

# KSA

Leading the future!



*Korea Science Academy of KAIST*



Korea  
Science  
Academy of  
KAIST



KOREA SCIENCE ACADEMY OF KAIST

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**KSA** KOREA SCIENCE  
ACADEMY OF KAIST

# Leading the

# Future



## The First National Science Academy in Korea for the Gifted

- Best education with excellent teachers and students
- Pioneer in developing a specialized curriculum for science-gifted students, research-centered learning, convergence education, and globalization

## The Only Secondary School Supported by the Ministry of Science and ICT

- Stable budget and operation under the ministry's direct supervision
- Support by the national government to foster talents: Minimum student payment

## The Home of Future Scientists Growing with KAIST (Korea Advanced Institute of Science and Technology)

- Affiliation with KAIST, world-class university in science & technology
- Holistic convergence education and college-level researches & lectures





# Start the

# Promise

## Research-oriented Education Aimed at Nurturing Creative Scientists

- Research-oriented education with high-tech equipments
- R&E program through student-centered research projects, mentoring-based graduation research
- High-profile teachers with professionalism recruited for the purpose of cultivating promising world-level scientists

## Global Education through International Partnerships and Network

- Development of leadership and global perspectives through international exchange programs
- Various opportunities to enhance academic and research abilities through international collaborative research, on-site research, and long & short-term exchange programs with partner schools abroad
- Globalized campus with foreign students and teachers, lectures taught in English, and operation of international programs

## Advanced Education in Collaboration with KAIST

- Opportunity to earn college credits through KSA AP (Advanced Placement) and courses taken at KAIST by KSA HP (Honors' Program)
- Opportunity to carry out graduation research under the guidance of KAIST professors through KAIST HRP (High school Research Program)
- Opportunity to attend lectures by KAIST professors



# Challenge the

# World

## Proud Home of Future Scientists

- Creative education free from the college entrance exam
- A learning journey to explore science and find oneself

## Fostering Pioneers Who Will Open Up New Horizons Leading to the Future

- Top-tier science talents endowed with academic enthusiasm and exceptional research capabilities
- Leaders of the global community with creativity and convergent thinking

## Nurturing Talents Who Can Work for the Humankind

- Creation of great values through new research and inventions
- Contributing to the betterment of human life: Richness, Wellness, and Safety

## The First National Science Academy in Korea for the Gifted



**MISSION**  
Nurturing Creative Global  
Leaders Who Will Contribute  
to World Society



**VISION**  
KSA!  
The Science-gifted Institute  
Leading the Future



〈 Close-knit Connection with KAIST 〉



## History



**KSA** KOREA SCIENCE  
ACADEMY OF KAIST

KSA was officially designated as the first school for science-gifted students in 2003. It became affiliated with KAIST, world-class university in science and technology in 2009. Since then, KSA has continued to produce future global leaders in science under the strong support from KAIST.



## Proud Home of Future Scientists

As the only science-gifted institute whose entire budget comes from the government, KSA has been striving to reach the top level of the world's best schools for science-gifted students.

(As of Feb. 2020)

Student	Grade	Grade 10			Grade 11			Grade 12			Total		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total
Student		122	13	135	111	18	129	108	23	131	341	54	395
Class		12			12			12			36		

※ 35 international students included

※ 4 RAA (Research-centric Academic Advisor) classes operated separately

(As of Feb. 2020)

Faculty	Category	Principal	Vice Principal	Full-time teachers		Dispatched by BMCOE	Temporary teachers	Total
				Korean	Foreigner			
No. of persons		1	1	46	5	7	5	65

※ 100% of science and math teachers have Ph.D. degrees.

(As of Feb. 2020)

Staff	Category	Administrative staffs							Engineers, etc.			Total
		Administrative Officer	Admissions Officer	Computer Technician	Dormitory Staff	Counselor	Librarian	School Nurse	TA	Engineers	Cafeteria Staff	
No. of persons		28	3	2	4	2	1	1	6	7	11	65

(Unit : m<sup>2</sup>)

Site Area (59,180)			Building Area (36,635)									
Buildings	Athletic Field	Roads	Main Bldg	Tamgu - Gwan	Hyeongseol - Gwan	Changjo - Gwan	Dream Design Center	Yeji - Gwan	Baegyang - Gwan	Dormitory	Others	
54,213	4,670	297	6,484	4,805	4,172	5,460	984	4,304	1,284	8,859	283	

1991

03. The 1<sup>st</sup> Entrance Ceremony of Busan Science High School

2002

05. Designated and Converted to a Science-gifted Institute

2003

03. The 1<sup>st</sup> Entrance Ceremony as the Science-gifted Institute

2005

07. Renamed as Korea Science Academy

2020

03. Entrance Ceremony 2020 (135 students / 13 int'l student included)

2017

03. Inauguration of 9th Principal, Dr. CHUNG Yoon  
06. Hosted International Student Science Fair 2017 (ISSF 2017)

2013

11. 10th Founding Anniversary as the First Science-gifted Institute in Korea

2009

02. Affiliated to KAIST (Korea Science Academy of KAIST)



## Customized Curriculum

KSA offers a differentiated curriculum with an aim to prepare gifted learners in science to lead the future of science in Korea. The curriculum is focused on offering student-centered and individualized education to develop capabilities and qualities of students. KSA is also strongly committed to supporting students' creative research activities to nurture them as well-rounded global leaders.



### Curriculum Organization

<b>Academic Courses (144 credits)</b>	<ul style="list-style-type: none"> <li>Natural Science (76 credits)</li> <li>Humanities (60 credits)</li> <li>Convergence (8 credits)</li> </ul>
<b>Creative Research Activities (30 credits)</b>	<ul style="list-style-type: none"> <li>Creative Basic Research (6 credits)</li> <li>Self-directed Small Group Research, and Domestic &amp; Int'l On-site Research (16 credits)</li> <li>Graduation Research (8 credits)</li> </ul>
<b>Competency-based Leadership Activities (Over 300 hours)</b>	<ul style="list-style-type: none"> <li>Career Development Activity (at least 60 hours)</li> <li>Cooperation Activity (at least 60 hours)</li> <li>Global Citizenship Activity (at least 60 hours)</li> </ul>

### Academic & Curriculum

- Credit-based Graduation System (174 credits)**
- Required Courses (83 credits):** Accelerated completion of mandatory courses of high school education
- Elective Courses (53 credits):** Advanced courses recognized as college credits
- Convergence Courses (8 credits):** Courses combining two or more academic disciplines
- Credit acceptance through the academic exchanges with science-gifted institutes at home and abroad
- Operation of subject classroom system

### Subject Operation

- Student-centered customized curriculum:** Accelerated · intensive education such as PT and AP, and customization of courses by student level
- Strengthening of investigation, discussion, and writing skills

### PT (Placement Test)

- Credit acceptance through the PT without taking courses**
- Applicable courses:** Mandatory courses

### KSA AP (Advanced Placement)

- KSA course credits transferred to leading domestic universities**
- AP agreements** with KAIST, POSTECH, UNIST, DGIST, and GIST

### KSA HP (Honors' Program)

- Accelerated advancement opportunity for outstanding students
- Taking courses at KAIST in the final semester
- Course credits accepted by KSA and KAIST

### Creative-Innovative Convergence Education

- Dream Design Center (DDC):** Utilized to provide educational opportunities with a focus on the generation of creative · multidisciplinary ideas (implementation of maker education; establishment and operation of Creative Convergence Design)
- Creative Engineering:** Designed to meet students' demand for engineering and help students to find a career path/ Focused on energy, nano-, robot, and bio-technologies, etc.
- Convergence Education:** Intended to cultivate problem-solving abilities and interdisciplinary thinking through integrated education of math, science, humanities, and arts

### Student-oriented / Learner-engaged Education

- Operation of classes with increased student participation through experiments, discussions, team assignments, etc.
- Operation of Learning Management System (LMS) -based classes
- Establishment of Active Learning Classroom (ALC) for participation -based classes
- Offering of various lectures in conjunction with KAIST Edu 3.0



## Creative Research Activities

The future of our society depends upon talented individuals, who think and act with a creativemindset, based on diverse experiences, respect of different opinions, and innovative ideas. KSA offers stepwise creative research activities to help science-gifted students become self-directed thinkers and action-takers so that they can realize their dreams.



### Year-by-Year Creative Research Activities

Grade	Type	Courses
10	Creative Basic Research	<ul style="list-style-type: none"> <li>Creative Design Activities</li> <li>Seminar on Basic Research Methodology</li> </ul>
11	Self-directed Small Group Research	<ul style="list-style-type: none"> <li>R&amp;E</li> <li>Domestic &amp; Int'l On-site Research</li> </ul>
12	Graduation Research	<ul style="list-style-type: none"> <li>Individual Research or KAIST HRP</li> </ul>

### Creative Basic Research

- Creative Design Activities:** Learning about the desirable qualities of researchers and adopt creative thinking through opportunities to explore areas of research in math and science; Building of scientific inquiry skills to foster science and technology talent for the 4th industrial revolution; Maker education introduced to enhance project oriented education and problem-solving capacities
- Seminar on Basic Research Methodology:** Conducting research on a topic of interest and gain skills on report writing and problem identification in small group; Established in the form of pre-R&E to lay the groundwork

### R&E (Research & Education)

- An opportunity to experience professional research by participating in a small group research project for one year and writing a thesis under the guidance of their advisors; Students explore career paths as future scientific leaders based on a solid research network connecting the KSA to universities and research institutes

### Graduation Research

- Individual Research:** Under the guidance of a KSA teacher, researching and writing a graduation thesis
- KAIST HRP (High school Research Program):** Performing research and writing a thesis over one regular semester and 30 days of intensive education during the summer break under the guidance of a KAIST professor

### RAA (Research-centric Academic Advisor)

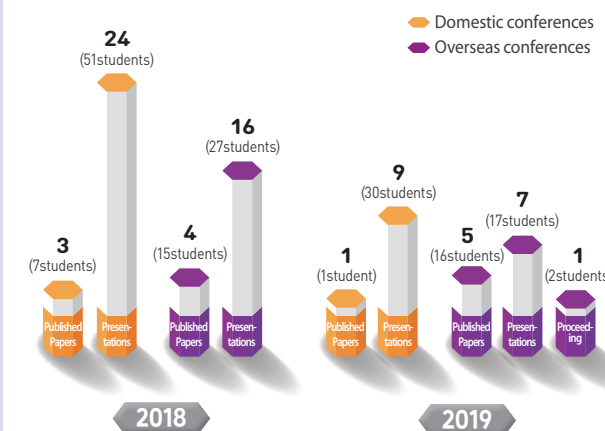
- As research-oriented system in which grade 10 to 12 students, under the guidance of an academic advisor, assigned to a class to establish a mentor program between junior and senior students

### Dream Design Center

- Establishment of idea generation and development space for students to apply their creativity and imagination while utilizing scientific knowledge and advanced equipment
- Utilized as an incubator for students to develop their ideas into intellectual property and contribute to society

### Outstanding Research Results Presented at Home & Abroad

- Publication of research: SCIE 1 time, KCI 3 times



## Globalization

KSA runs a number of international research and exchange programs that allow students to gain more opportunities on the global stage. Through the special chances, students gain cultural experiences and vast knowledge, and develop foreign language proficiency, expertise and creativity. This prepares them as leading scientists in Korea, who can compete at a global level and heighten the status of Korea as a scientific and technological powerhouse in the world.



- **Lectures in English**
  - Some of the Math and Science courses and all the English language courses
  - Adopted the 'Minimum Credit Requirement for English Courses System' since 2012
- **ECC (English Communication Center)**
  - An opportunity to improve and refine students' English skills, and learn customized high-level English
- **Student Exchange Program**
  - An opportunity to experience curricula and culture exchange with premier institutes abroad
  - Short Term (1 week): 6 countries, 7 institutes
  - Long Term (1 semester): Singapore, NUS High School of Mathematics and Science
- **Teacher Exchange Program (as of 2019)**

Semester	Nation	Outbound	Institute
2019-1	Singapore	Chemistry 1 person	NUS High School of Mathematics and Science
2019-2	Thailand	Biology 1 person	Mahidol Wittayanusorn School

### KSA Science Fair (KSASF)

- A science festival to share scientific minds, research together, and demonstrate young scientists' creativity with science-gifted students from around the country and all over the world
- Even years (domestic fair) and odd years (international fair)
- Host of ISSF 2017 (International Student Science Fair): 21 countries, 37 institutes / 243 participants



### Int'l Academic Exchange Programs

- **Int'l On-site Research:** Conducting the advanced research in globally renowned research institutes
- **Int'l Collaborative Research:** Conducting the research with prestigious science-gifted institutes overseas
- **Int'l Science Conference & Int'l Conferences for Talented Students in Science:** Presenting students excellent research results in the global stage

### Global Education

- **Exchange agreements with 21 institutes in 11 countries**
- **International Class**
  - Outstanding foreign students selected from all over the world since 2010
  - International Students in 2020: Total 35 students (around 12 students in each grade)

## Leadership Activities and Unique Programs

KSA operates a variety of leadership programs to cultivate students with intellect and good character. By fostering creative problem-solving and leadership skills, students can set their own goals and visions, and paint a bigger picture as leaders.



### Competency-based Leadership Activities

- **Fostering of global leaders with well-rounded development of intellect, morality, and physique**
- **Career Development Activity:** Participation in leadership activities, lecture activities, reading activities, career activities, character building activities, academic activities, etc.
- **Cooperation Activity:** Participation in student club activities, experiential activities, sports activities, etc.
- **Global Citizenship Activity:** Participation in school volunteering activities, external volunteering activities, overseas exchange, etc.

### Community Service

- **Group Activities for Talent Donation:** Share scientific knowledge with the local community students
- **Operation of Math/Science Camp:** For students from low-income families in Busan
- **Sharing Love with the Underprivileged of the Local Community:** Talent donation concert, No leftover food day, etc.

### Student Festivals

- **SAF (Science Academic Festival):** Science contest, quiz contest, scientific photo contest based on scientific knowledge
- **SAC (Science Adventure Celebration):** Performances and exhibitions organized by various clubs which pursue different interests and cultural activities

### Mentorship Program

- Teaching and learning program with senior and junior students as well as fellow classmates to share their knowledge in their field of expertise

### Unique Programs

- Scientists' House
- KSA Invited Lectures
- KSA Forum for Science-gifted Education
- Rowing Team / Archery Team
- Center for Student Growth
- Sports and Cultural Exchange with KMLA (Korea Minjok Leadership Academy)





## Scholarships and Development Fund

## Financial Support for Dream and Passion!

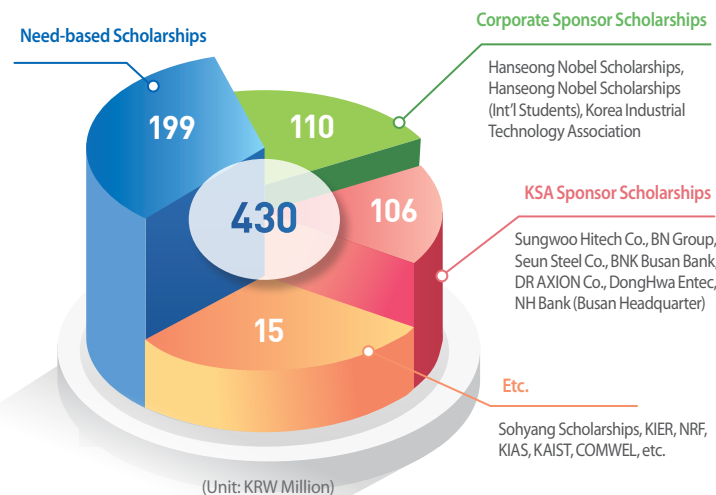
KSA offers a wide range of scholarships to support our students to grow as creative global leaders, who will enhance national competitiveness in science and technology and contribute to the mankind.

## Type of Scholarships

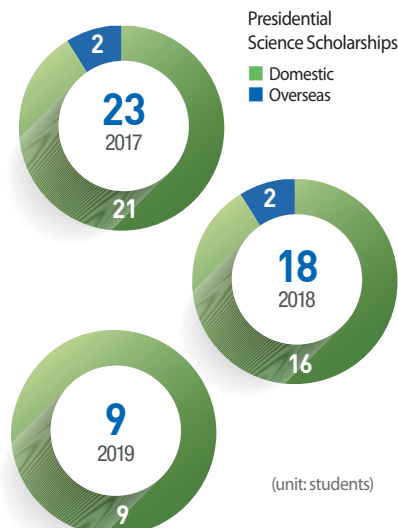
- **KSA Talented Scholarships:** 2 students (each of grade 11&12) with excellent GPA and/or research performance
- **KSA Sponsor Scholarships:** Students with excellent GPA and/or research performance
- **Need-based Scholarships:** Int'l students and low-income students (tuition fee deduction)

## Scholarships offered in 2019

## Scholarships for Current Students



## Scholarships for Graduates



## Expansion of the Development Fund

- KSA surpassed the fundraising milestone of KRW 1.2 Billion.



- Started as a fundraising campaign among faculty and staff (a total of KRW 160 million was donated).
- Small donations from current students, graduates, and parents by bank transfer are rising.
- Donations made to development fund through profits from campus events and parents' association.

## Future Operation of the Fund

- Stabilization of development fund operations and fund acquisition.
- Fundraising strategies including activating alumni associations, and devising ways to boost participation of parents.
- KSA will also seek to attract donations from large corporations and expand partnership with the Development Fund of KAIST.

## Admission

## Welcome to KSA! Home of Future Scientists

The admission process carried out by admissions officers involves a comprehensive evaluation of giftedness, creativity, and problem-solving skills.

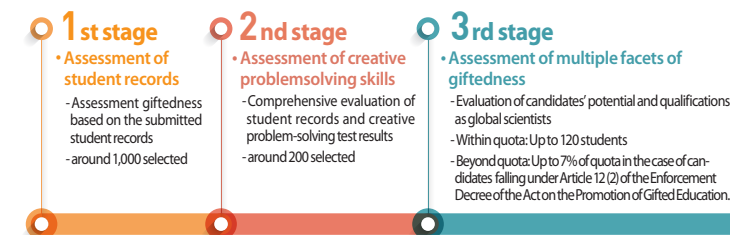
## Eligibility

- **Domestic Admissions:** Middle school students, graduates or those with equivalent educational background, who possess great potential in Math and Science, recommended by an advisory teacher, counselor and/or homeroom teacher from educational institutes specializing in gifted education (Around 120 Korean students selected).
- **International Admissions:** Foreign national middle school students, graduates or those with equivalent educational background, who possess great potential in Math and Science and English communication ability (Holders of Korean citizenship are NOT eligible. After acquiring a foreign citizenship and without holding a dual citizenship with Korea, students who completed both their primary and middle school level education abroad and whose parents hold a foreign nationality are eligible / around 15 students selected).

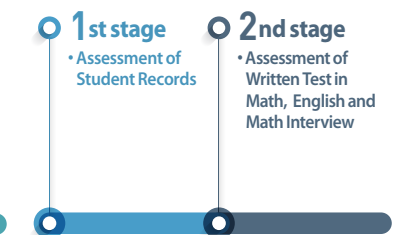
## Admissions Process

※ Priority selection for outstanding students at each admissions stage (Less than 20 students)

## Admissions Officer-centered Science-gifted Admissions



## International Admissions

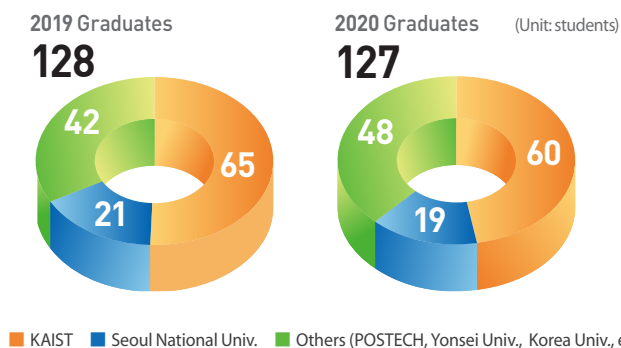


## Graduation

## Making a Leap Forward

Students are admitted to universities through special admission process, with the majority furthering their education at KAIST, SNU, POSTECH, and other prestigious universities at home and abroad.

## Admissions to Domestic Universities



※ 100% of students pursuing science and engineering majors in recent 5 years  
※ Admission to overseas universities in 2019 : To be confirmed after September 2020

## Support for the Admissions of Overseas Universities

- Administer the College Board AP exams and Support for SATs
- Hosting information sessions by prestigious universities overseas
- Establishing abroad graduates network and academic mentoring

## Admissions to Overseas Universities

- **109 students (2005~2019)**  
U.S.A. (Harvard Univ., etc.), U.K. (Univ. of Oxford, etc.), Japan (Tokyo Univ., etc.), Canada (Univ. of Toronto), Germany (Jacobs Univ.), China (Chinese Univ. of Hong Kong)