KSA

KOREA SCIENCE ACADEMY OF KAIST

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2020 Korea Science Academy of KAIST

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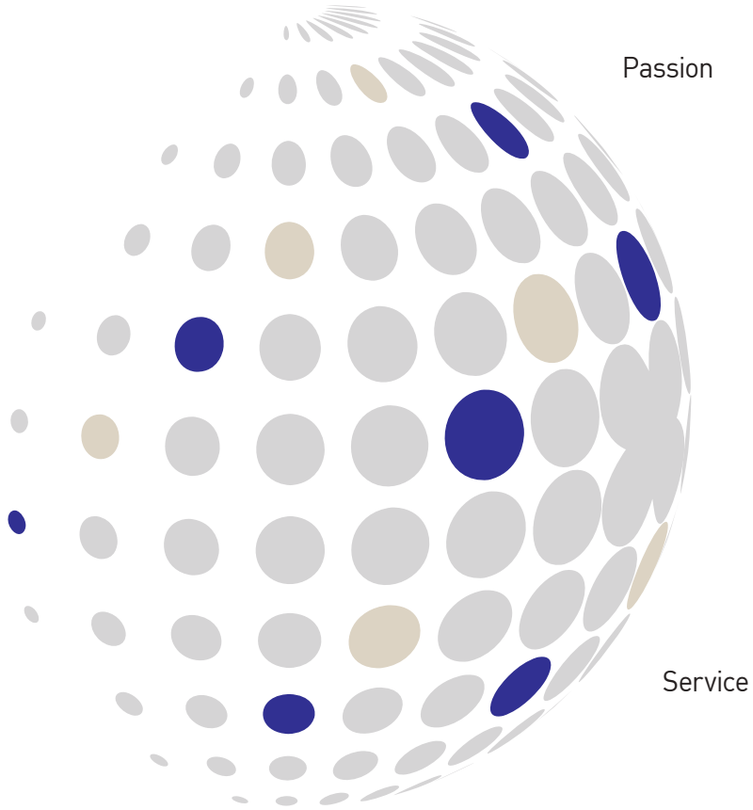
Korea
Science
Academy of
KAIST



KSA

LEADING THE FUTURE

Korea Science Academy of KAIST

Korea Science Academy of KAIST

KSA! LEADING THE FUTURE

Opening a new horizon in the future of
Science based on the values of
“CREATIVITY, PASSION, AND SERVICE”

Gifted students with scientific creativity
and artistic sensibility are expected to play
key roles in making changes for a better future.
The Science-gifted students at the
Korea Science Academy of KAIST (KSA) are
cultivated to act as key figures in paving
the way for the future of science.

KSA

KSA Leading the Future
Korea Science Academy of KAIST

CORE VALUES

Creativity · Passion · Service

Greetings.

Established in 2003 as Korea's first school for the gifted in science, Korea Science Academy (KSA) has provided world-class gifted education for about the past 15 years. Based on its experience and expertise, KSA seeks to become the world's best institute in science education for gifted students.

With the advent of the 21st century, the world is undergoing an unprecedented revolution of science and technology. Modern technologies and industries, driven by a network of talent in science and engineering, create new value through a convergence of different fields such as artificial intelligence, Internet of Things, robotics, 3D printing, and biotechnology.

Humanity is expected to embrace more changes and push forward into a new frontier of innovation.

Against this backdrop, the role of KSA in producing global talent in science and technology is crucial to the advancement of humanity. KSA has served as a leader of science gifted education in Korea through various innovative policies. It has freed gifted students from the burden of the national college-entrance exam, established a system to select gifted students, promoted student and research-centered gifted education, developed internationalization strategies, and collaborated actively with KAIST.

The goal of KSA is to nurture talented individuals with the courage and wisdom to adapt rapid changes and to fulfill the expectations of future societies. With creativity and passion as its core values, KSA will continue to expand its efforts in research, internationalization, and collaboration with KAIST, so as to emerge as the world's best institute in science gifted education. KSA promises to raise the standards of gifted education in science based on its insightful wisdom, organizational innovation, and exemplary performance.

CHUNG Yoon Ph. D.
Principal, Korea Science Academy of KAIST

Chung Yoon

Science-Gifted Institute

KSA OFFERS THE BEST EDUCATION FOR THE GIFTED.
KSA! LEADING THE FUTURE

KSA is the First Science-gifted Institute in Korea.

KSA offers the best education for the gifted
without the burden of college entrance exams.
KSA provides an independent curriculum, research-oriented education,
in-depth study in math & science convergence education, globalization,
educational-research collaboration with KAIST, assessment of giftedness, and
support in admission to universities specializing in science and engineering.

Research-Oriented Education

KSA Seeks to Become the World's Best Hub of Science-gifted Education.

KSA are nurtured to grow as global leaders
based on the core values of creativity, passion, and service.
KSA will create a new paradigm as the world's best hub
of science-gifted education.

KSA Offers Education with an Emphasis on Students and Research, Encouraging Independent Thinking and Learning.

The customized educational program focuses on the individual abilities of students and promotes creative thinking. Students interact with teachers and participate actively in the learning process. They are taught to explore creativity through numerous programs such as creative research fundamentals, R&E program, and graduation research.

Global Scientific Network

KSA has Formed a Large Global Network with Leading Institutes.

Students can experience different cultures by participating in int'l collaborative research, on-site research program, int'l academic conferences, and int'l conferences for talented students in science. KSA has formed partnerships with top Schools and Institutes and provides opportunities for student exchange. These activities will allow students to broaden their horizons and communicate with the international community.

KSA's Leadership Program Fosters Global Citizenship with Wisdom and Good Character.

Through volunteer activities, students are instilled a sense of sharing and community. Club activities also teach the value of cooperating with others and help to strengthen ties among the members. The enhancement of interpersonal relations will create synergy in developing qualities and virtues expected of global leaders.

KSA! Leading the Future

The brain of Korea!
The dreams of science-gifted students pave the way to
a more creative world. Thinking out of the box is to apply
the knowledge in books to the world around us.
With creativity and endless imagination,
talents in science create a better tomorrow
by pursuing their dreams.

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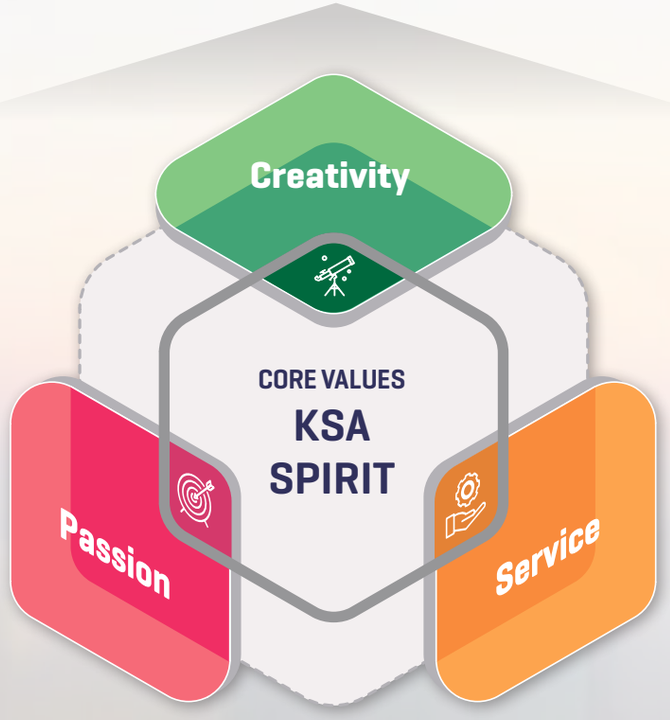
KOREA SCIENCE ACADEMY OF KAIST

Mission & Vision

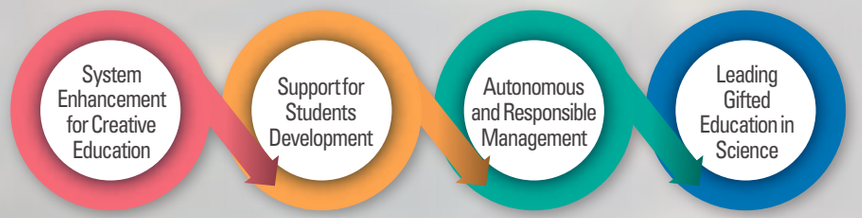
KSA is the first institute established in Korea for science-gifted students and designated by the Act on the Promotion of Specific Education for Brilliant Children. It was founded for gifted learners in 2003 with an aim to cultivate creative global leaders, who will contribute to national development and mankind, and receives full financial aid from the central government. KSA will dedicate its efforts to develop students' creativity based on the core values of 'Creativity, Passion, and Service' and emerge as the world-class institute for science-gifted students.

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

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



GOAL



[Close-knit Connection with KAIST]

History

With a history of more than 20 years, KSA was established as the Busan Science High School in 1991 before transforming into Korea's first institute of science gifted education in 2003. As an affiliate of KAIST since 2009, it has been consistently producing global talents in science.

1990

09. 07. Obtained Approval for the Establishment of Busan Science High School

1991

03. 04. The 1st Entrance Ceremony of Busan Science High School (60 students in 2 classes)

1993

10. 13. Establishment of Relationship with Samsung Heavy Industries

2001

10. 31. Selected as a Science-gifted Institute (Ministry of Science & Technology)

2002

04. 12. Signed an Academic Support Agreement with KAIST

05. 03. **Designated and Converted to a Science-gifted Institute (Ministry of Education & Human Resources Development)**

05. 21. Establishment of Relationship with Samsung SDI

07. 11. Signed an Academic Exchange Agreement with Samsung Advanced Institute of Technology

09. 27. Signed an Academic Exchange Agreement with Northside College Preparatory High School in the USA Signed an Academic Exchange Agreement with Mahidol Wittayanusorn School in Thailand Signed an Academic Exchange Agreement with Kolmogorov Math and Physics High School in Russia

2003

03. 05. **The Entrance Ceremony of Science-gifted Institute (144 students)**

05. 20. Signed an Academic Support Agreement with POSTECH-Busan Metropolitan City Office of Education

11. 17. Signed an Academic Exchange Agreement with Israel Arts and Science Academy in Israel

12. 01. Signed an Academic Exchange Agreement with Illinois Mathematics and Science Academy in the USA

12. 04. Signed an Academic Exchange Agreement with 239 Physical-Mathematical School in St. Petersburg in Russia

12. 08. Signed an Academic Exchange Agreement with Specialized Scientific Study Center of Novosibirsk State University in Russia

2005

06. 27. Signed an Academic Exchange Agreement with Australian Science and Mathematics School in Australia

07. 12. **Renamed as Korea Science Academy**

09. 23. Signed an Academic Exchange Agreement with National Junior College in Singapore

11. 22. Signed an Industry-Academic Exchange Agreement with the Busan: Footwear Industrial Promotion Center

2006

05. 16. Signed a Joint Operation Agreement for the 'Eastern Brothers Study Room' with the Busan Metropolitan City Office of Education (Eastern District)

08. 24. Signed an Academic Exchange Agreement with Moscow South-Eastern Lyceum and Grammar School in Russia

11. 22. Signed an Academic Exchange Agreement with School Affiliated to Fudan University in China

2007

04. 11. Signed an Academic Exchange Agreement with Roanoke Valley Governor's School in the USA

07. 11. Signed an Academic Exchange Agreement with Lyceum Physical Technical High School St. Petersburg in Russia

2008

04. 24. Signed an Industry-Academic Exchange Agreement with Seun Steel

07. 09. Signed an Academic Exchange Agreement with UNIST

2009

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

02. 16. Signed an Academic Exchange Agreement with G. T. (Ellen Yeung) College in Hong Kong

02. 17. Signed an Academic Exchange Agreement with NUS High School of Mathematics and Science in Singapore

03. 04. Entrance Ceremony 2009 (141 students)

2010

02. 03. Entrance Ceremony 2010 (160 students / 17 int'l students included)

07. 06. Signed an Academic Exchange Agreement with Camborne Science and International Academy in the U.K.

11. 11. Signed an Academic Exchange Agreement with Alam Shah Science School in Malaysia

2011

02. 09. Entrance Ceremony 2011 (154 students / 8 int'l students included)

06. 28. Signed an Academic Exchange Agreement with MINT-EC in Germany

11. 22. Signed a Mutual Support Agreement with the Busan Metropolitan City Institute for Gifted Education & the Busan Metropolitan City Institute for Science Education

2012

01. 05. Signed a Mutual Support Agreement with Korea Southern Power Co., Ltd.

02. 22. Entrance Ceremony 2012 (157 students / 8 int'l students included)

03. 07. Signed an Academic Exchange Agreement with DGIST

05. 23. Signed an Academic Exchange Agreement with Chungbuk National University Observatory

11. 12. Signed an Academic Exchange Agreement with GIST

2013

02. 20. Entrance Ceremony 2013 (149 students)

03. 04. Inauguration of the 8th Principal, Dr. CHUNG Yoon

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

2014

02. 19. Entrance Ceremony 2014 (145 students / 9 int'l students included)

04. 07. Signed a Talent Donation Agreement with Community Child Center of Busanjin-gu

05. 28. Signed an Academic Exchange Agreement with NUS High School of Mathematics and Science in Singapore

06. 11. Signed a Mutual Support Agreement with KAIST Global Institute for Talented Education

08. 11. The 10th ISSF 2014 Joint Declaration on the Enhancement of Int'l Partnership for Science-gifted Education

08. 22. Signed a Mutual Support Agreement with YTN Science

2015

03. 04. Entrance Ceremony 2015 (128 students / 15 Int'l students included)

10. 14. Signed an Academic Exchange Agreement with Kamnoetvidya Science Academy in Thailand

12. 11. Renewal of Academic Exchange Agreement with Mahidol Wittayanusorn School in Thailand

12. 11. Joining the International Science Schools Network (ISSN) as a Full Member

2016

02. 24. Entrance Ceremony 2016 (132 students / 11 int'l students included)

05. 25. Renewal of Academic Exchange Agreement with National Junior College (NJC) in Singapore

08. 26. Mutual Support Agreement with Busan National Science Museum

10. 24. Signed an Academic Exchange Agreement with The Experimental School of BeiHang Univ. (ESBHU) in China

2017

02. 15. Entrance Ceremony 2017 (133 students / 14 int'l students included)

03. 28. Inauguration of 9th Principal, Dr. CHUNG Yoon

06. 19. ~ 23. **Hosted the International Students Science Fair 2017 (ISSF 2017)**

12. 14. Completion and Opening Ceremony of the Dream Design Center

2018

02. 26. Entrance Ceremony 2018 (134 students / 14 int'l students included)

2019

02. 25. Entrance Ceremony 2019 (134 students / 12 int'l students included)

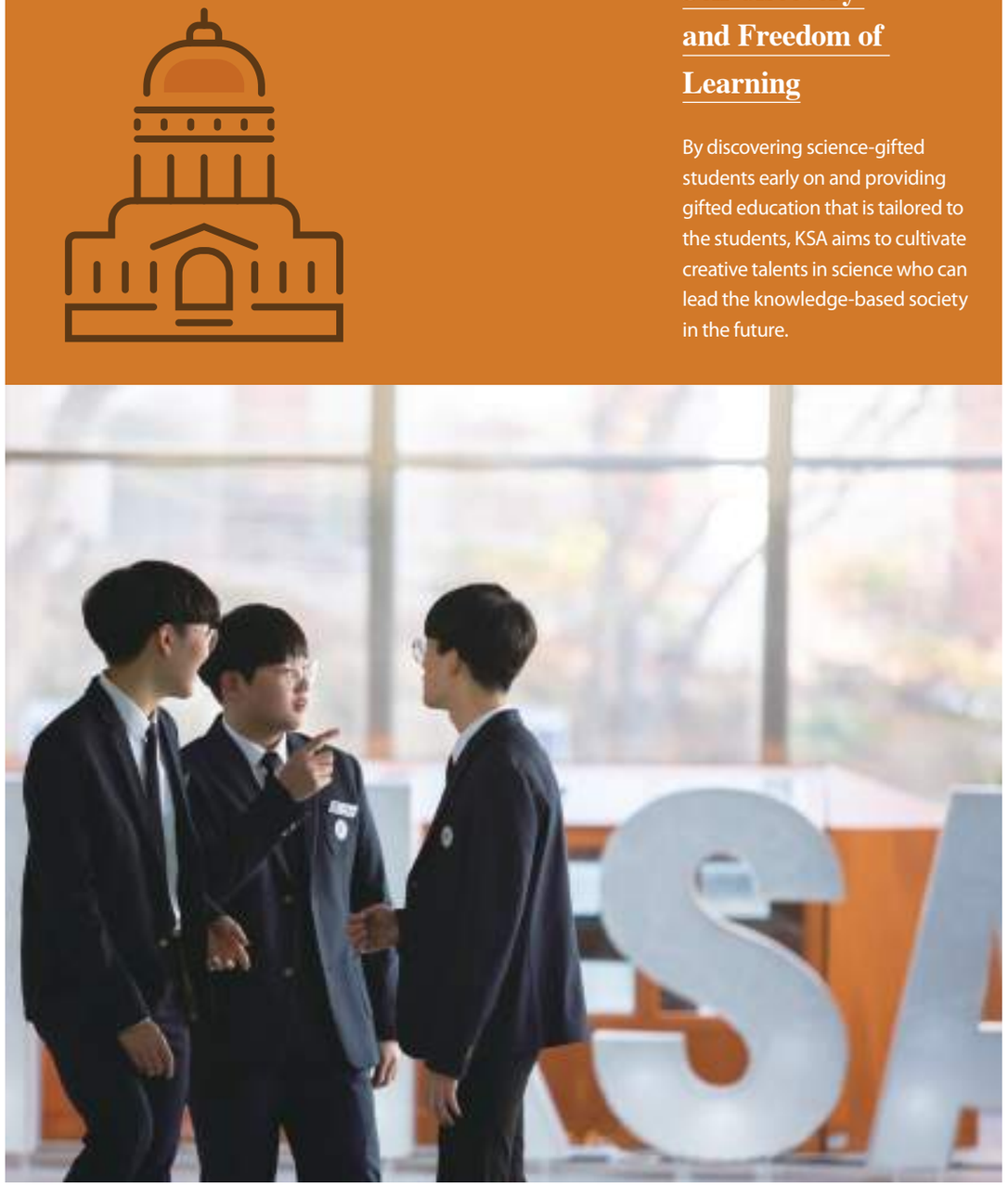
2020

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

Curriculum

A Journey of Self-discovery and Freedom of Learning

By discovering science-gifted students early on and providing gifted education that is tailored to the students, KSA aims to cultivate creative talents in science who can lead the knowledge-based society in the future.



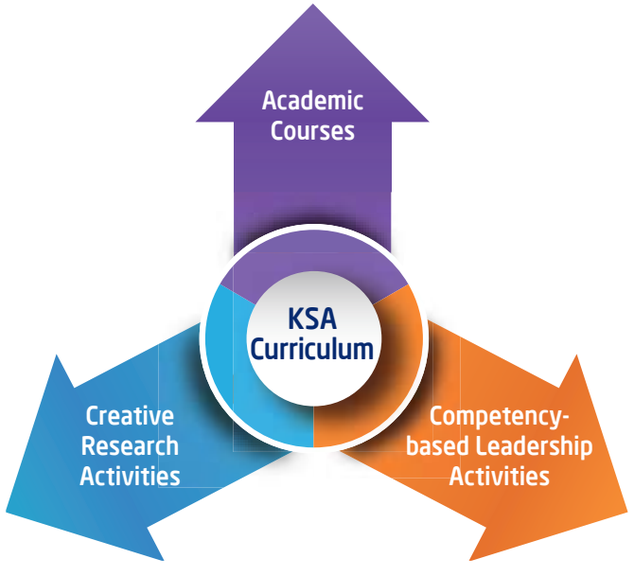
Curriculum

ACADEMIC OPERATION

KSA implements a **"Credit-based Graduation System"**, allowing students to complete the 3-year high school courses through the required courses and to take electives in AP courses for transfer credits and intensive college-level courses through convergence courses. Also, KSA provides our students with greater opportunities for learning by offering diverse and specialized educational programs, the credits of which are transferable to domestic and foreign universities and gifted education institutes with whom have academic exchange ties with.

Curriculum Organization

KSA offers a differentiated curriculum with an aim to prepare gifted learners in science to lead the future of science in Korea. Based on a curriculum that comprises of educational courses, creative research, and competency-based leadership activities, we conduct **student-oriented programs** to help each student develop his and her individual capabilities and qualities, and actively support students' **creative research activities** to nurture them as well-rounded global individuals.



Curriculum

Innovative Leaders Exploring Science and Shaping the World

KSA triggers interest and reveal the students' potential in the field of science and technology through its curriculum, which focuses on experience, exploration and experiments. KSA operates systematic and creative educational programs that promote self-discovery and helps gifted learners in science demonstrate their unlimited potential.

Curriculum

Curriculum OPERATION

KSA offers some of its courses while conducting all its English classes entirely in English to prepare the students as global leaders. Also, students can take electives based on their individual characteristics, capabilities, interest, and aptitude; and outstanding students can take upper-level courses through the PT (Placement Test). Required courses in Math and English are offered in different levels to further accommodate the students. KSA not only promote self-directed learning by providing education centering on discussion, experiments and hands-on practice, but also helps to develop students' inquiry, discussion, and writing skills.

PT (Placement Test)

The credits for required courses can be obtained without taking the classes if students pass the PT.

- **Eligible Courses**
  - Math I & II, Physics and Exp. I & II, Chemistry and Exp. I & II, Biology and Exp. I & II, Computer Science I & II, English I & II
  - Taking the English PT as English proficiency tests such as TOEFL and TOEIC

KSA AP (Advanced Placement)

AP credits obtained at KSA can be transferred when enrolled at the leading domestic universities.

- **Transferable AP Credits**
  - 58 credits to KAIST, 35 credits to POSTECH (Pohang University of S & T), 37 credits to UNIST (Ulsan National Institute of S & T)
  - AP agreements with DGIST (Daegu Gyeongbuk Institute of S & T) and GIST (Gwangju Institute of S & T)

ALC (Active Learning Classroom)

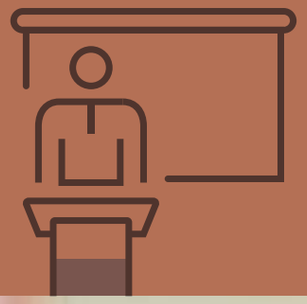
KSA has been operating a specialized classroom to implement the teaching method of Active Learning, which is a teaching and learning method based on learner-led cooperative learning.

Science Technology Management, Engineering & Convergence Education

KSA has placed greater priority on fostering interdisciplinary talent by providing students with an opportunity to diversify their thinking and experiences through multidisciplinary integrated curriculum.

- **Creative Convergence Design:** Hardware, software, and technical education in response to the fourth industrial revolution, and maker education with an interdisciplinary approach
- **Creative Engineering:** Designed to meet students' demand for engineering and help students to find a career path/Focused on convergence engineering including 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

Connected Education



KSA to Grow with KAIST

Since the affiliation with KAIST world-class university, in 2009, KSA has been offering holistic convergence education and college-level lectures to maximize the potential of gifted students.

KAIST–KSA Educational Collaboration

Korea Advanced Institute of Science and Technology

KSA AP (Advanced Placement)

AP credits obtained at KSA can be transferred to KAIST credits.

KSA HP (Honors' Program)

This program is in operation to maximize the advantages of our affiliation with KAIST. Outstanding students can take courses at KAIST for which the credits will be accepted as credits by KSA and KAIST.

- **Eligibility**
  - Students with excellent GPA
  - Students whose graduation research won't be impeded
  - Students who have met the graduation requirements
  - Students who have passed the evaluation of the KSA Curriculum Committee

KAIST HRP (High school Research Program)

Students in KAIST HRP conduct research in the spring term and during the summer vacation under the guidance of a KAIST professor. Such students get a chance to stay at KAIST for 30 days during the summer vacation for research activities and write a graduation thesis afterwards.

KAIST FACULTY LECTURES

Students have access to college-level lectures given by KAIST professors at KSA.

Departments

Department of Mathematics and Computer Science

+ http://mathcs.ksa.hs.kr
+ TEL. +82. 51. 606. 2280

Department of Physics and Earth Science

+ http://newton.ksa.hs.kr
+ TEL. +82. 51. 606. 2129

New Paradigm of Mathematics and Computer Science

The academy provides customized education for students by offering classes at different levels for major subjects. The students gain fundamental knowledge through customized classes, which provide them with a strong foundation to exercise their creativity. Mandatory Java programming classes, introduced to keep pace with the trends of information science education, cover the basic concepts of object-oriented programming. The integration of scheme programming into the information science curriculum trains students to look beyond conventional programing and think creatively.

The Knowledge of Basic Science is the Foundation for Future Development in Science

The Department of Physics and Earth Science offers a specialized program to help students with a keen interest in Physics and Earth Science gain in-depth knowledge as well as experience in research in this particular field. In response to our entry into the era of advanced science, we focus on basic science education and allow students to engage in lab experiments, hands-on practice, field-based learning and continuous inquiry activities to develop their scientific creativity and thinking skills. We also further heighten their learning, logical thinking and problem-solving skills. By creating the ideal conditions for lab experiments and hands-on practice with quality lab equipment, we provide basic science education centering on experiments and operate intensive programs at different levels that meet the individual needs of each student.

Department of Chemistry and Biology

+ http://chembio.ksa.hs.kr
+ TEL. +82. 51. 606. 2211

The First Step as a Scientist in Chemistry and Biology

The teachers of current chemists and biologists at the Department of Chemistry and Biology offer deepened education and research to foster the interest and talent of the students who will grow into future scientists. Based on a deep understanding of the chemistry and biology field, students operate a curriculum that enables them to develop their own abilities as self-directed inquirers with self-questioning and thoughtful attitudes. Based on inquiry, experiment and practice centered education, we trigger students' interest in natural phenomena and pass on to them the necessary scientific knowledge and scientific inquiry methods. The students take the first steps as a scientist in the field of chemistry and biology and continue to pursue their dreams.

Department of Humanities and Arts

+ http://human.ksa.hs.kr
+ TEL. +82. 51. 606. 2262

Scientists with Humanistic Knowledge and Sensibilities

The Department of Humanities and Arts offers a wide variety of courses that explore human interaction, behavior, society, and culture. Ranging from philosophy, history, and social studies to languages and fine arts, these courses aim to provide the basic/advanced knowledge of the subjects as well as promote logical, critical, and creative thinking. The faculty of the department is strongly committed to creating an environment in which students can develop the human values, linguistic competence, and academic capacity and become individuals with integrity.

Creative Research Activities

The Power to Change the World through Creative Thinking

The future of our society depends upon talented individuals, who think and act with a creative mind set, based on diverse experiences, respect of different opinions, and innovative ideas. KSA offers creative research activities in different levels 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

In grade 10, the focus is on developing the creative problem-solving and basic research skills among students. **In grade 11,** students perform R&E, visit research institutes at home and abroad, and engage in small group research activities. **In grade 12,** students are required to conduct graduation research and write a graduation thesis to develop their in-depth research skills.

✚ Creative Basic Research (Grade 10)

Comprised of survey of creative research and research methodology seminar. Students get a chance to explore the research field of their interest and gain the basic knowledge for future research activities. Research methodology seminar is conducted on a small group, in which students learn under the guidance of scholars and gain the basic knowledge in research.

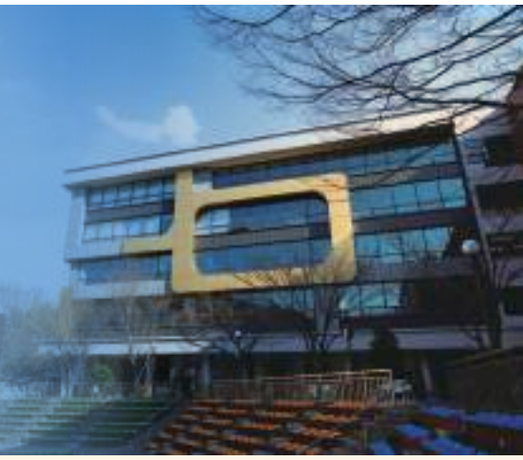
✚ Self-directed Small Group Research (Grade 11)

Through the Research and Education (R&E) Program, students gain more knowledge in advanced science, scientific research methods and debating processes and gain experience as a scientist by participating in actual scientific studies with the assistance of professors, researchers and teachers. The small groups carry out research activities for a year. Also, students engage in 3-weeks (20 days) R&E on-site research in summer and take part in interim and final presentations. Furthermore, int'l on-site research program (Second-year Overseas Training) is conducted in parallel in summer vacation.

✚ Graduation Research (Grade 12)

Students are given the option of performing individual research or participating in the KAIST High school Research Program (HRP). Students, carrying out research, do so under the guidance of a KSA teacher and write a graduation thesis. On the other hand, students in KAIST HRP conduct research in the spring term and during the summer vacation under the guidance of a KAIST professor. Such students stay at KAIST for 30 days during the summer vacation for research activities and write a graduation thesis afterwards.

Dream Design Center



Dream Design Center (DDC) is the hub of imagination and creative design at Korea Science Academy of KAIST. DDC is the perfect place for students to stretch their dreams by stimulating inspiration in a comfortable environment allowing them to make their own product from initial idea with a variety of digitally controlled 3D equipment. DDC has a wide range of tools for prototyping and fabrication, enabling students to move through complete idea processes from initial sketch to refined final product.

✚ VISION

- Fostering students who will lead the science and technology fields in the future by stimulating creative Maker mindset.
- Developing bold experimental thinking through project-based problem solving education.
- Encouraging challenging and innovative attempts suitable for Sci-Tech entrepreneur and innovator.

✚ MISSION

- Educational infrastructure for creative design and STEAM (Science, Technology, Engineering, Arts, and Math) education capable of materializing the intellectual products obtained through students' research activities such as R&E and graduation research.
- Testing site of various early designs derived from creative ideas based on scientific knowledge.
- Complex research environment to diversify student research activities and improve creativity.
- Formation of circulatory system covering from potential imagination to prototyping and generating intellectual property rights.
- Establishment a hub of entrepreneurship curriculum by disseminating the operation to other institutes.

✚ SPACE TO MAKE

Classification	Purpose	Key equipment
Idea Conference Hall (2F)	Cozy and pleasant space for ideation	WorkStation, iMAC, Tablet PC, VR Lego Mindstorms
IoT and 3D Printing Room (3F)	Space for IoT implementation and 3D model production	3D printers (FDM, SLA and DLP), Arduino, Raspberry Pi, BeagleBone Black
Basic Convergence Lab (4F)	Space for each team to conduct assignment-based projects	3D printer (MJP), 3D Scanner, Electron Microscope, Electric Furnace
General Workroom (5F)	Space to create basic parts and prototypes based on ideas	3(5)-Axis Carving Machine, CNC Lathe/Cutting Machine, Metal Laser Cutting Machine
Digital Machining Lab 2 (5F, Exploration Hall)	Space to conduct team assignments	Laser Cutting Machine, Knife Cutting Machine

Globalization

The World's Science Central that Competes through Communication

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

INTERNATIONAL ACADEMIC EXCHANGE PROGRAMS

International On-site Research

Participants in the On-site Research Program in 2019

Students can take part in advanced research opportunities in various research activities around the world including the U.S.A., Canada, Germany, U.K., and Russia, and cultivate their leadership skills as global leaders. An intensive science program and customized classes are operated for students of grade 11 while outstanding students in grade 12 are allowed to participated in research-centered training programs.

Grade	Nation	Institute	No. of persons	Total
11	U.S.A	Cornell University	12	129
		Michigan University	26	
		Wisconsin Center	21	
		Worcester Polytechnic Institute	7	
		University of Massachusetts	12	
	Canada	University of Toronto	12	
	Russia	Moscow South-Eastern Lyceum and Grammar School	11	
	U.K.	Imperial College London	8	
		University of Oxford	11	
		University of St. Andrews	9	
	Korea	UNIST	1	
12	Israel	The Weizmann Institute of Science	1	11
	U.K.	University of Oxford	4	
	Germany	Jacobs University Bremen	1	
		Goettingen Experimental Laboratory for Young People	5	

International Collaborative Research

International Collaborative Research Program in 2019

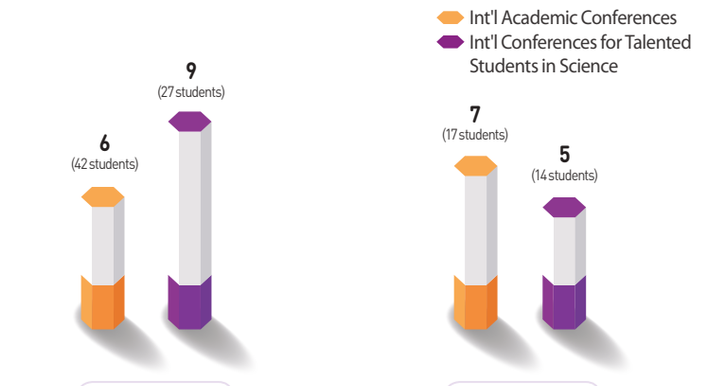
By conducting international collaborative research with leading educational institutes for gifted learners overseas, KSA cultivates leadership and collaborative research skills among our students. Students visit the participating institutes to carry out research projects and gain diverse cultural experiences.

Nation	Institute	No. of teams
Russia	Moscow South-Eastern Lyceum and Grammar School	3(6 students)
Japan	Ritsumeikan Junior and Senior High School	1(3 students)
Singapore	National Junior College	2(6 students)

Int'l Academic Conferences and Int'l Conferences for Talented Students in Science

Participation Status (Recent 2 years)

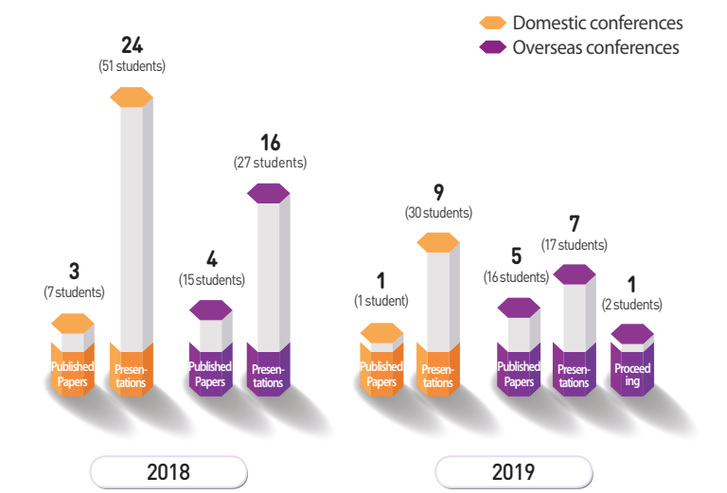
Students with excellent research skills participate in the programs to help build their global leadership skills and research capabilities.



Outstanding Research Papers Presented at Home & Abroad

Publication of professional research: SCIE 1 time, KCI 3 times (Recent 2 years)

The results of creative and diverse research activities of students are published through domestic and foreign academic journals and presented at academic conferences to demonstrate their infinite potential as future scientists.



GLOBAL EDUCATION

The int'l exchange programs cultivate our students' global leadership skills and broaden theirview of the world as global individuals, while at the same time, promote KSA to the world. Exchange of human resources is facilitated through bilateral visits and the status of KSA in the world is further heightened through the cultural exchange and curriculum experience programs. Furthermore, we run an international class for outstanding students from all over the world and offer Math and Science courses in English.

Overseas Educational Institutes for Science-gifted students

Exchange agreements with 21 institutes in 11 countries

Nation	Institute	Date
U.S.A.	• Northside College Preparatory High School	2002. 09. 27.
	• Illinois Mathematics and Science Academy	2003. 12. 01.
	• Roanoke Valley Governor's School	2007. 04. 11.
Russia	• Kolmogorov Math and Physics High School	2002. 09. 27.
	• 239 Physical-Mathematical School in St. Petersburg	2003. 12. 04.
	• Specialized Scientific Study Center of Novosibirsk State University	2003. 12. 08.
	• Moscow South-Eastern Lyceum and Grammar School	2006. 08. 24.
	• Lyceum Physical Technical High School Saint-Petersburg	2007. 07. 11.
Thailand	• Mahidol Wittayanusorn School	2002. 09. 27.
	• Kamnoetvidya Science Academy	2015. 10. 24.
Israel	• Israel Arts and Science Academy	2003. 11. 17.
Australia	• Australian Science and Mathematics School	2005. 06. 27.
Singapore	• National Junior College	2005. 09. 23.
	• National University of Singapore High School of Mathematics and Science	2009. 02. 17.
Japan	• Ritsumeikan High School	2006. 08. 24.
China	• High School Affiliated to Fudan University	2006. 11. 22.
	• Hong Kong G. T. (Ellen Yeung) College	2009. 02. 16.
	• The Experimental School of BeiHang University	2016. 10. 24.
U.K.	• Camborne Science and International Academy	2010. 07. 06.
Malaysia	• Alam Shah Science School	2010. 11. 11.
Germany	• MINT-EC	2011. 06. 28.

International Class

KSA has been operating an int'l class for outstanding students selected from all over the world through a special admission process since 2010. They take elective classes in Mathematics, Science and English, Art, and Physical Education together with Korean students, while a separate curriculum is provided for all required classes and Humanities subjects such as Korean and elective Social Science to accommodate their unique cultural background and learning processes.

English Lectures

Textbooks in English are used for all Math and Science courses, and lectures in English are given for some of the Math and Science courses. KSA has begun implementing the "minimum credit requirements for English courses" for students who were newly admitted to our school in 2012. All the English language courses are conducted in English.

ECC (English Communication Center)

Students are provided with an opportunity to improve and refine their English skills at the ECC. KSA is making an effort to create an ideal English learning environment to prepare our students as global scientists.

Student Exchange Programs (1 semester or 1 week)

Students experience curricula and culture exchange with premier institutes abroad.

- Assigned the 'Long Term Student Exchange Program' with NUS High School in Singapore (May, 2014)

Student Exchange Program in 2019
- Short Term (1 week): 6 countries, 7 institutes

Teacher Exchange Program

The program creates a multi-lateral network of teachers through mutual visits and the two schools' curriculum can be facilitated concerned as well as to share their teaching methodologies and practices.

Exchanges in 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

Competency-based Leadership Activities

Leadership Activities

Devoted Leadership with Sacrifice and Hard Work

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.

Student Festivals

- **SAF** (Science Academic Festival) **in Spring**

The festival includes a science contest, quiz contest, astronomical observation, scientific photo contest amongst others based on scientific knowledge and research to cultivate creativity and inquiry skills among the science-gifted students. Also, Scientists' House is operated for the general public to make it a festival for the entire community.

- **SAC** (Science Adventure Celebration) **in Autumn**

This festival includes performances and exhibitions organized by various clubs, which pursue different interests and cultural activities, as well as a sports competition, Humanities academic presentation, lectures with invited guests, Scientists' House and an open lab for the general public.

Mentorship Program

Senior and junior students as well as fellow classmates at KSA teach and learn specific subjects to share their knowledge in their field of expertise. Mentoring is encouraged not only for Science courses but also in Art and Physical Education.

Career Development Activity

KSA maximizes the potential of the students by allowing the scientific gifted students to establish desirable self-identity and to select the path appropriate for their aptitude.

Over 60 hours for 3 years

- Participation in leadership activities, lecture activities, reading activities, career activities, character building activities, academic activities, etc.

Cooperation Activity

KSA reinforces the practice-oriented character training and helps students gain diverse rewarding experiences and have a community-oriented mind set.

Over 60 hours for 3 years

- Required to join 1 group activity for each students (17 clubs, 43 research societies, and 33 mentoring teams)
- Participation in student club activities, experiential activities, sports activities, etc.

Global Citizenship Activity

Students perform a wide range of volunteer services such as providing assistance and sharing their knowledge in academic subjects, sports and culture with other students and the general public, and participating in campaigns for environmental conservation/preservation. Through these activities, they gain a better understanding of and experience in community.

Over 60 hours for 3 years

- Domestic volunteer activities
- Overseas volunteer activities
- Int'l Exchange Programs
- Talent donation(Programs for popularization of science, Assistance for the underprivileged, Science Camps, Concerts, etc.)

Unique Programs

Unique Programs

A passionate Dream of Becoming Scientists

The wide range of unique programs offered by KSA enhances students' confidence and academic interest and motivates them to engage in school activities with great enthusiasm. Students get a chance to broaden their knowledge based on a deeper understanding of science and technology gained through science festivals and special lectures hosted by the school. Also, they train and strengthen their mind and body through sports and extracurricular activities.

KSASF (KSA Science Fair)

KSASF is a festival held to allow science-gifted students from around the country to conduct studies together and share their findings to demonstrate their scientific creativity. Students are given a chance to present their research project, write science essays, engage in inquiry activities and field experience, and attend lectures by famous scientists. This encourages science-gifted students to engage in self-directed learning and demonstrate their brilliant minds. KSASF is held as a domestic fair in the even years and as an international event in the odd years.

KSA Science-gifted Education Forum

KSA forum provides information and promotes awareness of education for science-gifted students through lectures by experts. Experts in science-gifted share information on the education for gifted learners in science. By promoting communication and networking, the forum contributes to the development and advancement of education for science-gifted students.

Center for Student Growth

Through continuous and systematic fitness management and various and substantial sports activities, the center provides students with health and fitness and customized sports programs.

Scientists' House

The Scientists' House consists of 5 sessions (Math & Information science, Physics, Chemistry, Biology and Earth Science) that are equipped with diverse lab equipment. It is operated permanently for students nationwide to give an open opportunity to all students with a keen interest in science. Moreover, it contributes to the popularization of science through development and exhibition of new devices for scientific experience.

KSA Invited Lectures

Experts in various fields are invited to give special lectures to the students to pass on specialized knowledge and serve as role models. These lectures foster dreams and passion, and promote openness to new challenges.

Rowing Team

Students in the rowing team not only get to build their physical strength and endurance, but also gain experience in water sports and learn sportsmanship and teamwork skills.

Archery Team

By learning the intricate art of propelling arrows with the use of a bow, traditionally used in combat, students familiarize themselves with the proper decorum and morals of our ancestors. This not only trains their mind and body, but also cultivates their character and qualities as global leaders.

Sports and Cultural Exchange with KMLA

The KSA is motivating students to boost their enterprising and cooperative spirit through an annual sports competition with the elite Korean Minjok Leadership Academy (KMLA), paving the way for sports exchange and cooperation among these high schools for the first time in Korea.

Building a Database of Alumni

A website will be launched to provide a network for graduates and current students of KSA to interact with each other, which is expected to facilitate mutual exchanges, as well as career mentoring for graduates.

Community Service

Community Service

Spreading the Synergy of Wisdom and Sharing throughout the World

KSA students contribute to the local community by running a talent donation club and providing other students the opportunity to learn about scientific theories through hands-on classes. Students in Busan can visit the laboratories at KSA and participate in various experiments during the open lab and school camp.

Dream Class

KSA students provide the math and science education programs to elementary school students in the community with customized level. Through the sharing of knowledge, KSA students not only promote leadership, but also nurture the dreams of scientists in the community.

Dream Camp

Students organize a science/math camp for fellow students from low-income families in Busan as part of expertise sharing to help them develop interests in science and math.

KSA Orchestra Concert

Through concerts with community members and local residents and neighbors in the community, KSA creates a venue to harmonize with local community members. By contributing the donation from the concert, KSA implements to grasp the true meaning of voluntary service.

Talent Donation Club

As part of KSA's efforts in promoting student exchange and sharing of scientific knowledge, local students are invited to student festivals (spring) and culture festivals (fall).

To Spread Love to the Socially Excluded

Students organize concerts in community centers, donate food to free kitchens, and participate in environmental clean-ups. Students living in Busan are offered counseling and taught efficient study methods by KSA faculty.

Scholarships

Type of Scholarships

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.

- **KSA Talented Scholarships** 2 students (each of grades 11&12) with excellent GPA and or research performance
- **KSA Sponsor Scholarships** Students with excellent GPA and/or research performance
- **Need-based Scholarships** International students and low-income students

• Scholarships for Current Students in 2019 (Unit: KRW)

Category	Institute	Amounts
KSA Sponsor Scholarships	Sungwoo Hitech Co.	30,000,000
	BN Group	15,000,000
	Seun Steel Co.	15,000,000
	BNK Busan Bank	15,000,000
	DR AXION Co.	15,000,000
	DongHwa Entec	10,000,000
	NH BANK (Busan Headquarter)	6,000,000
Corporate Sponsor Scholarships	Hanseong Nobel Scholarships	100,000,000
	Hanseong Nobel Scholarships (Int'l Students)	3,600,000
	Korea Industrial Technology Association	6,000,000
Etc.	Sohyang Scholarships	6,000,000
	KIER	1,200,000
	NRF	1,200,000
	KIAS	600,000
	KAIST	1,200,000
	COMWEL	2,246,400
	etc.	2,246,400
Need-based Scholarships (tuition fee deduction)	KSA	199,046,400
Total		**429,339,200**

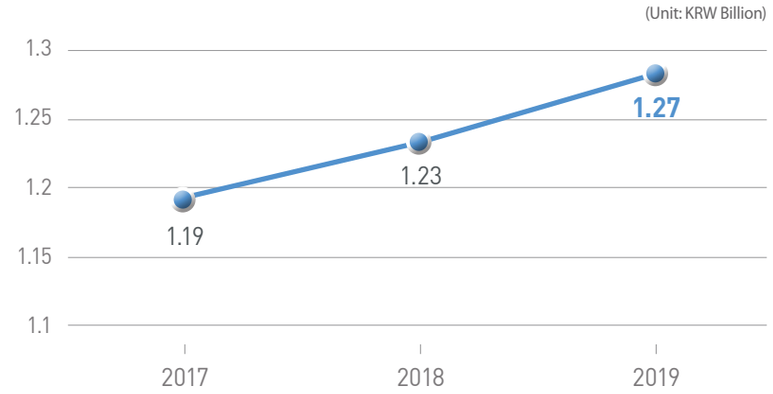
• Scholarships for KSA Graduates in recent 3 years (Unit: students)

Scholarships		2017	2018	2019
Presidential Science Scholarships	Domestic	21	16	9
	Overseas	2	2	0
Total		**23**	**18**	**9**

Development Fund

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.**
  - 48 parents of the 2014 entering students joined the monthly donation program in 2014.
  - A more convenient process for donors through the adoption of Cash Management Service (CMS) in 2015.
  - An increase of 37 million KRW in small donations by students' parents in 2016.
  - 10 million KRW donated to Alumni Development Fund in 2019.
- **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

Admission

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

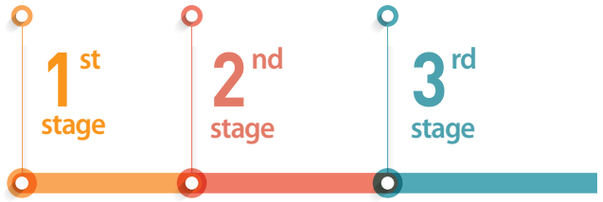
Eligibility

- **Admissions Officer-centered Science-gifted 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).

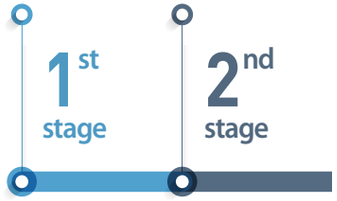
Admissions Process

[Admissions Officer-centered Science-gifted Admissions]



- **Assessment of student records**
  - Assessment giftedness based on the submitted student records
  - around 1,000 selected
- **Assessment of creative problemsolving skills**
  - Comprehensive evaluation of student records and creative problem-solving test results
  - around 200 selected
- **Assessment of multiple facets of giftedness**
  - Evaluation of candidates' potential and qualifications as global scientists
  - Within quota: Up to 120 students
  - Beyond quota: Up to 7% of quota in the case of candidates falling under Article 12(2) of the Enforcement Decree of the Act on the Promotionw of Gifted Education.

[International Admissions]



- **Assessment of Student Records**
- **Assessment of written Test in Math, English and Math Interview**

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

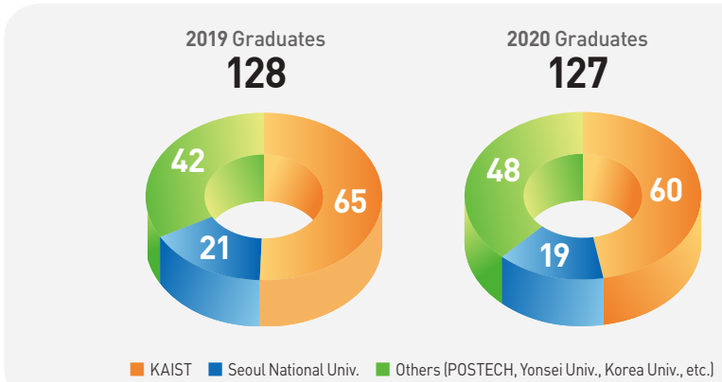
Graduation

Graduation

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

Admissions to Domestic Universities

(unit: students)



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

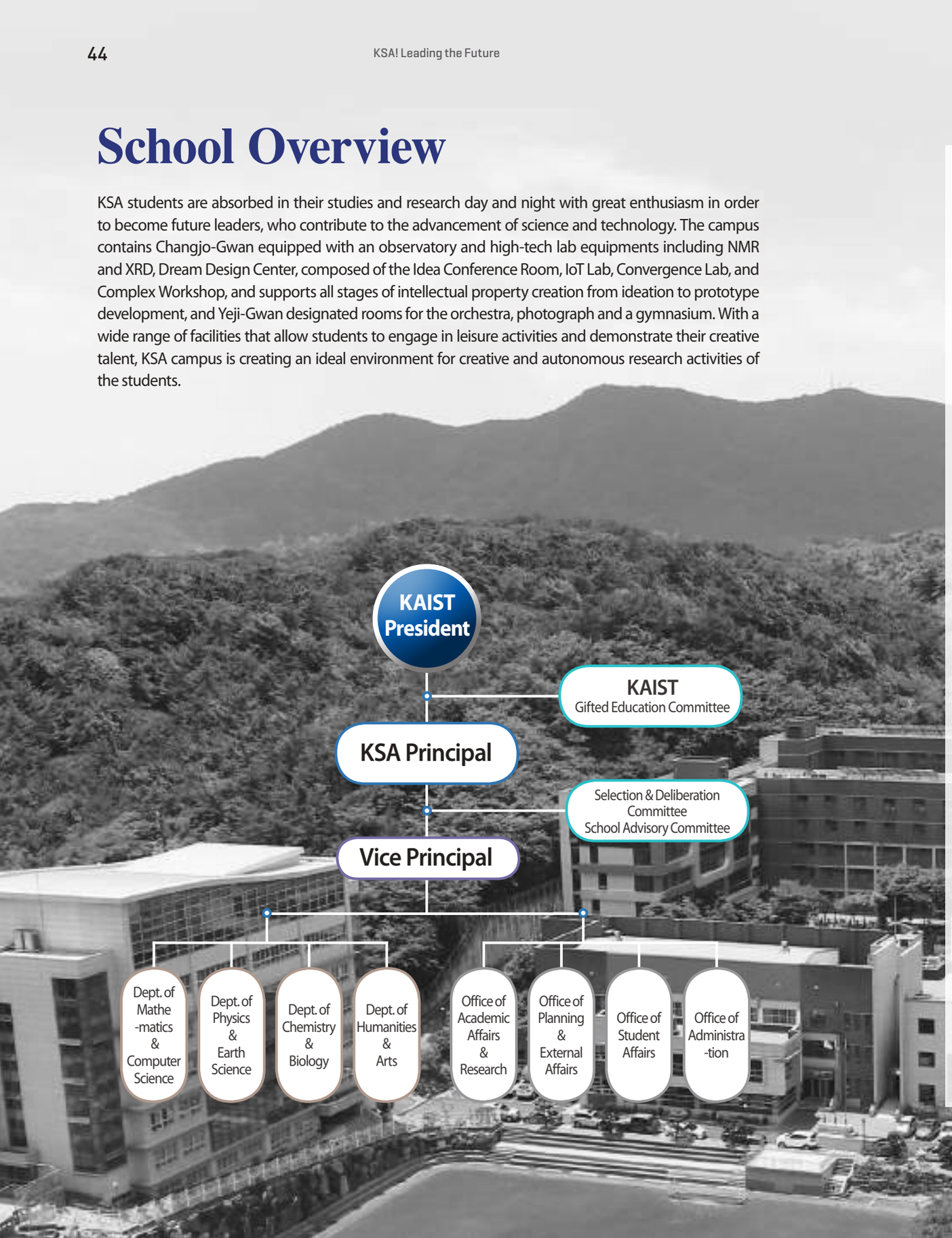
Support for the Admissions of Overseas Universities

- 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)

Nation	U.S.A.	U.K .	Japan	Canada	Germany	China
Univ.	Harvard Univ. Princeton Univ. Stanford Univ., etc.	Univ. of Oxford Univ. of Cambridge Imperial College London, etc.	Tokyo Univ. Kyoto Univ. Osaka Univ., etc.	Univ. of Toronto	Jacobs Univ.	Chinese Univ. of Hong Kong
No. of Students	78	21	6	2	1	1

School Overview

KSA students are absorbed in their studies and research day and night with great enthusiasm in order to become future leaders, who contribute to the advancement of science and technology. The campus contains Changjo-Gwan equipped with an observatory and high-tech lab equipments including NMR and XRD, Dream Design Center, composed of the Idea Conference Room, IoT Lab, Convergence Lab, and Complex Workshop, and supports all stages of intellectual property creation from ideation to prototype development, and Yeji-Gwan designated rooms for the orchestra, photograph and a gymnasium. With a wide range of facilities that allow students to engage in leisure activities and demonstrate their creative talent, KSA campus is creating an ideal environment for creative and autonomous research activities of the students.



REMINISCENT OF A UNIVERSITY CAMPUS, ADVANCED SCIENCE FACILITIES

Student

(As of Feb. 2020)

Grade	Grade 10			Grade 11			Grade 12			Total		
Category	M	F	Total	M	F	Total	M	F	Total	M	F	Total
No. of students	122	13	**135**	111	18	**129**	108	23	**131**	341	54	**395**
No. of classes	12			12			12			36		

※ 35 international students included ※ 4 RAA classes operated separately

Faculty

(As of Feb. 2020)

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.

Staff

(As of Feb. 2020)

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

Facility

(Unit: ㎡)

Site Area (59,180)			Building Area (36,635)								
School Site (58,883)		Accessory Area	Main Bldg	Tamgu -Gwan	Hyeong seol-Gwan	Changjo -Gwan	Dream Design Center	Yeji -Gwan	Baeg yang-Gwan	Dormitory	Others
Buildings	Athletic Field	Roads									
54,213	4,670	297	6,484	4,805	4,172	5,460	984	4,304	1,284	8,859	283

KSA! LEADING THE FUTURE

KSA! The World's Best Hub of Science-gifted Education

Leaping Forward to the next 15 years!

- Expansion of School Budget and Development Fund
- Contribution to World Science-Gifted Education
- Recruitment of Quality Faculty and Enhancement of Student Welfare
- Enhancement of Global Competence
- Enhancement of Education and Research Capacity (Connection with KAIST)

BEST
IN KOREA

TOWARDS THE WORLD'S NO.1

Proudest KSA students

- World Best Talent in Science and Engineering with Creative Thinking and Passion
- Wise Talent with Communication · Convergence, Service · Contribution, and Wisdom · Health
- Global Talent with Advanced Refinement and Leading Global Society