part of the earth.

## Geophysics

Geophysics is a discipline which applies techniques and theory from mathematics and physics (and, to some extent, chemistry and geology) in order to theorise the way the planet earth behaves in its environment. It is therefore a multidisciplinary approach. It is concerned with the internal structure of the earth and its dynamics. It studies, for example, the physical properties of air, water and other earth materials in terms of their density, electrical conductivity and elasticity and other properties. Geophysics is usually divided into exploration and global geophysics.

## Marine Engineering

Marine Engineering can be defined as “the branch of mechanical engineering that deals with the design, construction, installation, operation and repair of the machinery of vessels”. This is a practical discipline. Many marine engineers test and maintain machines used at sea. Marine engineers are also responsible for the design of such machines. They work not only with boats but also with pumping systems, mooring systems, ports, harbours, and oil rigs.