▢ Education of KAIST Mechanical Engineering

- The undergraduate curriculum has been updated to include emerging technologies along with the fundamental disciplines of the mechanical engineering. We are striving to provide the best learning experience through the continuous development of courses and improvements of experimental equipment and facilities. We also support students in their efforts to realize ideas and carry out hands-on projects by offering the latest manufacturing equipment.

Undergraduate program	▶ Graduation requirement 136 credits (research credits included) ▶ Student exchange programs, credit exchanges, and integrated program of undergraduate and graduate programs.
M.S. program	▶ Graduation requirement 36 credits (research credits included) ▶ Dual degree program with foreign universities ▶ Research proposal is submitted in the first semester of the second year, and a thesis is presented in the second semester.
Ph.D. program	▶ Graduation requirement 69 credits (research credits included) ▶ Dual degree program with foreign universities ▶ Qualifying examination has to be passed within 1.5 years. Final dissertation consists of presentation and oral examination.
Integrated M.S. and Ph.D. program	▶ Graduate students, who have enrolled for at least 1 semester into the M.S. program and are recommended by the advisor, can advance into the Ph.D. program without completing the M.S. program.

▢ Research of KAIST Mechanical Engineering

1) Design and Manufacturing for Reliability

- Innovative design & manufacturing theory, mechanical analysis methods for mechanical systems with high reliability

· New designs and technologies for modeling and governing equation
· Innovation and creation of mechanical systems
· Innovation of the analysis and design programs and tools Development & application of new materials to mechanical systems
· Manufacturing system modeling, simulation, and optimization
· Simulation of tribo-systems

· Analysis & design under uncertainties

2) Multi and Transcending Scale Engineering

– Extreme-scale mechanical engineering research ranging from nanometer -scale materials design to ocean-scale fluid dynamics

· Micro/nano-scale and multi-scale physics and simulations
· Design & fabrication of meta-materials with extreme material properties
· Development of flexible micro/nano devices and systems
· Opto-fluid-flexible body interaction and nature-inspired fluid mechanics
· High-performance lasers and laser-based precision engineering
· Complex fluid phenomena at the air-ocean-land interfaces

3) Energy: Generation, Efficiency, and Sustainability

- Analysis and design of heat transfer and fluid mechanics encountered in power production and energy conversion systems

· Design of energy systems ranging from sub-micro to macro scale
· Engines, fuel cells, turbo systems, cooling of electronic devices
· Developing a novel energy conversion device
· Numerical/experimental analyses of heat transfer and fluid mechanics
· Fundamental research on flow control and heat transfer enhancement
· Production and application of cryogenics and superconductivity
· Temperature measurement at micro/nanoscale and flow visualization

4) Biomedical Engineering

- Biomechanics research and its application for disease diagnosis, treatment innovation, medical robots, sports training systems

· Cellular/tissue/organism level biomechanics and mechanobiology
· Medical robotics and simulation
· Physical human robot interaction system and bio-mechatronics
· Biomedical photonic imaging system
· VR-based rehabilitation system for optimal rehabilitation
· Wearable sports training system based on sports biomechanics

5) Intelligent Mechatronics and Robotics

- Interdisciplinary research on intelligent machine technology including sensor, actuator, acoustics, vibration, control and robots

· Design and control of humanoid robot and automatic system platform
· Intelligence, navigation and control for unmanned vehicle systems
· Medical robotics and medical simulation
· Design and fabrication of bio-inspired artificial muscles
· Vibro-acoustic source identification and design for sound quality
· Customized active noise control for automobile, MRI, home appliances