SAUDI RESEARCH SCIENCE INSTITUTE

King Abdullah University of Science and Technology

KAUST Academic Programs and Research Field Choices

	KAUST ACADEMIC PROGRAM	DESCRIPTION
1.	Bioscience	Program focus on the fundamental scientific study of living matter.
2.	Biological Engineering	The program offers the study and application of engineering principles, concepts and methods to life sciences.
3.	Environmental Science and Engineering	Program involves study of scientific principles for preservation of the environment.
4.	Marine Science	Program involves study of biology and ecology of the many marine life forms especially in the Red Sea.
5.	Plant Science	Program aims to develop an understanding of how plants can grow under extreme environmental conditions. It addresses the fundamental plant biology at the molecular and physiological level.
6.	Applied Mathematics and Computational Science	Program trains students to construct and solve mathematical and computational models of real-world problems.
7.	Computer Science	Program involves study and design of computer systems and computing tools like computer graphics, operating systems, artificial intelligence etc.
8.	Electrical Engineering	Program involves study of electrical systems and devices teaching students to design anything from large-scale communication systems to tiny integrated circuits and sensors.
9.	Statistics	Program trains students to analyze and model complex real-world problems arising in modern Statistical Data Science.
10.	Applied Physics	Program involves study and design of innovative solutions in several applied physics specialties, such as optics and photonics, semiconductor devices, quantum electronics, and novel materials for energy applications.
11.	Chemical Engineering	Program offers students opportunities to develop real-world solutions to global challenges by using basic discoveries in chemical sciences.
12.	Chemical Science	Program covers all basic areas of chemistry with a focus on current challenges related to catalysis and materials.
13.	Earth Science and Engineering	Program involves study of geophysical problems associated with the atmosphere and/or ocean circulation, earthquakes, oil exploration, reservoir modeling, and subsurface phenomena.
14.	Energy Resources and Petroleum Engineering	Program involves study of world's pressing energy geo-engineering problems like increased hydrocarbon recovery with reduced environmental and economic costs related to reservoir access and production.
15.	Materials Science and Engineering	Program trains students in fundamental and applied knowledge of materials.

16.	Mechanical Engineering	Program involves study of fundamental scientific principles required for the design and analysis of working of engines and machines.

Depending on the applicant's research interests, the following table can be used for identifying the Research Subfields with the given the Research Fields

	Research Fields	Sub fields
1.	Bioscience	Biochemistry Cellular and Molecular Biology Microbiology Genetic Engineering Plant Sciences Drought- and salt-resistant plants High-performance computing to allow better analysis of cutting-edge biological experiments
2.	Biological Engineering	Fast Diagnostic Tools for Pathogen Detection 3D Bioprinting Bioelectronics Genome Editing Technologies
3.	Environmental Science and Engineering	Water Desalination Water treatment Renewable sources of energy Air Pollution Water Pollution
4.	Marine Science	Marine Genomics Marine Microbiology Coral Reef Ecology Marine Microbial Ecology Ecology and Management of Marine Fisheries
5.	Plant Science	Plant growth and development Plant adaptations Sustainable agriculture
6.	Applied Mathematics and Computational Science	Algebra Analysis Applied Mathematics Geometry Numerical Methods Probability and Statistics
7.	Computer Science	Artificial Intelligence Machine Learning Networks and Communications Computational Biosciences and Bioinformatics Computer Graphics / Visual computing Parallel computing Software Engineering, Programming Languages Internet of Things Cybersecurity Computational imaging Computer simulations Computer Systems/ Embedded systems

		Computer Architecture
8.	Electrical Engineering	Circuits Photonics Lasers Electronics Sensors Low power electronics Robotics
9.	Statistics	Statistical analysis and modeling of data for environmental and climate science, renewable energies, geophysics, and marine science Data mining
10.	Applied Physics	Optics Photonics Semiconductor devices Quantum electronics Novel materials for energy applications
11.	Chemical and Biological Engineering	Gas and liquid separations, Development of new materials for reducing greenhouse gases Sustainable energy technologies/ clean combustion Alternative fuels
12.	Chemical Science	Analytical Chemistry General Chemistry Inorganic Chemistry Organic Chemistry Physical Chemistry Nano Technology Green Chemistry Catalysis Chemistry of new materials/smart materials
13.	Earth Science and Engineering	Geophysics Geophysical problems associated with the atmosphere and/or ocean circulation Earthquakes Oil exploration Subsurface phenomena Modeling, understanding and predicting the Red Sea
14.	Energy Resources and Petroleum Engineering	Modeling of earth systems for energy resources Climate modeling Enhanced oil recovery/ Unconventional recovery Reservoir engineering
15.	Materials Science and Engineering	Solar Cell Materials and Devices New Materials for energy storage Semiconductor Materials Magnetic Materials Optical Properties of new Materials Electronic Properties of Materials
16.	Mechanical Engineering	Mechanical properties of materials Environment-friendly/Clean combustion