[KIST] Study Proposal of International Admission for 2021 Spring Semester

No.	Major	Sub-Major	Research Group (Team)	Study and Research Proposal
1	Division of Bio-Medical Science & Technology	Biological Chemistry	-	Biological chemistry focuses on understanding diverse life phenomena and application on researches for treatment and diagnosis of various diseases based on integrated approach of biology and chemistry. - Study of mechanism of cancer, brain & cardiovascular disease, inflammatiory disease - Development of biomarkers for early diagnosis or prognosis - Discovery of drug action point and validation - Artificial intelligence-based new drug candidate design - Discovery of bioactive small molecules and new drug candidates through organic synthesis - Immunotherapy study on anti-cancer using bio/nano materials - Development of functional substances and new drug candidates using natural products - Development of biosensors - New methods development for bio/environmental samples
2	Division of Bio-Medical Science & Technology	Neuroscience	-	The neuroscience program is committed to the prevention and treatment of brain disorders and the systematic understanding of brain function through the multidisciplinary research approaches at the level of genes, cells, circuits and animal behavior. - Development of markers for cellular activity & monitoring of cell population activity and developing new theoretical tools for data analysis - Studies on sensory system in peripheral and CNS - Research on synaptic functions in animal models of brain cognitive and degenerative disorders - Discovery & modulation of new neuronal circuits for brain function via neuronal connectomics, optogenetics, and pharmacogenetics - Understanding the interactive mechanisms between brain and metabolism, inflammation, addiction. - Development of new cell therapy to brain disorders based on adult neurogenesis - Computational approaches to understanding of brain circuit interactions, cellular and molecular processes in normal and disease brain models

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3	Division of Bio-Medical Science & Technology	Biomedical Engineering	-	Biomedical engineering is a fusion of engineering, biology, and medical science and is a multidisciplinary program developing new medical technique which can solve an incurable or hard to treat disease and disabilities by combining engineering technology with biological approach. Biomedical engineering is dedicated to the development of advanced tools and knowledge that can be applied for medical treatments and early diagnosis in clinics. 1. Biomaterials, tissue engineering, molecular imaging : Biodegradable metal, biocompatible polymers, hydrogels, Tissue engineering, Nanomaterials-based diagnosis, Molecular imaging for cancer diagnosis 2. Medical imaging and device : 3D medical imaging system, Surgical micro-robot, Rehabilitation-aiding robot 3. Biomicrosystems : Microfluidic chip, Brain stimulation via neural probe, Brain on a chip
4	Division of Energy & Environment Technology	Energy Engineering	-	Basic and applied sciences for environment-friendly energy and chemicals are studied to achieve a sustainable community. Interdisciplinary research for production, storage, and transfer of renewable energy and chemicals are performed in the applications of biomass-derived products, solar energy, fuel cells, advanced batteries, hybrid materials, and energy systems.
5	Division of Energy & Environment Technology	Environment Engineering	-	For the safe and sustainable environment, we study basic and applied technology related to various environmental issues. Detailed research fields include water resource management and process engineering, treatment of soil and ground water, energy production using wastes, air pollution monitoring and modeling, diagnosis and control of environmental pollution (chemical and bio hazardous materials), and environmental health risk.

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6	Division of Nano & Information Technology	Nanomaterials Science & Engineering	-	Nanomaterials technology (NMT) major aims at providing prospective professional researchers with higher education that can cultivate specialized backgrounds and R&D competences required to formulate significant problems in engineering applications of nanomaterials and to explore successfully the solutions thereof based on understanding of nonlinear, unusual or new properties of materials with respect to their nano-scale structures. In order to achieve this goal, NMT major offers a course curriculum to teach basic knowledge that can be used for forming and characterizing various nano-structured materials such as quantum dots, nano wires, nano films and nano particles and for analyzing their structure-property relations. More importantly, NMT major provides strong laboratory-based education that allows students opportunities to acquire, to exploit and even to create knowledge from their own spontaneous and direct experiences by participation in research projects of different kinds such as; basic researches pursuing fundamental understanding of the properties of nanostructure materials, advanced researches developing stand-alone NT technologies or fusion technologies with IT (semiconductor materials and device, information processing, storage, display, sensing and so on), ET (energy conversion, storage, environmental technology) or BT (bio technology). The faculty of NMT major comprises researchers of established or promising careers,□ conducting R&D for creative original technologies or core technologies of nanomaterials.
7	Division of Nano & Information Technology	HCI & Robotics	-	In HCI & Robotics program, we are studying fundamental theories and technologies in the major subjects of HCI and Robotics, such as artificial intelligence, immersive virtual reality, physics based simulation, media and internet technology, multimodal perception and interaction, robot perception and actuation, knowledge representation and reasoning, human-robot interaction and mechanism design. The students in the program are also expected to gain practical experience to meet the challenges of future cutting-edge technologies by participating in national projects in HCI & Robotics.