How Should the Universities Respond to the Era of the 4th Industrial Revolution?

Focusing on the case of Hanyang University

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CONTENTS

Introducing Hanyang University

Founding Principle & Vision

- To educate and train students to love one another, upon virtues of **diligence, honesty, humility** and **service**
- **T**o heighten the noble spirit of learning
- To train students to dedicate themselves for the nation and its people, and further, for all mankind.


Diligence


Honesty


Humility


Service

“ My little children, let us not love in words or speech but in deed and truth ”

John 3:18

History

1939

Dr. Lyun-joon Kim founded Dong-A Engineering Institute in Seoul

1959

HY Engineering College was accredited by the government

1972

Hanyang University Hospital opened as the biggest hospital in Asia in 1972

1979

ERICA Campus, the second campus opened in Ansan City

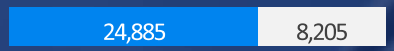
2019

Hanyang University Celebrates its 80th anniversary in 2019

Hanyang at a Glance

01 Organization

Registered Students **33,090**

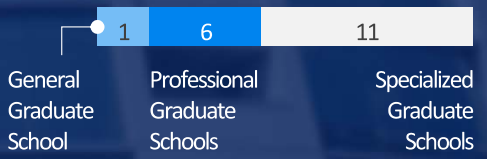


Faculty Members & Lecturers **4,364**

Staff Members **823**

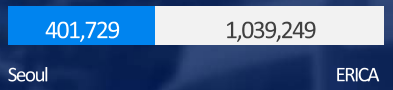
Colleges **25**

Graduate Schools **18**



02 Campus

Size of Campus (m2) **1,440,978**



Number of Buildings **134**

03 Budget

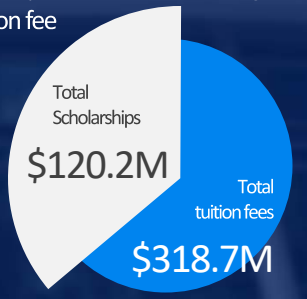
$997.3M

School expenses accounting

Industry-Academic Cooperation Foundation accounting

04 Scholarships

2019 Ratio of Scholarships to Tuition fee **37.7%**



As of 2020

Hanyang Global Network

564
Partner Universities

Asia

Brunei	1
Cambodia	2
China	106
India	6
Indonesia	14
Japan	50
Kazakhstan	3
Kyrgyzstan	1
Malaysia	9
Mongolia	2
Myanmar	1
Nepal	1
Pakistan	2
Philippines	1
Singapore	6
Taiwan	25
Thai	9
Turkmenistan	1
Uzbekistan	3
Vietnam	11

Europe

Austria	3
Belarus	1
Belgium	7
Bulgaria	1
Croatia	1
Czech	4
Denmark	6
Estonia	1
France	27
Finland	5
Germany	22
Hungary	2
Ireland	2
Iataly	10
Latvia	2
Lithuania	2
Luxembourg	1
Malta	1
Monaco	1
Netherlands	11
Poland	4
Portugal	2
Romania	2
Russia	5
Serbia	1
Spain	19
Sweden	10
Switzerland	5
Turkey	9
Ukraine	3
UK	14

Oceania

Australia	11
New Zealand	1

America

Argentina	1
Brazil	3
Canada	11
Chile	4
Colombia	1
Ecuador	1
Mexico	6
Peru	1
USA	65

Africa

Egypt	1
Ethiopia	1
Kenya	1
Morocco	4
Senegal	1

Alumni Network System

340,000 Alumni as of 2020

Notable leaders in High-tech Industry

Hanyang alumni are often found among the leaders in Korean Economy.

Chung Mong-koo
Chairman of Hyundai Motor Group

Kim Hyun-suk
CEO of Samsung Electronics

Chun Kyung-joon
Chairman of Seegene

Jeon Yong-hyun
CEO of Samsung SDI

Hwang Kyu-bin
CEO of Xeline

Lee Young-ae
Actress

Highly Cited Researchers

3 professors at Hanyang University included in the annual list of Highly Cited Researchers(HCR) released by Clarivate Analytics

* To be named as an HCR requires that his or her papers are ranked in the top 1 % by citations for field and year in Web of Science.

Pf. Kim Ki-hyun

New absorbent materials for the reduction of hazardous pollutants in air such as formaldehyde

Pf. Seon Yang-guk

Leading energy storage device technology with “Potassium ion batteries”

Pf. Paik Un-gyu

Improving sodium ion Batter Efficiency

Colleges and Graduate Studies

01 Colleges

SEOUL Campus

16 Colleges

63 Departments

College of Engineering
College of Medicine
College of Humanities
College of Social Science
College of Natural Science
College of Policy Science
College of Economics & Finance
College of Business
College of Education
College of Human Ecology
College of Music
College of Art & Physical Education
Division of Nursing
Division of International Studies
Division of Industrial Convergence
Division of Intelligence Computing

ERICA Campus

9 Colleges

45 Departments

College of Engineering Science
College of Pharmacy
College of Software Convergence
College of Science &
College of Technology Convergence
College of Language & Cultures
College of Communication &
College of Social Science
College of Business & Economics
College of Design
College of Sports & Arts

Colleges and Graduate Studies

02 Graduate Studies

Graduate Studies SEOUL & ERICA Campus

- Master's Degree
  153 Departments
- Doctoral Degree
  146 Departments

Professional Graduate Studies

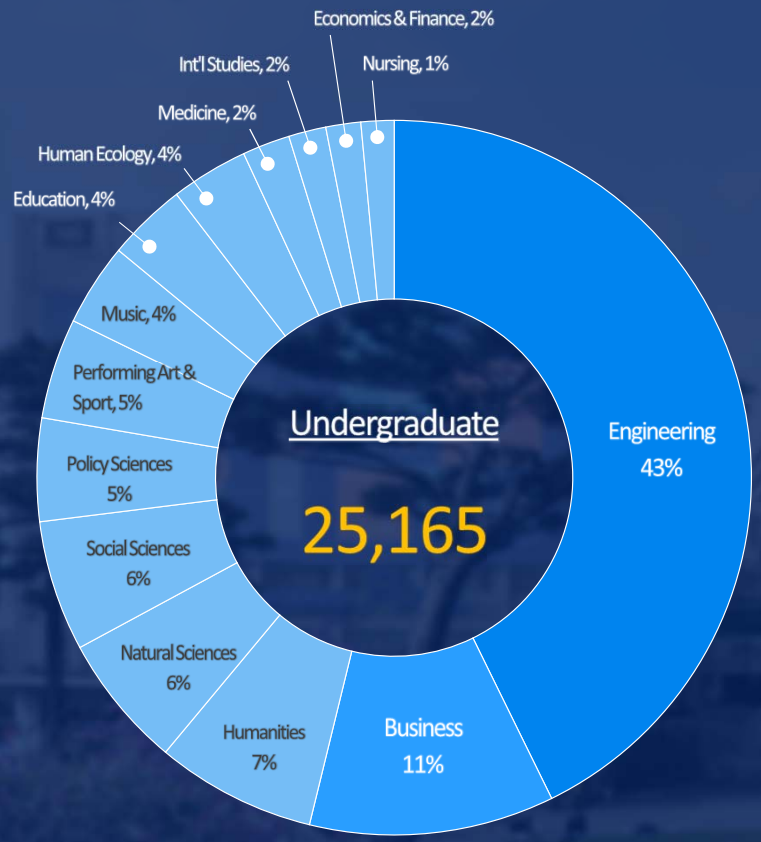
Graduate School of Urban Studies
Graduate School of International Studies
Graduate School of Business
Graduate School of Law
Graduate School of Biomedical Science & Engineering
Graduate School of Technology &
Graduate School of innovation Management

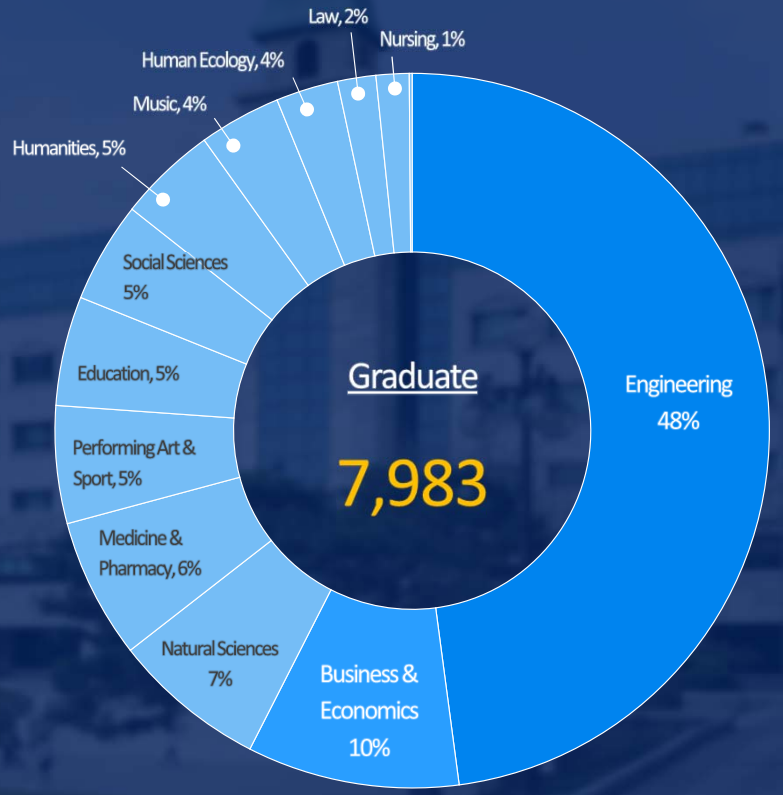
Specialized Graduate Studies

SEOUL Campus
Graduate School of Engineering
Graduate School of Public Policy
Graduate School of Education
Graduate School of Journalism & Mass Communication
Graduate School of International Tourism
Graduate School of Clinical Nursing
Graduate School of Real Estate Convergence
Graduate School of Public Health
Graduate School of Counseling Psychology
Graduate School of Artificial Intelligence

ERICAL Campus
Graduate School of Industrial Convergence

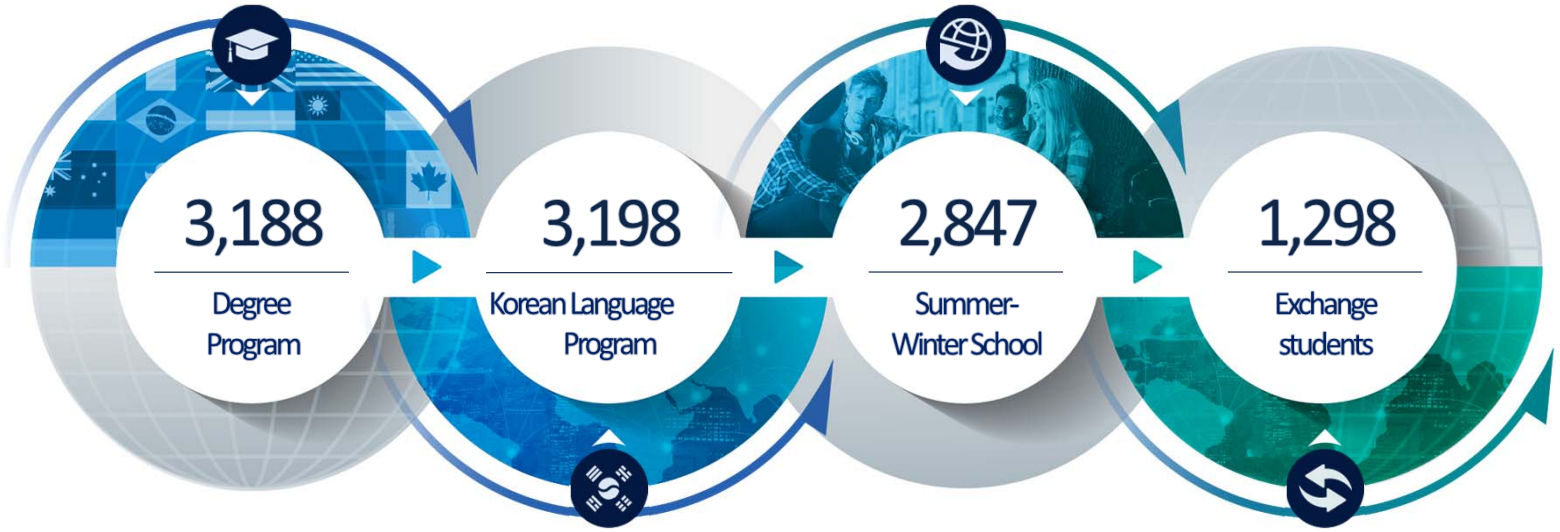
Students [2020]





International Student [2019]

Hanyang University cultivates more than 10,000 foreign students per year.



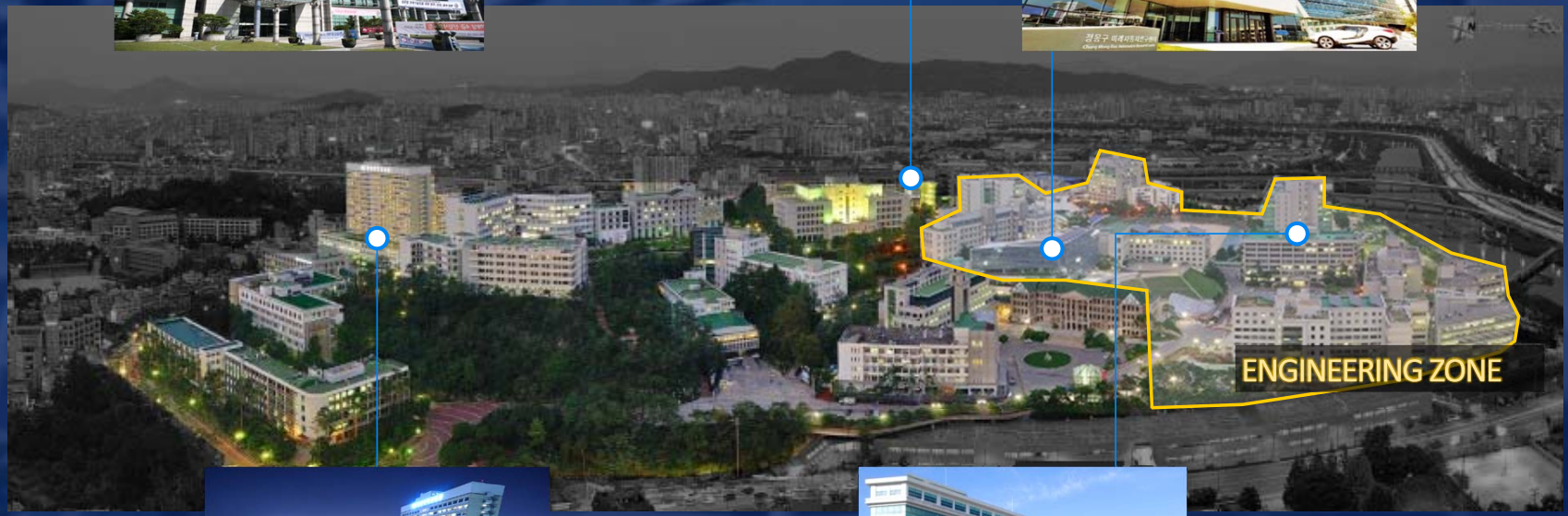
※ Summer/Winter schools were closed in 2020 due to COVID-19

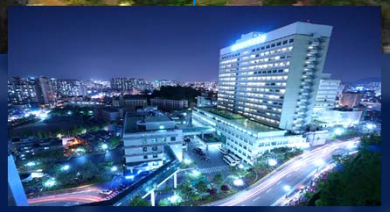
SEOUL Campus

Hanyang Institute of Technology

Global Entrepreneurship Center
Hanyang Technology Holdings
Hanyang Human Resource Development Center

Hyundai Automotive Research Center





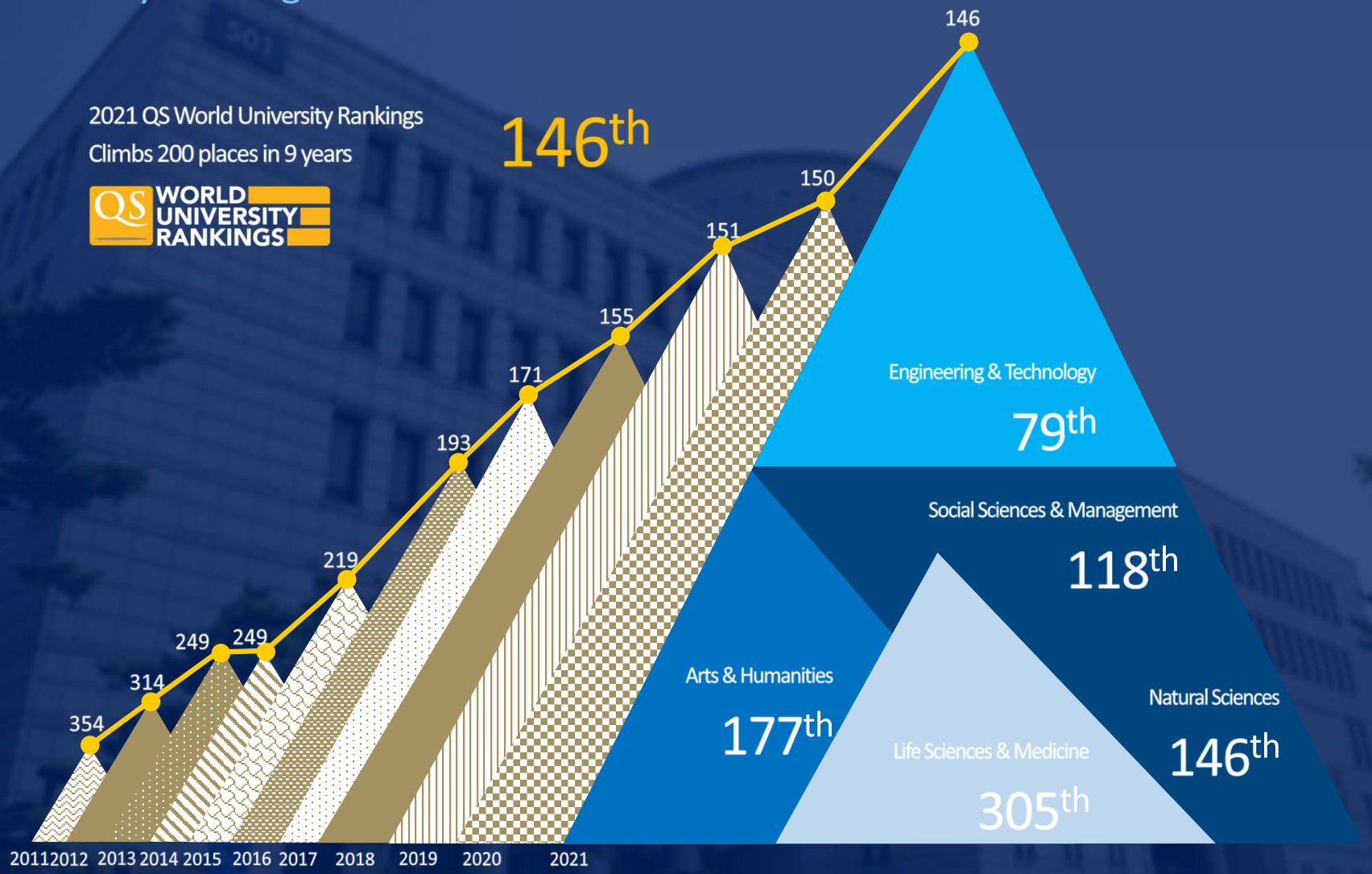
Hanyang Medical Center

Fusion Technology Center

RIKEN(Japan) Research Center
ARKEMA(France) Research Center

ERICA Campus

World University Rankings & Accreditation



What Age Are We Living in Now?

History of Industrial Revolution

1st Industrial revolution

Driven by
steam engine
[18th century]

2nd Industrial revolution

Driven by
electricity & internal combustion
engine
[19-20th century]

3rd Industrial revolution

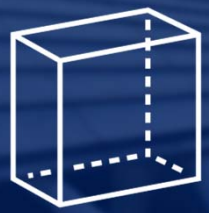
Driven by
computer & internet
[Late 20th century]

History of Industrial Revolution

IoT

AI

VR



3D Printing

- New technologies such as AI, IOT, Brain science, VR, Autonomous Driving, and 3D Printing are integrated to create new advances and platforms that are leading the rapid changes on a global scale.

- 1st ~ 3rd industrial revolutions were labeled posthumously, but 4th industrial revolution is named before its full blooming

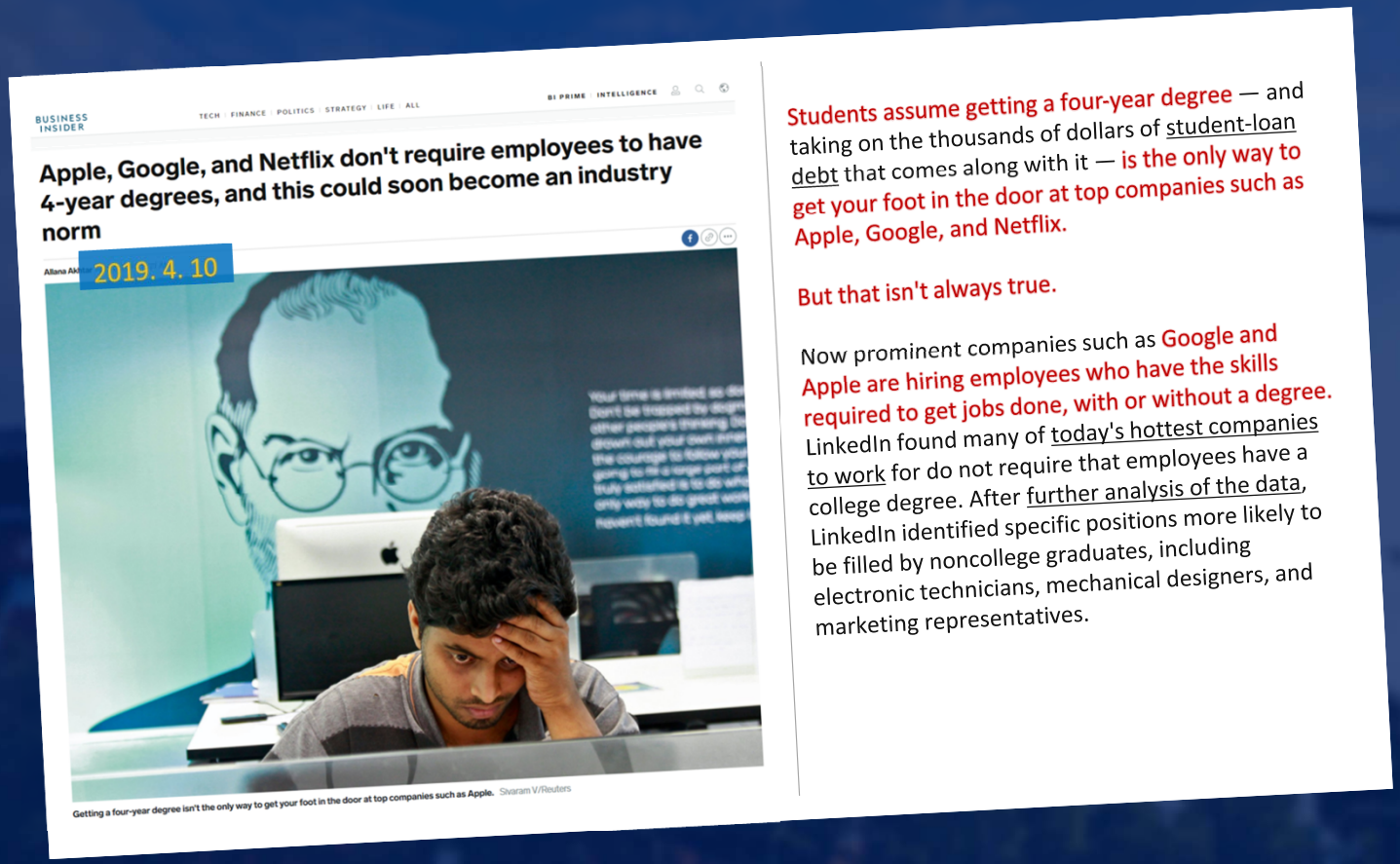
Difficult to predict what is ahead of the 4th industrial revolution

Need for Industry-University Collaboration

※ Industry is a broad concept that includes not only industry but also society

University needs to respond to new demands of the society

Education that provides professional skill sets needed to connect with the society


BUSINESS INSIDER

TECH | FINANCE | POLITICS | STRATEGY | LIFE | ALL

BI PRIME | INTELLIGENCE

Apple, Google, and Netflix don't require employees to have 4-year degrees, and this could soon become an industry norm

2019. 4. 10

Getting a four-year degree isn't the only way to get your foot in the door at top companies such as Apple. Sivaram V/Reuters

Students assume getting a four-year degree — and taking on the thousands of dollars of student-loan debt that comes along with it — is the only way to get your foot in the door at top companies such as Apple, Google, and Netflix.

But that isn't always true.

Now prominent companies such as Google and Apple are hiring employees who have the skills required to get jobs done, with or without a degree. LinkedIn found many of today's hottest companies to work for do not require that employees have a college degree. After further analysis of the data, LinkedIn identified specific positions more likely to be filled by noncollege graduates, including electronic technicians, mechanical designers, and marketing representatives.

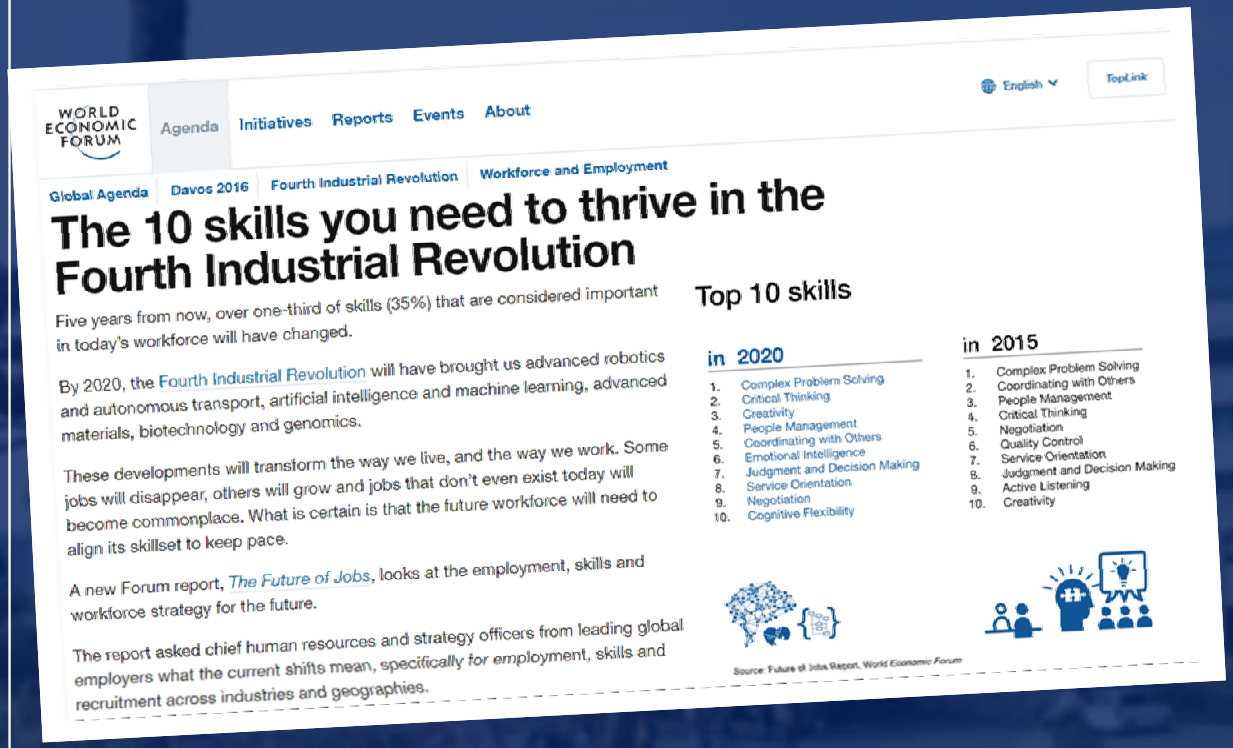
Google, Apple, Amazon, Netflix
no longer require a college degree for employment

"Professional skills and hands-on experience"

University education should reflect "industry needs".

※ SOURCE : BUSINESS INSIDER, Allana Akhtar, 2019. 4. 10. www.businessinsider.in

Core Skills needed in the 4th Industrial Revolution



WORLD ECONOMIC FORUM

Agenda Initiatives Reports Events About

English TopLink

Global Agenda Davos 2016 Fourth Industrial Revolution Workforce and Employment

The 10 skills you need to thrive in the Fourth Industrial Revolution

Five years from now, over one-third of skills (35%) that are considered important in today's workforce will have changed.

By 2020, the Fourth Industrial Revolution will have brought us advanced robotics and autonomous transport, artificial intelligence and machine learning, advanced materials, biotechnology and genomics.

These developments will transform the way we live, and the way we work. Some jobs will disappear, others will grow and jobs that don't even exist today will become commonplace. What is certain is that the future workforce will need to align its skillset to keep pace.

A new Forum report, *The Future of Jobs*, looks at the employment, skills and workforce strategy for the future.

The report asked chief human resources and strategy officers from leading global employers what the current shifts mean, specifically for employment, skills and recruitment across industries and geographies.

Top 10 skills

in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity

Source: Future of Jobs Report, World Economic Forum

In 2020	In 2015
1. Problem Solving	1. Problem Solving
2. Critical Thinking	2. Coordinating With Others
3. Creativity	3. People Management
4. People Management	4. Critical Thinking
5. Coordinating With Others	5. Negotiation
6. Emotional Intelligence	6. Quality Control
7. Judgement and Decision Making	7. Service Orientation
8. Service Orientation	8. Judgement and Decision Making
9. Negotiation	9. Active Listening
10. Cognitive Flexibility	10. Creativity

The ability to exchange questions with others and finding answers together are considered most important

※SOURCE : World Economic forum, Alex Gray, 2016. 1. 19. https://www.weforum.org/

Restructuring of university education for work experience

How universities are providing hands-on experience to the students?

Although universities often advertise “practical skills” and “hands-on experience” through various programs, are they authentic and sustainable? Do they satisfy the “industry need”?

Examples : Connect with Real World

NORTH CAROLINA STATE UNIVERSITY

Our students gain the skills that matter in the real world.
At NC State you'll learn by doing and apply that knowledge in the field. Our graduates are career-ready. You will have access to internship and co-op opportunities, on-campus career fairs that draw scores of potential employers, personalized career counseling.

GEORGIA TECH UNIVERSITY

Technologically based education combined with experiential learning. Cooperative Education
Georgia Techs cooperative education program is the largest voluntary co-op program in the U.S.

NATIONAL UNIVERSITY OF SINGAPORE

Internships are a key element of our emphasis on experiential learning. It provides students with an opportunity to apply classroom knowledge to practical work situations, gaining valuable work experience, industry knowledge and skills.
All students are required to complete an internship module as part of the BEng degree requirements with the exemption of

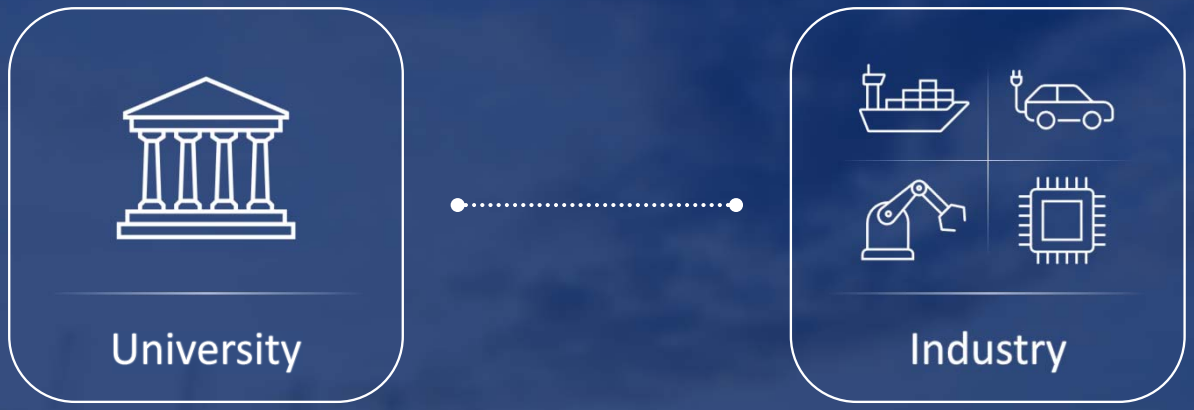
4th Industrial Revolution & University

Why Innovate?

| “Why” Innovate?

University education does not teach sufficient core skills that are needed for the 4th industrial revolution

HOW to Innovate



Enhancing the ties between University-Industry

4th Industrial Revolution & University

Innovation in Education

IC-PBL, Co-op

Class to Labor Market

Linking university with industry : What does Hanyang university do?

"4th Industrial revolution brings hyper-connectivity in which everything is connected and interacts so that new ideas are quickly translated to create and deliver value in an efficient way

To provide a new kind of labor force for the 4th Industrial Revolution
Building bridges between university and industry

On/Off campus, Strengthen the university/industry connection

INSIDE CAMPUS	OUTSIDE CAMPUS
Fostering Problem-solving talents thru problem-solving education	Fostering talents that meet the needs of the real world thru on-the-job training
IC-PBL : Tackle real world problems	CO-OP : ON-the-job-training


On campus : bringing real world problems to class
IC-PBL
Industry-Coupled Problem/Project-Based Learning
Enhancing the ties between University-Industry
→ Problem-Solving Centered Education : IC-PBL

IC-PBL : Definition

Definition of IC-PBL

Industry-Coupled Problem-Based Learning (IC-PBL) is a learner-centered educational model at Hanyang University in which learners solve context-rich problems occurring in real-life fields, coupled with industry and society

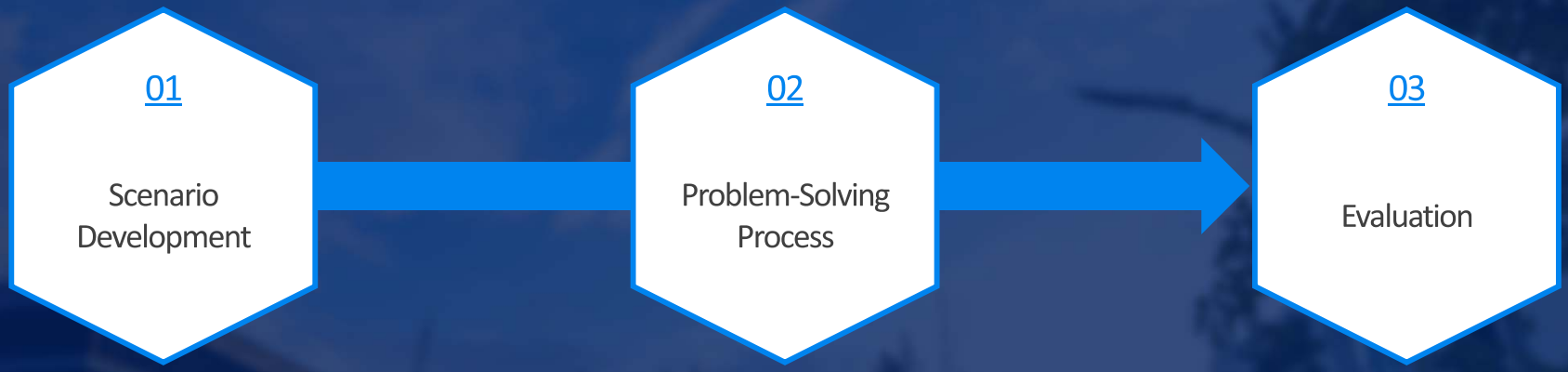
University

Professor + Student

Field Expert

IC-PBL : Process

Project-incorporated Curriculum



- Explore an Industry from the field for class contents
- Develop IC-PBL scenarios with hands-on subjects from the Industry

- Provide learners with relevant materials of industry
- Interim review of learner's report by industry manager

- Feedback and evaluation of the learner's final report
- Adoption and application to a solution in the industry

Innovative educational platform at HYU : IC-PBL

Industry-Demand-Based learning

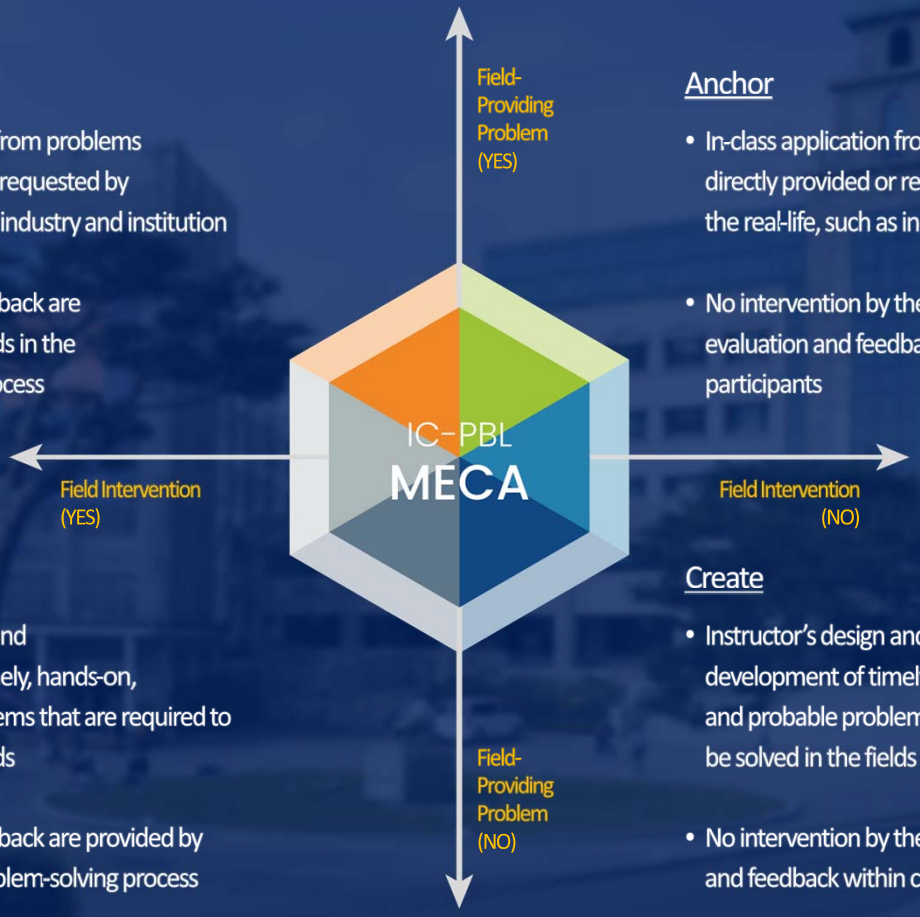
Types of IC-PBL: MECA

Merge

- In-class application from problems directly provided or requested by the real-life, such as industry and institution
- Evaluation and feedback are provided by the fields in the problem-solving process

Anchor

- In-class application from problems directly provided or requested by the real-life, such as industry and institution
- No intervention by the fields, but evaluation and feedback within class participants



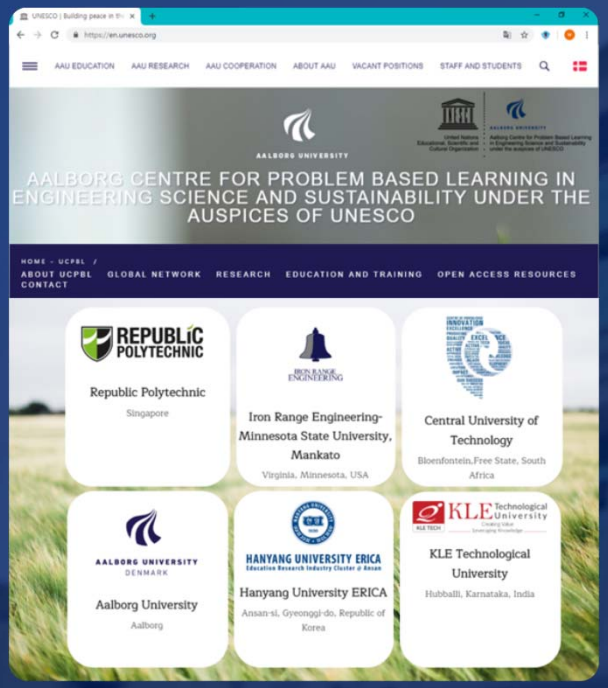
Evaluate

- Instructor's design and development of timely, hands-on, and probable problems that are required to be solved in the fields
- Evaluation and feedback are provided by the fields in the problem-solving process

Create

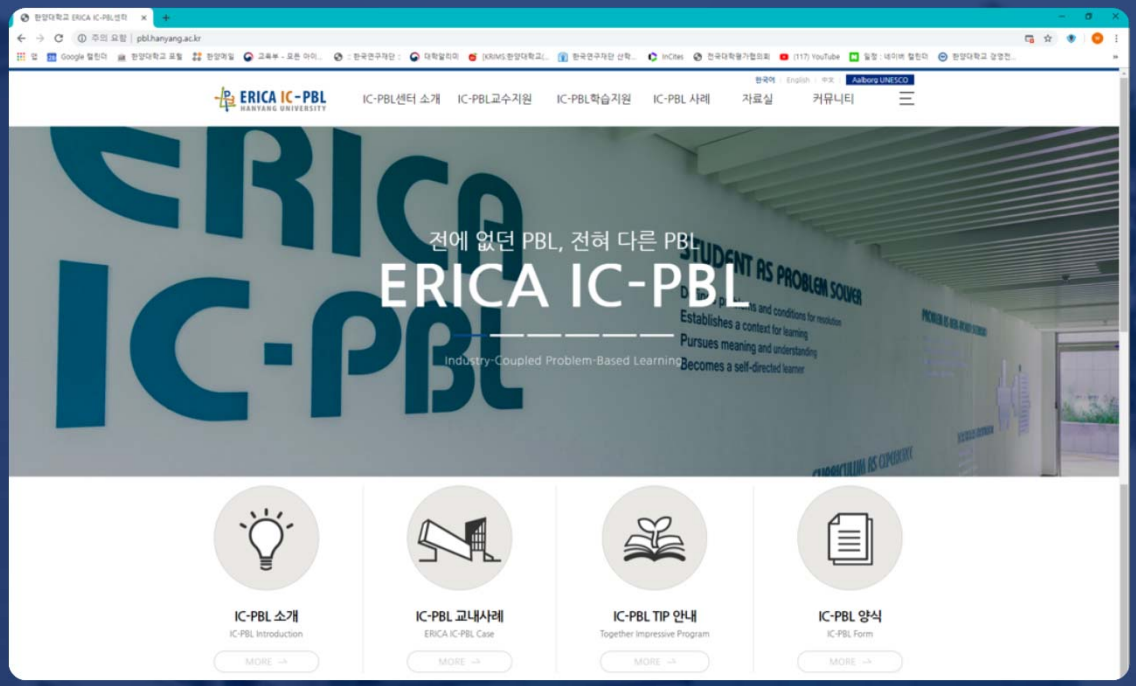
- Instructor's design and development of timely, hands-on, and probable problems that are required to be solved in the fields
- No intervention by the fields, but evaluation and feedback within class participants

Reinforcement of IC-PBL & Academia-Industry Linkages



Hanyang University's IC-PBL
registered on UNESCO PBL CENTER

Exchanges and improvement on PBL curricula with 20 different international universities acknowledged by UNESCO



Interest in IC-PBL: Materials available on IC-PBL website

Institutions downloaded	Number of Downloads	Note [2021.January]
Universities and Education Institutions	15,720	Korean Universities(133, excluding SNU) Foreign Universities: Virginia Tech(美) Naquin University(中)

※Types of Download: IC-PBL cases, IC-PBL forms and resources, opinions on websites, etc.

IC-PBL : Global Interest

IC-PBL for Global Networking

Homepage of IC-PBL Center

Korean (http://icpbl.hanyang.ac.kr)

English (http://icpbl-eng.hanyang.ac.kr)

Chinese (http://icpbl-chn.hanyang.ac.kr)

The Aalborg Centre for Problem Based Learning in Engineering Science and Sustainability (www.ucpbl.aau.dk)

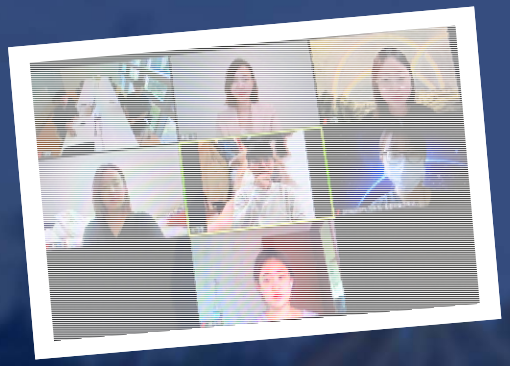
IC-PBL example[Type M]

College of Education(Dept. of Applied Art) at Seoul campus

IC-PBL “3D Simulation”

- To address security concerns of single-female household in Seoul
- Design smart security system and product based on ICT

- Working with Seoul Digital Foundation to assess the current situation, identify the problem → scenario development
- Visit locations with densely populated single-resident housing and analyze problems with the current security system
- Constant feedback from Seoul Digital Foundation → application of 4 patents



※ZOOM meeting with SDF

※Presentation at Seoul Smart City Center

※Serivice design through site visits

IC-PBL example[Type M]

College of Engineering (Architectural Engineering)

IC-PBL “smart Construction Material”

· Create a concrete product you have never seen before with 3D printing technology”

· Each week, students learn theories in the form of proactive discussions by presenting sub-themes that students can think about in connection with the performance of the assignment

· Each team selects a project topic and conducts hands-on learning to derive project outcomes

· 3 companies work together to provide technical and material resources necessary for students' creative projects

· Weekly classes are conducted in the form of a meeting with the professor and team about project progress and issues, and then moving to the workplace to perform production

※Team meeting with professor

※Construction of molding

※Molding of 3D campus map for HYU

IC-PBL example[Type M]

College of Engineering (Mechanical Engineering)

IC-PBL “Smart Manufacturing-PBL[1]”

· Choose one issue among the six RFPs suggested by CJ CheilJedang, and present a solution through the verification process as an expert.

· CJ conducts a demand survey to identify actual industrial field problems and establishes a pool of six project proposals.

· Students are divided into 6 teams and perform tasks on/off-line with 6 mentors of CJ.

· Internship privileges are given to outstanding students selected through evaluation of the final outcomes.

※Evaluation by top management at CJ

※Lecture by Vice President of CJ

※Meeting between students and CJ mentor

IC-PBL example[Type M]

School of Management

IC-PBL “Field type data-based service design strategy”

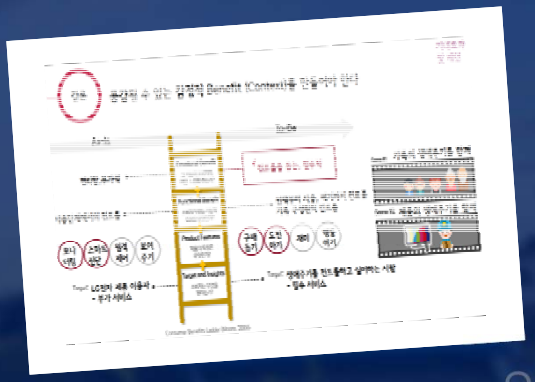
· Collect and analyze field data such as ThinQ App for LG Electronics smart home service, and design a new smart home service that meets new customer needs by using data-based design thinking methodology.

· Collaboration between professor, head of LG Electronics H&A Human Resource Development Team and IC-PBL Center at HYU

- Design a curriculum tailored to corporate needs and set problem scenario development
- Diagnose problems and draw solutions thru the design thinking process
- Interim evaluation by LG mentor and top team selected by LG top management
- Selected team was given opportunities for internship at LG (Smart Homecare Department)

※Meeting of LG mentro (LG showroom)

※Presentation at LG twin



※Top team selected by LG

IC-PBL example[Type M]

College of Science and Technology

IC-PBL “Underwater sound engineering”

· Solve the marine plastic waste problem from the perspective of the oceanography and underwater sound engineering

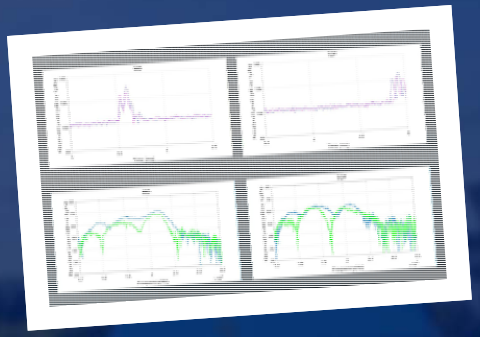
· Scenario development in conjunction with LIG Nex1

· Teaching Fellow and tutors support team discussions and water-tank experiments

· Proposal of plastic waste control system using RFID” presented by students is scheduled to be applied and registered for a patent

※Meeting with LIGNex1

※Water-tank experiment



※Sonar test results

IC-PBL example[Type M]

College of Engineering

IC-PBL “Advanced Soil mechanics”

Propose a design for the foundation construction work based on the actual case of the construction of the Gimpo-Paju Expressway (Seoul Metropolitan Area 2nd outer Ring Expressway)

· Korea Expressway Corporation (KEC) provides the basic soil data.

· Mentoring from bridge-building experts and others from KEC

· Undergraduate-graduate students' mentee-mentor matching is conducted in the form of cooperative learning IC-PBL classes.

※Site visit and presentation

※ site visit of Gimpo-Pajoo expressway/ consultation with experts

IC-PBL example[Type M]

School of Pharmacy

International Vaccine Institute

IC-PBL "Pharmaceutical microorganisms"

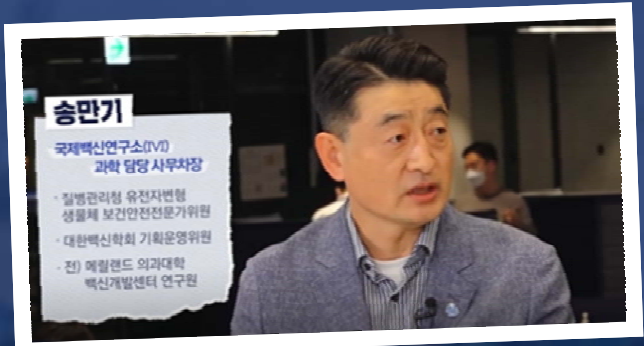
· Identify the causative pathogen of new infectious diseases as a researcher at the Institute of Infectious Diseases

· Develop problem scenarios with the aim of establishing step-by-step research methods for detection and identification of pathogens from patient samples and official reporting to the academic community.

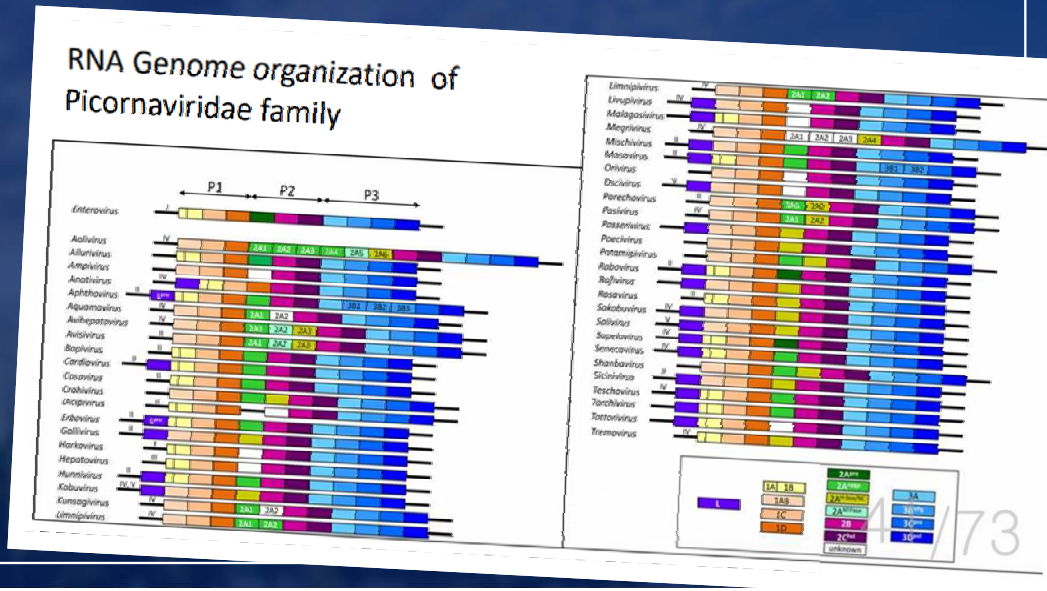
· Final report on a method for identifying microorganisms to identify pathogens of newly emerging viral diseases.

· Establish and facilitate infection monitoring system

· Active feedback from International Vaccine Institute



※Final presentation for International Vaccine Institute



IC-PBL example[Type M]

School of Design [Visual Design Major]

IC-PBL "Visual Design Workshop"

· Propose a brand strategy for SMEs' hit products.

· Clean-I Inc. : Character development project to advance into China market under the companion animal Laura & Paul brand

· R&D for Laura & Paul's customer contact items for Clean-I's entry into the Chinese market

· Awarded a running loyalty fee : settlement of 0.3% of sales from over 1 billion won every quarter from 2021

※ Pet food characters and company logo developed at HYU

※ Contract for product loyalty

IC-PBL example[Type M]

College of Engineering [Electrical Engineering]

IC-PBL “ICT convergence robot engineering”

- Propose a business model for a recently launched service robot, TEMI
- Each team is given a Temi, and develop a timely scenario for the non-face-to-face era using it.

- Collaborate with Hyurim Robot Inc. to develop robot algorithm and to propose a new business model
- Team teaching by professors from College of Engineering and School of Finance
- Hyurim Robot Inc. provides training in hardware and software
- Excellent team selection after intermediate and final evaluation through participation of field experts
  → Awarding scholarships and
- Return of service robots and business models to Hulim Robot Co.

※MOU between ERICA-Hyurim

※Meetings with Hyurim engineers

※Certificate of Completion

Opportunity to further revitalize industry-university-linked education in the non-face-to-face era caused by COVID-19

IC-PBL course evaluation from 2020 spring semester : ICT convergence robot:

Professor

"Hands-on experience and feedback provided deep understanding"

"Through on-line meetings, real-time feedback and individual care were possible. Facilitating the class was made easy by instant response and feedback which speeded up the project completion."

Students

"On-line helped bi-lateral communication"

"Interaction was limited to class period in an off-line class, but on-line meetings allowed more frequent and in-depth interactions and instant feedback."

Industry

"Mentoring was not limited by working hours and there was no need for a site visit"

"Since the non-face-to-face educational environment was well established, it was not necessary to leave office to go to school to mentor the class during work hours."

Strengthening the connection between
the university and the real world off campus

Co-op

Co-operative Education Program

※ Co-op : Providing on-the-job training experience to develop
practical professional skill sets

Co-op Programs around the world

While co-op programs in Korea are mostly state-driven, co-op programs outside Korea are self-initiated to allow students to gain on-the-job training experience in a relevant industry. The Industry caters to the student's needs and capability to promote for them assimilate to the working environment. Co-op programs help universities, students, and industry by providing diverse career outlets for students and a competent workforce for the industry.

구분	Univ. of Waterloo	Northeastern Univ.	Drexel Univ.	Univ. of Cincinnati	Georgiatech Univ.
설립연도	1957	1898	1891	1819	1885
소재지	CANADA	USA	USA	USA	USA
재학생수	30,000	13,000	15,876	31,985	14,527
CO-OP도입시기	**1957년**	**1909년**	**1919년**	**1906년**	**1912년**
CO-OP운영형태	선택형 4/5년제	선택형 4/5년제	선택형 4/5년제	선택형 4/5년제	선택형 4/5년제
CO-OP센터	Center for Co-operative Education and Career Action	Co-op Center	Steinbright Career Development Center	Professional Practice And Experiential Learning	Division of Professional Practice
센터 소속인원	**160명**	**75명**	**44명**	**45명**	**20명**
연간 참여 학생수	18,300명	8,000명	4,500명	5,500명	3,200명
1인당 관리 학생 수	123명	106명	100명	130명	160명
연간 참여기관 수	5,200개	3,000개	1,650개	2,000개	1,000개
평균 현장실습비	**평균시급 $15~$25**	**평균시급 $12~$30**	**평균월급 $2,650**	**평균시급 $12~$20**	**평균월급 $2,000**

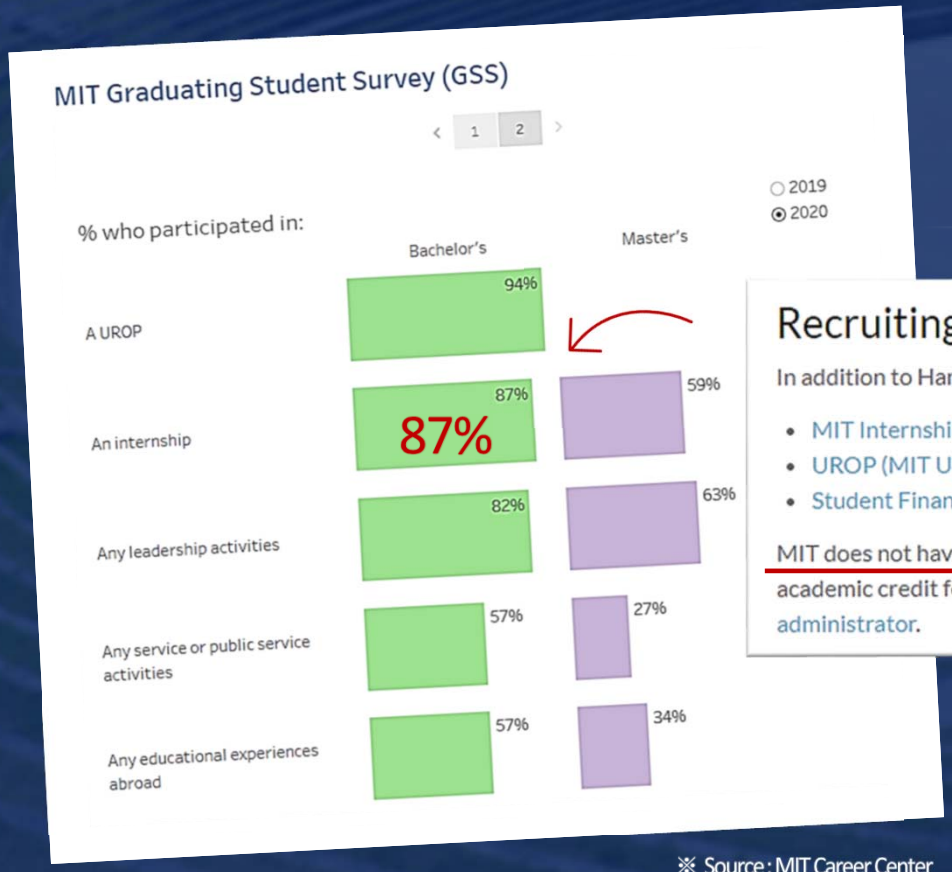
"University of Waterloo students spend a total of 6 semesters (1 semester = 4 months) in co-op programs during their study. Companies pay a regular salary and clearly state the job duties. More than 98 % of students who participated in a co-cp program obtain a permanent job"

※Source : EBS NEWS G "Co-op program for University of Waterloo [2019]

Co-op Programs around the world : MIT

87% of graduated student participated in an internship program (2020)

- 62 % of undergraduate graduates, class of 2020 responded to the survey



※ Source : MIT Career Center

Why do 87% of the students from MIT which ranked #1 QS ranking have internship experience?

To experience and tackle real world problems…

Recruiting for Internships

In addition to Handshake, recruit interns through:

- MIT Internship Programs run outside of CAPD.
- UROP (MIT Undergraduate Research Opportunity Program)
- Student Financial Services (for part-time or seasonal jobs during the fall or spring semester)

MIT does not have co-op programs and most MIT students intern during the summer. Typically departments do not offer academic credit for internships, and any requests to do so should be sent to the appropriate department's academic administrator.

MIT says " Most MIT students intern during the summer"

Technology & Knowledge Transfer to Society

Era of hyperconvergence

"The 4th Industrial Revolution is the era of hyperconvergence, an era in which new technologies and industries are created through the convergence of existing technologies and new technologies."

HYU's Three Strategies for Strengthening Cooperation with University Research and Industry

Sustainable university-industry cooperation platform	Strategy in the field of LIFE SCIENCE, a high value-added growth industry	Fostering a humanities center that cooperates with society
I.U.C.C.	MEB	H^2EC
Industry-University Collaboration Center	Medicine-Engineering-Bio	Hanyang Humanities Enhancement Center

Establish bridges that link university with industry(society)
IUCC – MEB – H2EC

Ecosystem of sustainable industry-university cooperative research

I.U.C.C.

Industry-University Collaboration Center

※IUCC connects the university with industry beyond conventional means. It establishes a close working environment in which the industry can freely interact with research resources at HYU

I.U.C.C. at Hanyang University

※ 48 large corps. and SME in IUCC

4 IUCCs launched in 2019

- HYU Battery Center
  College of Engineering (Energy Eng.)
- EUV Lithography Center
  College of Engineering (Materials Eng.)
- Composite Materials Innovation Center
  College of Engineering (Mechanical Eng.)
- Next-generation Power Transmission and Distribution Center
  College of Engineering (Electrical Eng.)

Strategy in the field of LIFE SCIENCE, a high value-added growth industry

MEB

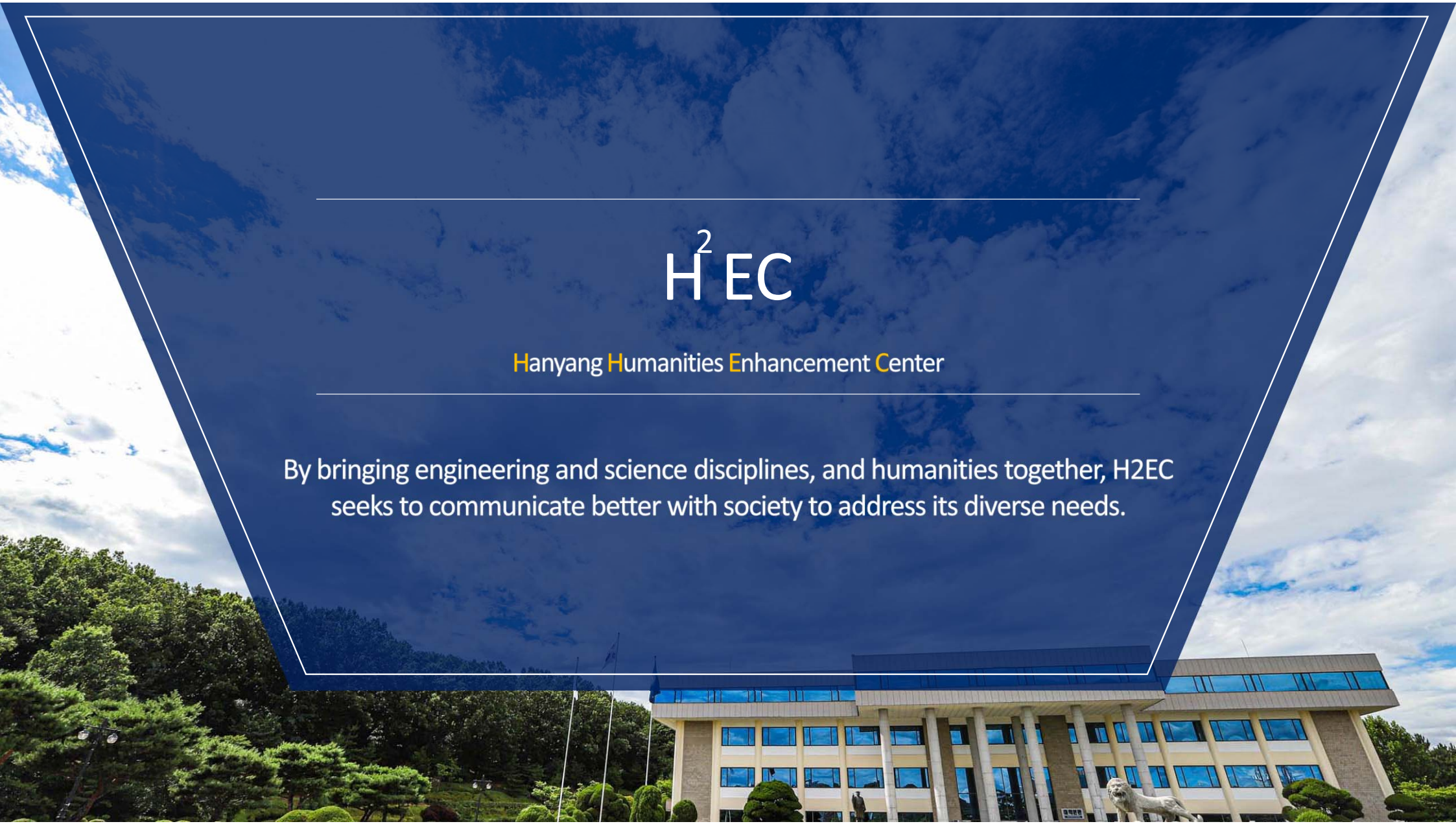
Medicine – Engineering - Bio

Life Science is considered a high value-added industry. Through MEB, HYU promoted technology and knowledge to the industry and contribute to the growth of the bio-industry.

MEB at Hanyang University

5 MEB centers ware launched in 2019

- HY Developmental Medicine Center
- Response-adaptive Smart Healthcare Center
- Plasma Medicine Center
- HY Metabolic Disease Treatment Center
- New Drug Solubilization Center



H^{2}EC

Hanyang Humanities Enhancement Center

By bringing engineering and science disciplines, and humanities together, H2EC seeks to communicate better with society to address its diverse needs.

| H²EC at Hanyang University

Science and Technology Ethics, Law, and Policy Center

College of Humanities

Artificial Intelligence UX Design Center

College of Design

Convergence Research Center for Cognitive Science based on Speech Database

College of Humanities

Hanyang University ERICA Campus

The campus that was overlooked in the beginning,
Now with the bright future

Government-sponsored project transforms ERICA into
research-oriented Cluster Campus

HYU opens ERICA campus in 1979 at Banwall

HANYANG UNIV. ERICA

Established in 1979

Mechanical Eng. 500 students

Electronic Eng. 200 students

Electrical Eng. 100 students

Total : 800

State-sponsored Projects play integral part of university development

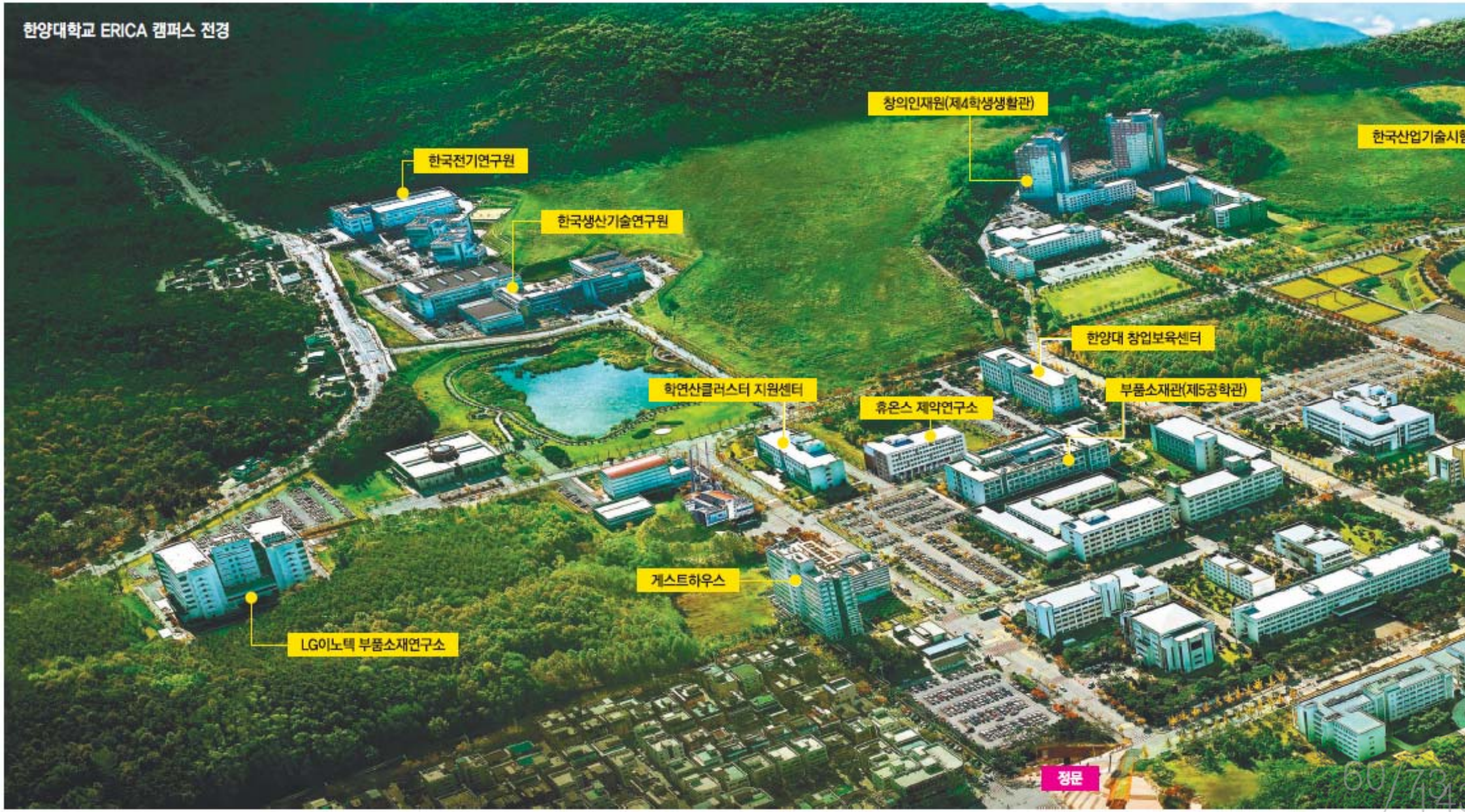
	1st Stage University development based on Industry-university symbiosis (HUNIC*)	2nd Stage University development based on Industry-university symbiosis (HUNIC*)	Industry-university initiated university development (LINC**)	Social need-based Industry-university initiated university development (LINC+**)
Duration	2004~2008	2009~2011	2012~2016	2017~2021
Sponsoring agencies	Ministry of Education Ministry of Trade, Industry, and Energy	Ministry of Education Ministry of Trade, Industry, and Energy	Ministry of Education	Ministry of Education
Fund	US$200 million	US$70 million	US$ 1 billion	US$ 1 billion
Participating universities	12	17	57	75

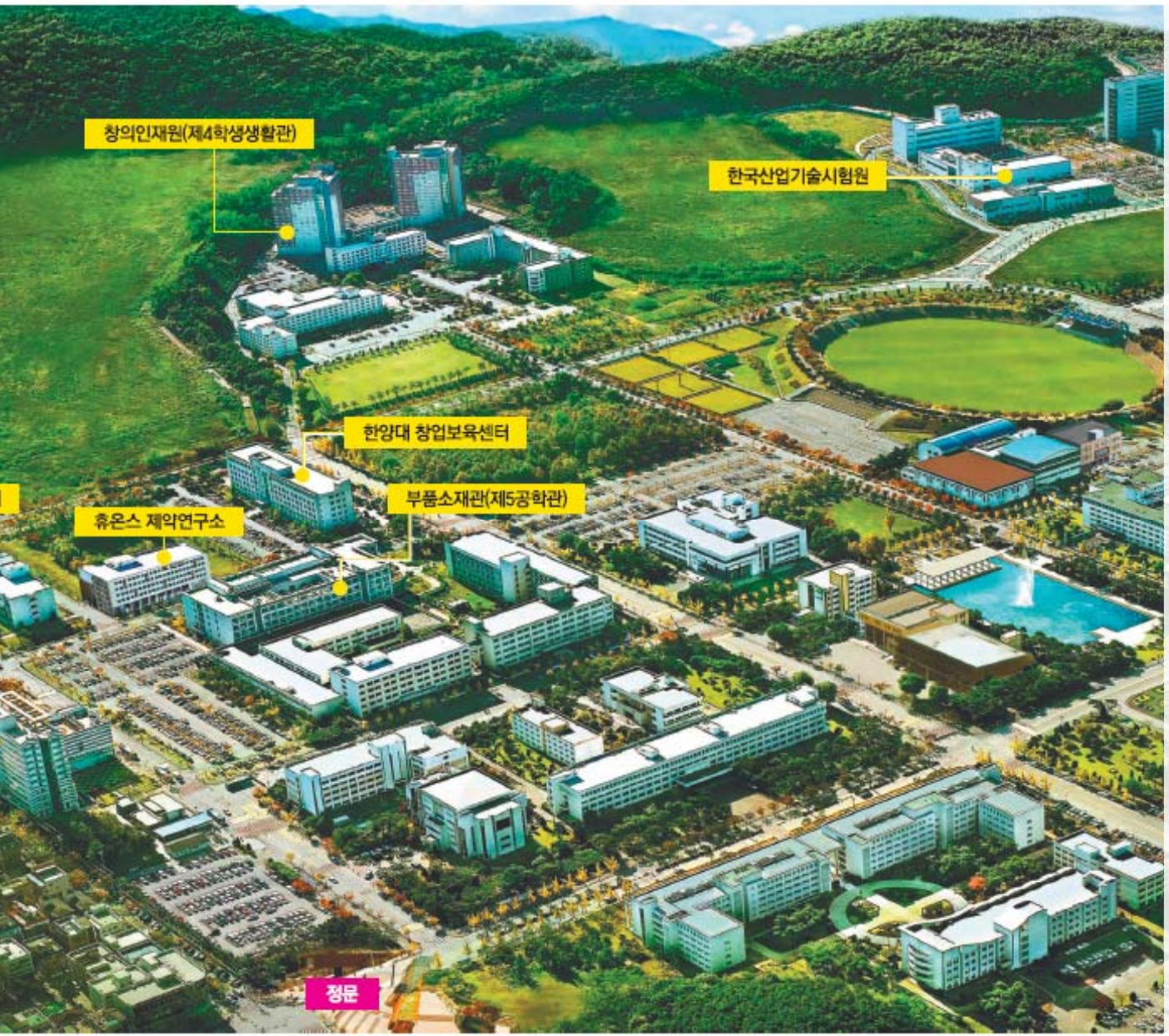
* HUNIC: Hub University for Industrial Collaboration

** LINC: Leaders in Industry-University Collaboration

State-sponsored Projects play integral part of university development

- 1st stage HUNIC : sponsors technology development, human resource development, and infrastructure build-up in industry-concentrated regions and promotes research activities and networking to transform the industrial park to a technology innovation cluster.
- 2nd stage HUNIC : sponsors restructuring of university to promote the industry-university liaison and strengthen the resource flow from university to the industry.
- LINC : focused on reducing job mismatches and the symbiosis of local industry with university by restructuring the university education system.
- LINC+ : promotes student startups and assists local SMEs to gain regional economic competitiveness. The project is designed for the co-development of university and local community to address the needs of society and expand the industry-tied education mode and job market.


한양대학교 ERICA 캠퍼스 전경
창의인재원(제4학생생활관)
한국산업기술시
한국전기연구원
한국생산기술연구원
한양대 창업보육센터
학연산클러스터 지원센터
휴온스 제약연구소
부품소재관(제5공학관)
게스트하우스
LG이노텍 부품소재연구소
정문

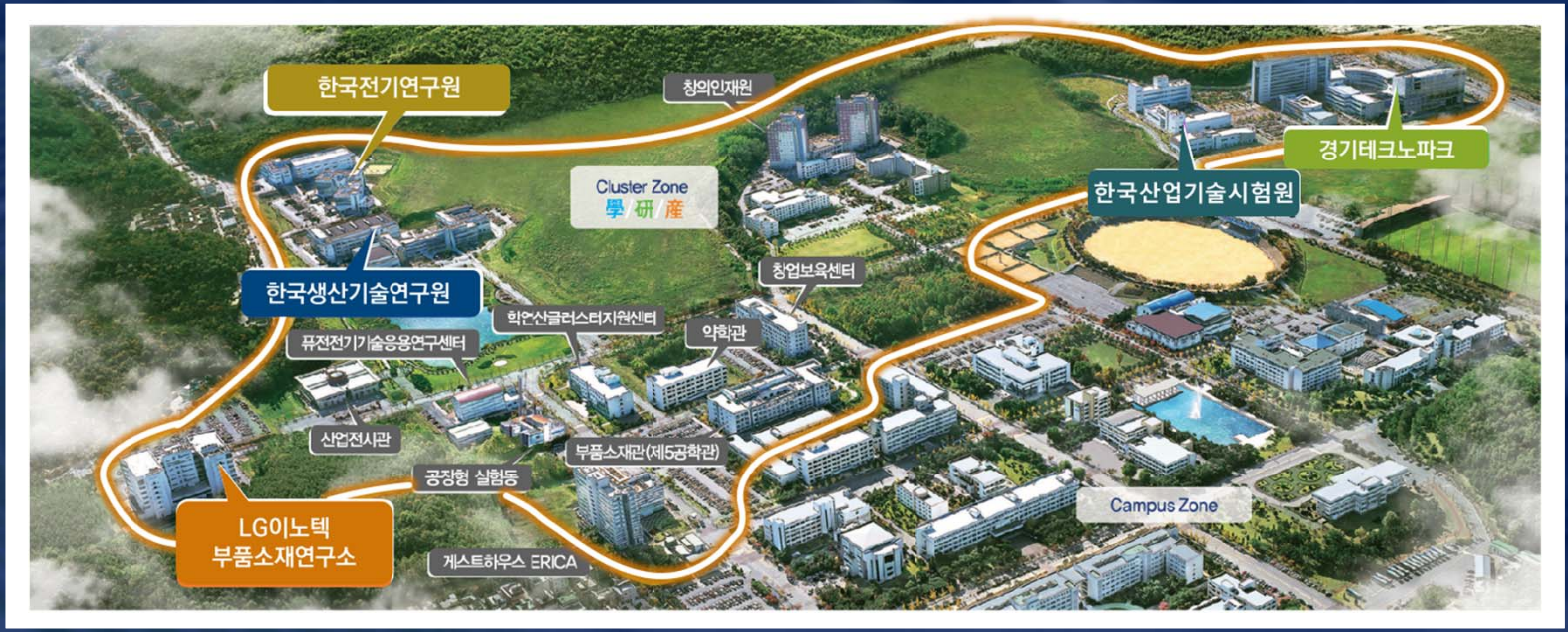


學·研·産 Cluster

HYU ERICA is an academic-industrial cluster campus that fosters practical talent and enhances industrial competitiveness.

Education
Research
Industry
Cluster at
Ansan

ERICA Cluster



LG Innotech

- Opened on June 2006
- Area: 21,120m²
- Employees : 964 (2 modules)

Korea Electechnology Research Institute

- Opened on December 2007
- Area : 13,200m²
- Employees : 130(3 modules)

Korea Institute of Industrial Technology

- Opened on July 2007
- Area : 20,790m²
- Employees : 278

Gyunggi Techno Park

- Opened on May 2003
- Area : 53,828m²
- Companies/Employees: 103/~1,000

Korea Testing Laboratory

- Opened on July, 2004
- Area : 15,180m²
- Employees : 280

Campus Innovation Project at ERICA

Why do you need one?

- University can provide highly qualified human and physical resources.
- Startups can grow with the help of expert assistance from the university.
- University innovation leads to job creation.
- Small-scale inner-city state-of-the-art industrial park is established within the campus.
- Industry resource expansion, state-sponsored industry-university projects, and increasing competitiveness of local industry allows the university to grow into a focal point of innovation.

Project Summary

Project	ERICA campus innovation park (inner-city state-of-the-art industrial park)
Sponsoring agencies	Ministry of Education, Ministry of Land, Infrastructure, and Transport, Ministry of SMEs and Startups
Constructed by	Korea Land & Housing Corporation and Hanyang University Inc.
Area	T otal 184,130㎡ 1st stage 78,579㎡ + 2nd stage 105,551㎡
Finished by	1st stage : 2020 ~ 2022, 2nd stage : 2023 ~ 2024
Resident Industry	IT, advanced materials, smart manufacturing

Campus Innovation Park Project

· sponsored by Ministry of Education, Ministry of Land, Infrastructure, and Transport, Ministry of SMEs and Startups

· Nurturing the industry-university symbiosis through the creation of urban high-tech industrial complexes

MASTER PLAN

KAKAO Data Center [2020. 9 .7]

3C [Campus, Company, Community]

- Campus Innovation Park Project houses KaKao Data Center which occupies an area of 10,8383m².
- Invested US$400 million to be completed in 2023
- Hyperscale with 12,000 servers

Industry-University Innovation HUB

3C [Campus, Company, Community]

· Purpose: Center of Knowledge Transfer
- Startups, BI, POST BI
- university 5%, commercial 5%

· Construction cost : ~ US$50 million
- Gyunggi province: US$1 million
- Ansan city: US$2 million,
- Federal Gov. : US$9.5 million
- LH: US$37.5 million

· Size
- 15 floors with 2 underground
- Total area : 22,583.51 m²

Sharing Education

Virtual Learning becomes the new normal for university education

Universities need to change : Sharing Education

"MIT invested US$1 billion for establishing College of Computing"

MIT News
ON CAMPUS AND AROUND THE WORLD

SUBSCRIBE

MIT reshapes itself to shape the future

Gift of $350 million establishes the MIT Stephen A. Schwarzman College of Computing, an unprecedented, $1 billion commitment to world-changing breakthroughs and their ethical application.

MIT News Office
October 15, 2018

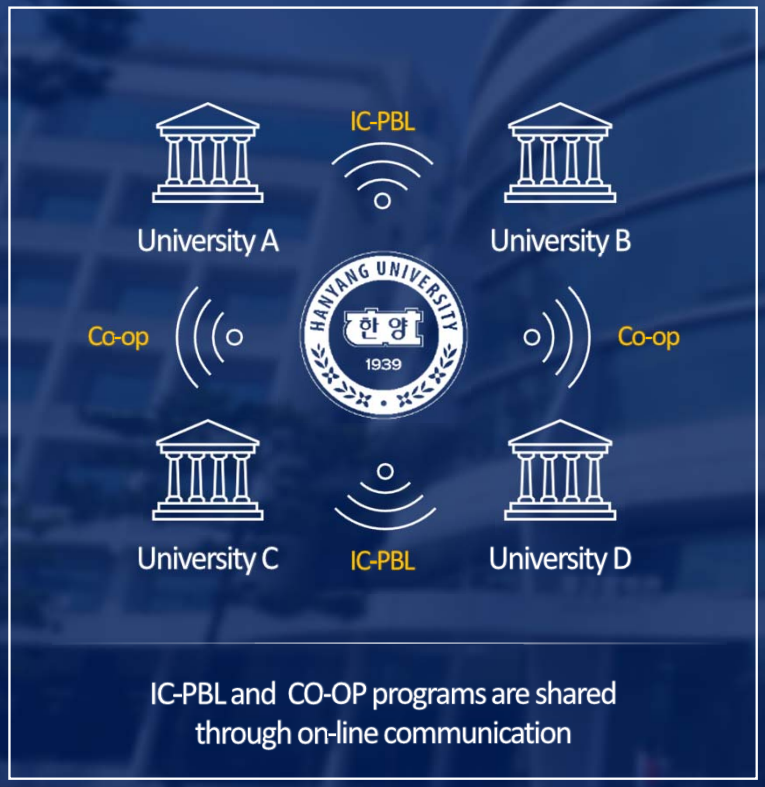
Universities in Korea are not easy to compete with global mega-institutions such as MIT

A resource sharing system between universities built to solve the needs and changes of society that a single university cannot respond

※SOURCE : MIT News 2018 .10 .15. https://news.mit.edu/2018/mit-reshapes-itself-stephen-schwarzman-college-of-computing-1015

Sharing Education

Multiple universities share their resources to respond the need of society in the face of fast-changing environment.



IC-PBL and CO-OP programs are shared through on-line communication

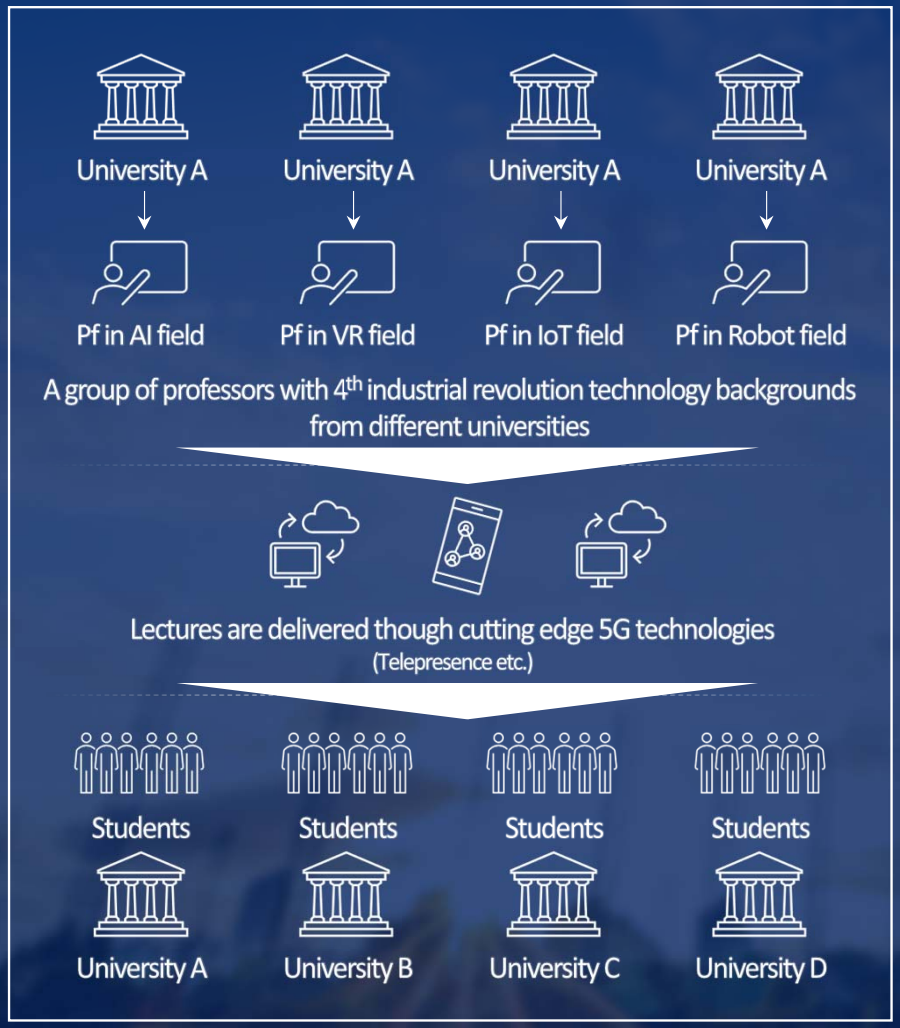
· On-line sharing of curriculum and teaching method
→ IC-PBL homepage, on-line CO-OP programs

· Scheduled Off-line conference
→ IC-PBL TIP(Together Impressive Program)

· Introduction of 5G technology such as telepresence
→ Remote teaching using hologram

Pooling limited resources among universities creates co-adaptive strategy

Sharing Education : Telepresence



Professors with high competency are selected from each university
→ Professional teaching team for sharing education

Professional teaching team + Industry experts
→ development of IC-PBL curricula

Telepresence strengthens the communication channels and expediates information sharing

→ IC-PBL that closely bound to the industry
→ Disseminated to multiple locations simultaneously

Self-motivated, competent workforce with professional skill sets

| Sharing Education : Telepresence

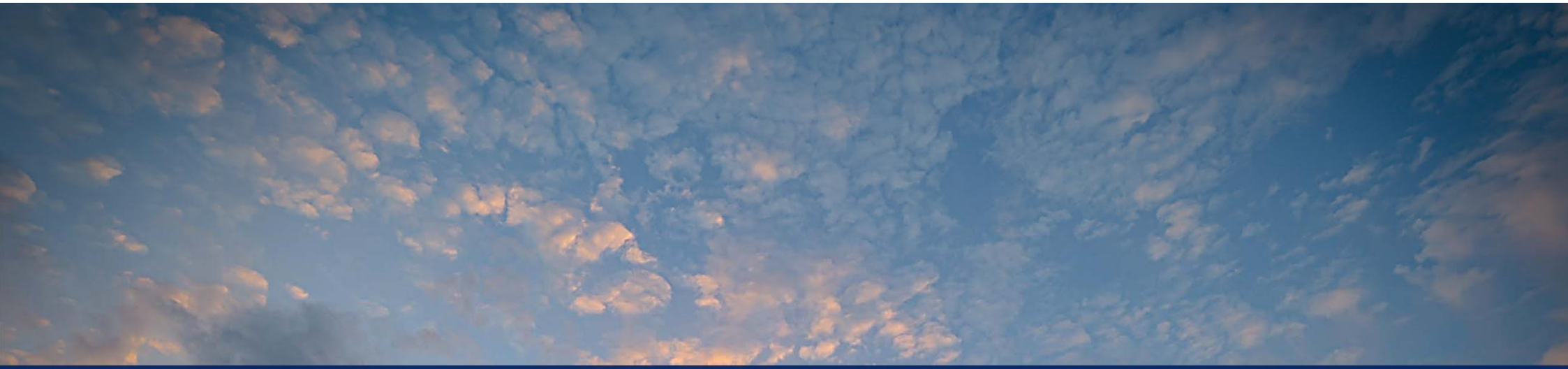
※SOURCE : www.hanyang.ac.kr, Introduction video for HY-LIVE., 2020. 1.

Rapid change brought about by "COVID-19"

THE GREATEST DANGER IN TIMES OF TUBULENCE
IS NOT TUBULENCE ITSELF,
BUT TO ACT WITH YESTERDAYs LOGIC.

"Existing practice"

PETER DRUCKER [1909. 11. 19. ~ 2005. 11. 11.]



Thank you