SUPPORTING ACADEMIC PROGRAMS

Overview

The Texas A&M Core Curriculum, in compliance with the Texas Core Curriculum, provides students with a foundation of knowledge of human cultures and the physical and natural world, develops principles of personal and social responsibility for living in a diverse world, and advances intellectual and practical skills that are essential for all learning. In support of the Core Curriculum, the supporting academic programs enhance the individual degree programs and university graduation requirements.

The core curriculum focuses on the development of six skills that have been shown to be effective in preparing students for the job market and their role in a diverse world and democratic society.

- **Critical Thinking Skills** – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
- **Communication Skills** – to include effective development, interpretation and expression of ideas through written, oral and visual communication.
- **Empirical and Quantitative Skills** – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.
- **Teamwork** – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.
- **Personal Responsibility** – to include the ability to connect choices, actions and consequences to ethical decision-making.
- **Social Responsibility** – to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities.

For additional information, please reference [http://core.tamu.edu](http://core.tamu.edu).

Geosciences

**Geosciences**

Students at Texas A&M at Qatar will have the opportunity to take courses in two areas within the Geosciences. Geology, the major focus, deals with the processes and forces acting at the surface and within the earth; with the materials of the earth, its forms and structures; and with the history of its development and the evolution of life on its surface and in its waters. Geophysics may also be offered. This deals primarily with the physics of the solid earth, from the measurement and understanding of its internal structure and physical properties, to plate motions and their effect on continents and ocean basins, to detection of its natural resources through remote sensing.

Liberal Arts

**Liberal Arts**

Examples of history show us that a liberal arts education is the foundation of a strong and progressive society. The Liberal Arts Program offers students an opportunity to explore the intellectual achievements of humankind through a disciplined and responsible study of issues that have been of enduring importance to people. Thus, courses in liberal arts help students develop sensitivity to the questions and values that confront them in their daily lives. At the same time, skills are built that can be put to use in solving complex problems. One of the program’s principal objectives is to achieve the hallmark of an educated person: a fundamental knowledge of the forces that have shaped and continue to direct our cultural identities.

Science

**Science**

**Chemistry**

An understanding of chemistry is critical to an understanding of life and its associated activities. Chemistry and chemical principles profoundly influence the way we live, communicate and interact with one another, so it is little wonder that a strong background in chemistry provides a solid foundation for a variety of careers of major importance in the 21st century. Chemistry is uniquely positioned at the crossroads between the biological and physical sciences. By exploiting their understanding of both realms, chemists and other professionals with strong backgrounds in chemistry have made, and continue to make, major contributions to improve the human condition. Major technological and biological discoveries almost always depend on a fundamental understanding of chemistry, and the pursuit of these discoveries, as a way to improve the world in which we live, drives those who seek to be part of the process.

The Chemistry Program at Texas A&M at Qatar offers coursework and research in various areas of chemistry, organized into a program leading to a minor degree in chemistry.

**Mathematics**

A comprehensive understanding of mathematics is a key foundation to engineering. The Texas A&M at Qatar mathematics curriculum is structured to teach mathematical concepts that enhance students’ analytical abilities and to use quantitative mathematical tools and apply them to problems in engineering. Students will learn coordinate systems, vectors, analytical geometry, functions, differentiation and integration techniques, computer algebra systems (Maple and Matlab), multiple integration techniques, gradients, line and surface integrals, Stokes’ theorems, differential equations, matrices, determinants, and topics in applied mathematics, such as Fourier series and wavelets with application to data compression and signal processing.

**Physics**

Physics is the science that investigates and tries to understand the basic laws of nature. In this pursuit, it deals with the entire range of natural phenomena, from the smallest domain of subnuclear particles to the largest domain of distant objects in the universe.

This breadth of interests is reflected in the type of work pursued by physicists. Some physicists are interested in research on problems that are at the frontiers of knowledge. Some apply this newly acquired knowledge to make practical advances. Still others use knowledge of physics as a basis for careers in teaching or administration.