

# KOICA- SKKU Master's Degree Program in Water Resources Management

August 16, 2018–January 14, 2020

Seongnam & Suwon, Korea



Korea International Cooperation Agency



Sungkyunkwan University

***\*Participants are strongly advised to thoroughly read and follow the provided instructions in the Program Information.\****

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# I . PROGRAM OVERVIEW

■ **Program Title:** KOICA-SKKU Master's Degree Program in Water Resources Management

■ **Duration**

- Stay duration: August 16, 2018 ~ January 14, 2020 (17 months study in Korea)  
*During 17 months in Sungkyunkwan University, students are strongly recommended to complete their thesis.*
- Academic duration: August 16, 2018 ~ August 28, 2020 (24 months)  
*In accordance to university regulations, the diploma will be issued in August 2020.*

■ **Degree:**

- 1) Master of Science in Engineering (Academic Degree)
- 2) Master of Science in Water Resources or Master of Science in Environmental Engineering (Professional Degree)

The Graduate School of Water Resources, Sungkyunkwan University provides two different degree programs and it is required to choose one of the two. You can choose the degree type you want to pursue on your application form if you have a preference.

■ **Objectives**

- 1) To educate government officials and those working for public institutions in developing countries in the areas of water resources and environmental engineering in order to help them enhance their comprehensive competency for water resources management
- 2) To help strengthen their capabilities of coping with the climate change impact on the water resources and the paradigm change in the water industry and water management

- 3) To help strengthen their ability of how to control various water-related rules and regulations needed to deal with tasks of water resources management in a rapidly changing environment
- 4) To help enhance their capabilities of collecting, analyzing and utilizing water related information, and applying it to water resources management
- 5) To share Korea's experience in water resources management as well as its application and implementation on the water industry and water management

■ **Training Institute: Graduate School of Water Resources, Sungkyunkwan University (<http://web.skku.edu/~gswr>)**

■ **Number of Participants: 20 Government Officials**

■ **Application Eligibility**

**Candidates should:**

- Have a completed Bachelor's degree in civil and environmental engineering, agriculture, chemistry/chemical engineering, coastal/ocean engineering and other water resources-related areas
- Have a good command of both spoken and written English in order to take classes conducted entirely in English and to be able to write academic reports and theses in English.

■ **Language: English fluency that requires no translation**

■ **Accommodations:**

Students of KOICA-SKKU Master's Degree Program in Water Resources Management will live in the 'Ui-gwan' house of the Natural Sciences (Suwon) Campus dormitory, known as Bongryonghaksa, if it can accommodate all the students. Otherwise, students will live in the 'Shin-gwan' house of the dormitory. The dormitory is managed directly by the university.

**\*Living Conditions**

- Dormitory (Double-occupancy rooms)

- In-room Facilities: A heater and an air conditioner, two beds, two desks, two chairs, two wardrobes, a laundry rack, a wireless internet router, a waste paper basket, a brush and a shovel
- Communal Facilities: washing machines, irons, water purifiers, microwave ovens, TVs, vacuum cleaners, laundry driers

**\*Building-specific Notes**

- Ui-gwan: Communal toilets and showers. Slippers are to be worn in rooms.
- Shin-gwan: Each room has a bathroom with shower. Shoes are to be removed in rooms.

## II. PROGRAM CONTENTS

### 1. ACADEMIC SCHEDULE

Academic affairs	Date (YYYY.MM.DD)	Contents / Remarks
<b>Preparatory Session</b>	2018.08.16– 2018.08.19	Arrival, KOICA Orientation
	2018.08.20 – 2018.08.26	Orientation, Membership Training
<b>Fall Semester (1st semester)</b>	2018.08.27 – 2018.12.21	- Take the Korean Language Class - Seminar (2 Times)
<b>Winter Vacation</b>	2018.12.22 - 2019.02.28	- Take 'Co-operative Education for Water Resources Practice' (requisite) - Study Visit (1 day) - Special Lecture on Korean History and Culture (2 Times, 4 Hours)
<b>Spring Semester (2nd Semester)</b>	2019.03.01 – 2019.06.20	- Seminar (2 Times)
<b>Summer Vacation</b>	2019.06.21 – 2019.08.31	- Take 'Co-operative Training in Water Resources' (for Professional Degree Only) - Study Visit (2 Days & 1 Night) - Special Lecture on Korean History and Culture (2 Times, 4 Hours) - MT
<b>Fall Semester (3rd Semester)</b>	2019.09.01 – 2019.12.21	- Seminar (2 Times) - Attend a Conference - Qualification Examination - Preliminary Presentation of Thesis
<b>Wrap-up Session</b>	2020.01.02 – 2020.01.14	- Course Completion Ceremony and Farewell - Departure
<b>Spring Semester (4th Semester)</b>	2020.03.01 – 2020.06.20	- Thesis Research after Return - Final Defense Presentation (Video Conference)

\*The above schedule is subject to change.

\*\*A detailed program schedule will be provided upon arrival.

## 2. CURRICULUM

### 1) List of Courses for M.S. in Engineering (Academic Degree)

Type	Track	Subject
Requisite		<ul style="list-style-type: none"> <li>• Communications and Presentations on Water Resources</li> <li>• Co-operative Education for Water Resources Practice</li> <li>• Independent Research for Master's Thesis (1)</li> <li>• Independent Research for Master's Thesis (2)</li> </ul>
Select at least 4 from this group		<ul style="list-style-type: none"> <li>• Hydraulics</li> <li>• Hydrology</li> <li>• Hydro-meteorology</li> <li>• Hydrologic Modeling: Theory and Practice</li> <li>• Flow Analysis for River Systems</li> <li>• Analysis and Management of River Water Quality</li> <li>• Special Topics in Environmental Engineering</li> <li>• ICT-based Smart River Management</li> <li>• Integrated Water Resources Management</li> <li>• Membrane Water Treatment</li> <li>• Environmental Chemistry</li> <li>• Global Water Industry</li> </ul>
Selective	Common	<ul style="list-style-type: none"> <li>• Smart Eco City Technology</li> <li>• Scientific Computing: Theory and Practice</li> <li>• Practical Business for Global Water Industry</li> <li>• Sustainable Urban Water Management</li> <li>• Groundwater Modeling: Theory and Practice</li> </ul>
	Water Resources	<ul style="list-style-type: none"> <li>• Planning and Design of Multi-purpose Dams</li> <li>• Design of Hydraulic Structures</li> <li>• Water Resources and Remote Sensing</li> <li>• Integrated Flood Risk Management</li> <li>• Statistical Hydrology</li> <li>• Advanced Wave Mechanics</li> <li>• Computational River Hydraulics</li> <li>• Integrated Coastal Zone Management</li> </ul>
	Environmental Engineering.	<ul style="list-style-type: none"> <li>• Water Circulation Plant Engineering</li> <li>• Advanced Biological Water Treatment</li> <li>• Fundamental Bioremediation</li> <li>• Floating Desalination Plant</li> <li>• Desalination Engineering Technology</li> <li>• Advanced Environmental Analytical Chemistry</li> </ul>

\* There are two major tracks: water resources and environmental engineering

\* The above curriculum is subject to change

## 2) List of Courses for M.S. in Water Resources (Professional Degree)

Type	Subject
Requisite	<ul style="list-style-type: none"> <li>• Communications and Presentations on Water Resources</li> <li>• Co-operative Education for Water Resources Practice</li> <li>• Co-operative Training in Water Resources</li> <li>• Independent Research for Master's Thesis (1)</li> <li>• Independent Research for Master's Thesis (2)</li> </ul>
Select at least 4 from this group	<ul style="list-style-type: none"> <li>• Hydraulics</li> <li>• Hydrology</li> <li>• Hydro-meteorology</li> <li>• Hydrologic Modeling: Theory and Practice</li> <li>• Flow Analysis for River Systems</li> <li>• Analysis and Management of River Water Quality</li> <li>• Special Topics in Environmental Engineering</li> <li>• ICT-based Smart River Management</li> <li>• Integrated Water Resources Management</li> <li>• Membrane Water Treatment</li> <li>• Environmental Chemistry</li> <li>• Global Water Industry</li> </ul>
Selective	<ul style="list-style-type: none"> <li>• Smart Eco City Technology</li> <li>• Scientific Computing: Theory and Practice</li> <li>• Practical Business for Global Water Industry</li> <li>• Sustainable Urban Water Management</li> <li>• Groundwater Modeling: Theory and Practice</li> <li>• Planning and Design of Multi-purpose Dams</li> <li>• Design of Hydraulic Structures</li> <li>• Water Resources and Remote Sensing</li> <li>• Integrated Flood Risk Management</li> <li>• Statistical Hydrology</li> <li>• Advanced Wave Mechanics</li> <li>• Computational River Hydraulics</li> <li>• Integrated Coastal Zone Management</li> </ul>

\* The above curriculum is subject to change

### 3) List of Courses for M.S. in Environmental Engineering (Professional Degree)

Type	Subject
Requisite	<ul style="list-style-type: none"> <li>• Communications and Presentations on Water Resources</li> <li>• Co-operative Education for Water Resources Practice</li> <li>• Co-operative Training in Water Resources</li> <li>• Independent Research for Master's Thesis (1)</li> <li>• Independent Research for Master's Thesis (2)</li> </ul>
Select at least 4 from this group	<ul style="list-style-type: none"> <li>• Hydraulics</li> <li>• Hydrology</li> <li>• Hydro-meteorology</li> <li>• Hydrologic Modeling: Theory and Practice</li> <li>• Flow Analysis for River Systems</li> <li>• Analysis and Management of River Water Quality</li> <li>• Special Topics in Environmental Engineering</li> <li>• ICT-based Smart River Management</li> <li>• Integrated Water Resources Management</li> <li>• Membrane Water Treatment</li> <li>• Environmental Chemistry</li> <li>• Global Water Industry</li> </ul>
Selective	<ul style="list-style-type: none"> <li>• Smart Eco City Technology</li> <li>• Scientific Computing: Theory and Practice</li> <li>• Practical Business for Global Water Industry</li> <li>• Sustainable Urban Water Management</li> <li>• Groundwater Modeling: Theory and Practice</li> <li>• Water Circulation Plant Engineering</li> <li>• Advanced Biological Water Treatment</li> <li>• Fundamental Bioremediation</li> <li>• Floating Desalination Plant</li> <li>• Desalination Engineering Technology</li> <li>• Advanced Environmental Analytical Chemistry</li> </ul>

\* The above curriculum is subject to change

#### 4) Degree requirements

	Academic Degree	Professional Degree
Credit Requirements	30 or more credits (including 6 credits for thesis research)	33 or more credits (including 6 credits for thesis research)
QE & Thesis Requirements	- Qualifying exam - English skill - Thesis (in English)	- Qualifying exam - English skill - Thesis (in English)
Others	Students must take the 'Safety Training' online course every semester	

\* 3 credits per subject

\* In order to take a qualifying exam, students must take 18 credits with GPA higher than 3.0 (B).

#### 5) Credits taken at each semester

	Credits		Remarks
	Academic Degree	Professional Degree	
1st semester	9	9	Korean Language Class (Non-credit)
Winter	3	3	Co-operative Education for Water Resources Practice
2nd Semester	9	9	
Summer		3	'Co-operative Training in Water Resources
3rd Semester	6	6	• Independent Research for Master's Thesis (1)
4th Semester	3	3	• Independent Research for Master's Thesis (2)

## **6) Allocation of the thesis supervisor**

- Students can choose a thesis supervisor among the professors within his/her major branch. In case there is no professor concerned, the honorary professor, invited professor, or the professor from other universities can be chosen.

## **7) THESIS EVALUATION**

- A thesis evaluation committee is composed of 3 members. Only those who pass through the process can get the degree.
- Requirements
  - \* Fulfillment of the credit requirements before the semester of the thesis evaluation begins, with the average grade higher than B.
  - \* Fulfillment of the foreign language requirement and passing the qualification exam.

### **3. EXTRACURRICULAR ACTIVITIES (TENTATIVE)**

#### **1) Korean Language Class**

- 32~40 hours during the 1<sup>st</sup> semester
- Managed by the Sungkyun Language Institute

#### **2) Special Lecture on Korean History and Culture**

- 3~4 times of 2-hour lecture during the winter and summer vacations

#### **3) Technical Visit**

- 1-day trip to Sihwa Tidal Power Plant, Ara Waterway, Yeoju Weir, or a drinking water treatment plant in Seoul metropolitan area during the winter vacation
- 2-day trip to Namgang Dam, Nakdong Estuary Barrage, Busan, Yeongju Dam, and Andong Cultural Village during the summer vacation

#### **4) Seminars/ Special Lectures**

- 2 times during each semester

#### **5) Membership Training**

- Accompanied by professors and domestic/overseas regular students
- 2-day trip in August every year during the program

#### **6) Attending a conference**

- attend a conference held by academic societies

#### **7) Cultural Events of Sungkyunkwan University**

- Freshmen Welcome Party
  - \* Event Description: A cultural performance event to welcome and introduce newly admitted students to SKKU
  - \* Event Period: Every January
  - \* Department in Charge: Admissions Management Team



#### - My Mom is a Freshman

- \* Event Description: A cultural program for welcoming newly admitted freshmen and their parents by providing the freshmen the opportunity to feel their first taste of freedom coming into college, and for the parents to feel and be reminded of their own college memories
- \* Event Period: Every March
- \* Department in Charge: External Affairs Team



#### - The Smile of Confucius

- \* Event Description: SKKU's theatre department offers "Who am I," a play about the life of Shinsan Kim Chang-sook, the founder of SKKU who has left a great mark in Korea's modern history. The play tells the life history of the kind patriot and pioneer who has loved Korea more than anyone else and it makes us question what kind of life SKKU students must pursue in this world we live in.
- \* Event Period: March-April & September-October every year
- \* Department in Charge: Offices of Social Sciences/ Arts Department



#### - Daedong Festival

- \* Event Description: A festival for uniting all SKKU students where the student council and university clubs offer various cultural events
- \* Event Period: Every May
- \* Department in Charge: Student Council



#### - Countryside Volunteering

- \* Event Description: Since the university has signed a “Farm Love” agreement with 30 farm villages in Chungju in 2006, SKKU has been carrying out countryside volunteer programs from spring to fall.
- \* Event Period: Every May, July- August, October-November
- \* Department in Charge: Social Service Center



- Grand March through the Country

- \* Event Description: A program for promoting SKKU students' passion, spirit and self-pride, pride in the university and pride in the nation
- \* Event Period: Every July and August
- \* Department in Charge: Student Support Team



- Foreign Culture Experiences

- \* Event Description: To promote the global leadership of SKKU students and to increase awareness about the importance of the world's cultural heritages, SKKU offers selected students foreign cultural experience program during summer break.
- \* Event Period: The event is announced every May and June and the selected applicants get to visit foreign countries in July and August.
- \* Department in Charge: Student Council



- University Anniversary Festival

- \* Event Description: A cultural festival and event to celebrate SKKU's foundation day (September 29). The student council and university clubs offer various cultural events.
- \* Event Period: every September and October
- \* Department in Charge: Student Council



# III. TRAINING INSTITUTE

## 1. GENERAL INFORMATION

### 1) About the Graduate School of Water

Graduate School of Water Resources (GSWR), Sungkyunkwan University is the first specialized graduate school in the field of water resources and the water environment. The GSWR, Sungkyunkwan University was founded in 2013 for the purpose of cultivating talents in the field of water resources to cope with to the rapid growth of world water industry. The Graduate School of Water Resources, being operated with the financial support of the Korean Government, aims to build a new model of education in the field of water resources and cultivate professionals with global competitiveness

GWl (Global Water Intelligence) has forecasted that 5.6 % annual average growth of the world water market shall be continued from approximately 480 billion dollars in 2010 to 870 billion dollars in 2025. As the water industry emerges as the blue gold industry, innovative technologies in relation to the water have been developed. Integration of the traditional water management technologies with other technologies such as ICT, BT, and NT are accelerating. Not only the technologies but also the paradigms for water management are changing. Sustainable development and eco-friendly management of water resources are being stressed. We believe that postgraduate level education is essential to cultivate professionals who can integrate various water related disciplines to deal with the changing paradigms in water industry and water management under changing environment

The school has concluded 53 MOUs with government agencies and companies.

- Ministry of Land, Infrastructure and Transport and K-water
- 9 Major construction companies
- 11 Engineering companies
- 31 Water & Environmental Venture companies

In addition, active global research and educational cooperation run through international MOUs with eight universities in Asian region. Currently, the School has about 30 international students and is operating global program with international language.

## 2) Mission Statement of GSWR

- GSWR is to cultivate professionals in the field of water resources who can integrate various water related disciplines to deal with various tasks of water resources management under changing environment.

## 3) Location (Natural Science Campus in Suwon)

- ① Subway: Seoul station (line No.1) → Sungkyunkwan Univ. station (50 mins)
  - Sadang station (line No.4) → Geumjeong station → Sungkyunkwan Univ. (35 mins)
- ② Shuttle bus (fee) ※ It stops running on weekends and holidays (Contact No.: 031-290-5466)
  - Sadang station (Line No.2 and 4): In front of Exit No. 9
- ③ Bus: 62-1, 82-2, 39, 7790, 7800, 3003



※ ADDRESS: 2066, Seobu-ro, Jangan-gu, Suwon, Gyeonggi-do, Korea, 16419

### (1) From Incheon International Airport:

- A. Find gate 7 where you can find airport bus stop 7B.
- B. Take the Airport Limousine Bus heading “toward Yeong-tong” at the bus stop.
- C. After getting off at West Suwon Terminal- the first stop after departing from Incheon International Airport.

- D. When you get off at West Suwon Terminal next to Emart (supermarket), you will need to go around to the front of the building and find the bus stop under the overpass. You may also catch a taxi from here.
- E. Take bs 62-1, 99 or 99-2. Get off after 3 stops (10 minutes) at Sungkyunkwan University.
- F. Walk straight down until you see the west gate on your left side.

(2) By Subway:

- A. Take Seoul Metro Line# 1 and get off at Sungkyunkwan University Station.
- B. Take exit #2.
- C. SKKU Suwon Campus is approximately 10~15 minutes' walk from the subway station.

**4) Homepage: <http://web.skku.edu/~gswr/>**

## 2. FACULTY AND RESEARCH UNITS

### 1) Faculty Members

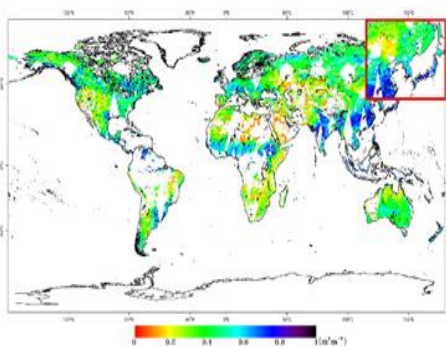
#### Faculty

	<p><b>Minha Choi</b> mhchoi@skku.edu Hydrometeorology, Remote sensing <a href="http://web.skku.edu/~wrrsl">http://web.skku.edu/~wrrsl</a></p>		<p><b>Nak Kyung Kim</b> nkkim@skku.edu Soil Mechanics &amp; foundation <a href="http://civil.skku.ac.kr/yurim.skku.ac.kr/~nkkim">http://civil.skku.ac.kr/yurim.skku.ac.kr/~nkkim</a></p>
	<p><b>Am Jang</b> amjang@skku.edu Environmental sensors, Hybrid - Seawater desalination <a href="http://wiz.skku.edu/ewater">http://wiz.skku.edu/ewater</a></p>		<p><b>Jung Lyul Lee</b> jllee@skku.edu Coastal environment modeling, Ocean energy <a href="http://wiz.skku.edu/skkuce1">http://wiz.skku.edu/skkuce1</a></p>
	<p><b>Kyung Soo Jun</b> ksjun@skku.edu River hydraulics, Hydraulic &amp; hydrologic modeling <a href="http://www.skkuhydro.com">http://www.skkuhydro.com</a></p>		<p><b>Kwang-Myong Lee</b> Leekm79@skku.edu Hydraulic structures, Concrete materials <a href="http://wiz.skku.edu/ACTech/">http://wiz.skku.edu/ACTech/</a></p>
	<p><b>Hyung-soo Kim</b> sookim@skku.edu Environmental Engineering, Membrane process <a href="http://wiz.skku.edu/ewater">http://wiz.skku.edu/ewater</a></p>		<p><b>Ick Tae Yeom</b> yeom@skku.edu Wastewater advanced treatment, Wastewater reuse <a href="http://wiz.skku.edu/environlab">http://wiz.skku.edu/environlab</a></p>

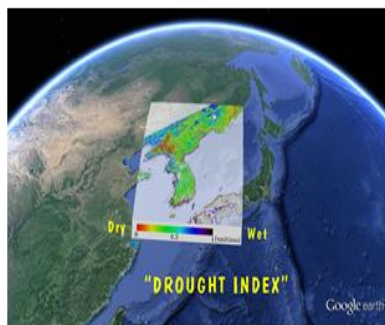
## 2) Water Resources & Remote Sensing (Prof. Minha Choi)

Fresh water resources on our planet are now drastically becoming scarce natural resources. The fresh water resources stress may be more deteriorated by increasing climate change and population growth scenarios in the world including East Asia. To better understanding of fresh water availability linked to the land surface and the atmosphere, accurate estimation of the water and energy fluxes should be conducted. Dr. Choi's research interests are based on an incessant desire to understand those natural hydrologic phenomena that frequently cause floods and droughts and significant damage to people and property. A main research goal is to improve knowledge of land surface hydrologic processes and modeling by integrating remotely sensed data and ground-based data with an emphasis on the soil-vegetation-atmosphere dynamics over a range of scales. Toward this goal, the role of soil moisture and evapotranspiration directly related to many hydrometeorological variables considering spatial-temporal variability and the quantification of uncertainty within the context of the satellite footprint have been sought.

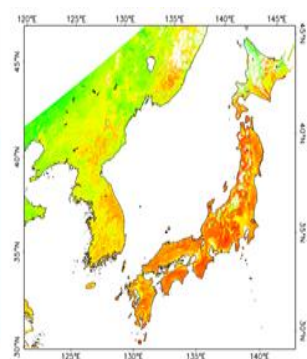
**Land surface-atmosphere interactions, experimentation, remote sensing, model assimilation, ArcGIS, ecohydrology**



Soil Moisture



MODIS-based Drought



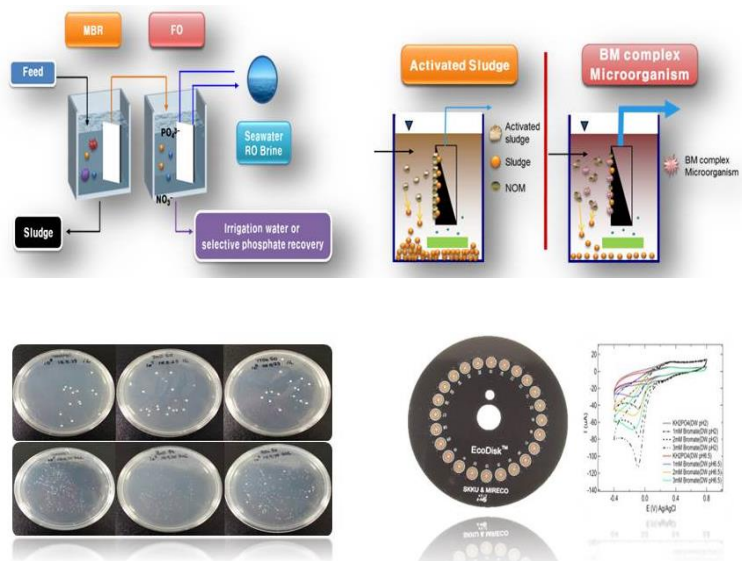
Evapotranspiration

### 3) Smart Water Advanced Treatment (Prof. Am Jang)

The Smart Water Advanced Treatment (SWAT) lab focuses on the development of sustainable water and wastewater treatment systems, membrane based desalination, and environmental pollution monitoring using state-of-the-art lab chip (LC) sensors, including pH, ORP, DO, nitrate, phosphate, and heavy metals. Major research interests include as follows:

- Water treatment: advanced membrane bioreactor (MBR) with aerobic granules; low cost and high performance ceramic and polymer membrane filtration for potable water production; adsorption materials for pollutions removal; biological nutrient removal (BNR)
- Water supply and resource recovery: RO desalination; water reuse; phosphate recovery from wastewater using forward osmosis (FO) and MBR
- Pollution monitoring: membrane fouling; the development of portable environmental LC sensors; environmental biofilm monitoring with microelectrodes and molecular techniques (i.e., fluorescent in situ hybridization, FISH); harmful algal blooms; biotoxicity of engineered nanomaterials

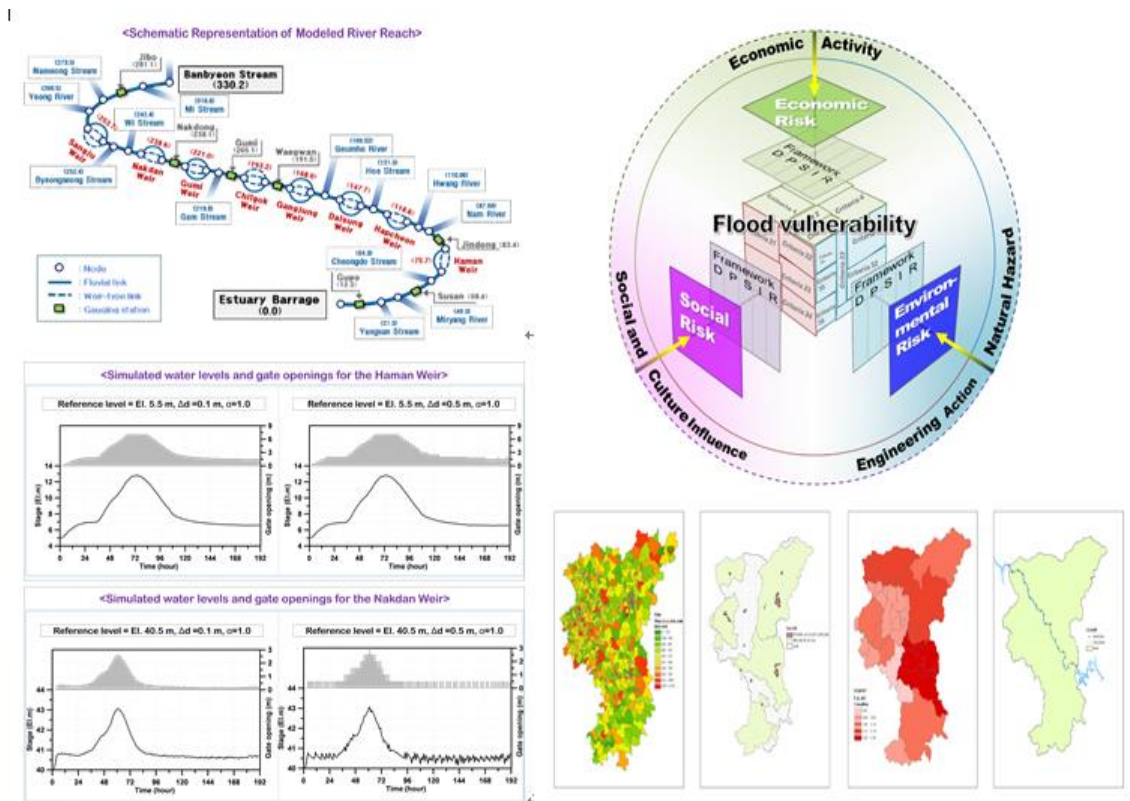
**Forward osmosis, membrane bioreactor, ceramic membrane, electrofloatation, NPs toxicity, lap chip sensors**



### 4) Water Resources Engineering Lab. (Prof. Kyung Soo Jun)

Climate change, urbanization and increasing global population are posing serious threats to our humanity's water security. Solving the challenges of water resources management is one of the fundamental goals of this generation. Prof. Jun is interested in quantitative and qualitative analysis of water resources including risk assessments for hazard, which is essential for water resources management. Numerical models have been developed and applied to solve various problems related to the water resources. In particular, his laboratory has developed flood computation model for major Korean rivers, and has very successfully transitioned the model for a wide range of applications.

**Computational river hydraulics, environmental hydraulics, hydraulic and hydrologic modeling, flood risk analysis, water quality modeling**



## **5) Environment-Water Advanced Technology Engineering Research (Prof. Hyung-soo Kim)**

Prof. Kim's lab opened in 1995 and prof. Kim has played a role as a 1st generation pioneer of membrane process in water treatment in Korea. Advanced water treatment process and membrane processes have been adopted to overcome limits of conventional drinking water treatment system. Hybrid waste water treatment system which combines biological treatment and membrane processes was developed for stable and safe wastewater treatment system. Recently, with facing water shortage, wastewater reuse and desalination processes are actively studied to secure the alternative water resources. Especially, proving the membrane fouling and technologies of maintenance of the membrane processes are prof. Kim's special interests.

**Membrane process, integrity test, membrane fouling control, maintenance of membrane process, practical pilot-plant scale membrane system operation**

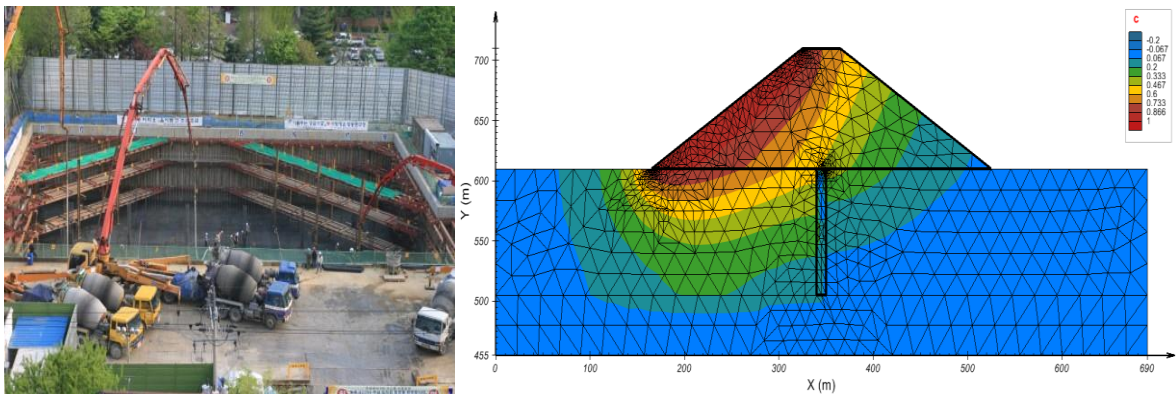


## 6) Foundation System Research (Prof. Nak Kyung Kim)

Foundation system consists of foundations in buildings, earth structures, geo-hydraulic structures and others related to water resources. In water resources engineering, earth dams and hydraulic structures have been focused for centuries for the stability of those water resources related structures. Water-soil interactions, seepage hydraulics and new foundation support systems have been studied recently.

In our lab, research areas covers the new geotechnical foundations on water bearing soil condition, numerical analysis on foundation systems, groundwater problems in excavations, and earth dams design and analyses. Research goal is mainly a development of new foundation support to increase the economics and stability of the geo-hydraulic structures. The innovative prestressed wale system was developed to solve the earth support problem in large excavation in soft and water bearing soils. The system has been applied to the many construction projects and has performed successfully. The seepage pressures on slurry wall has been analyzed and the design water pressures were suggested. Ongoing research is the smart helical reinforcement system on very soft clay subsoil.

**Geo-hydraulic structures, earth structures, foundation system, numerical analysis, new foundation design, instrumentations on foundation behavior**

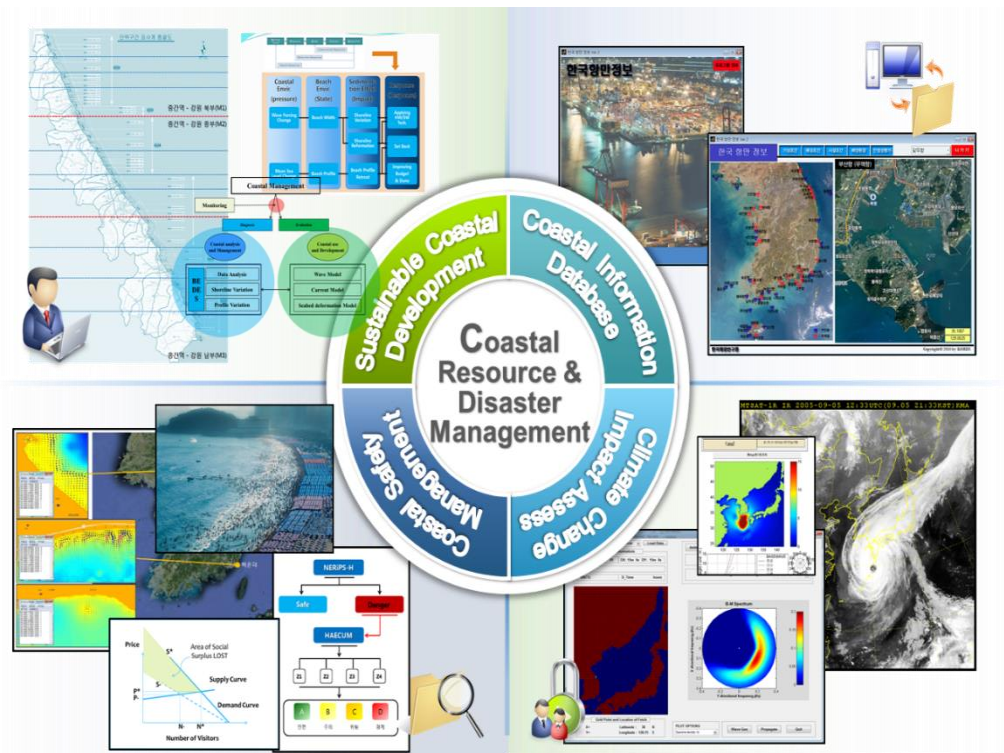


## 7) Coastal Resource and Disaster Management (Prof. Jung Lyul Lee)

Recent coastal zone is vital to the well-being of our country. It is home to roughly half of the Korea population and supports ecologically important habitats and natural resources. It also boasts vibrant harbors and fishery ports and many other important industries.

The lab provides the fundamental studies and strategies for protecting, restoring, and responsibly developing diverse coastal communities and resources. To support the goals of the Korean ICZM, it also takes a comprehensive approach to coastal resource management—balancing the often competing and occasionally conflicting demands of coastal resource use, economic development, and conservation.

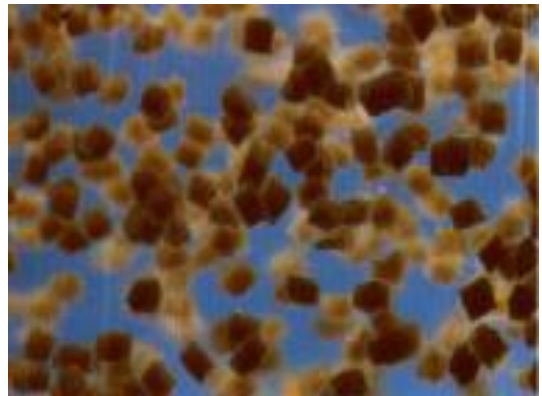
**Understanding coastal environments; Assessing economic values of natural resources; Protecting valuable resources from coastal hazards; Managing development in high hazard areas; Providing sustainable solutions on coastal development**



## 8) Emerging Contaminants Research (Prof. Ick Tae Yeom)

ECRL (Emerging Contaminants Research Laboratory) has carried out research about advanced waste water and sewage treatment technology, reuse technology, specific substances harmful to the quality of water and micro emerging contaminants treatment. Especially, in 1990's, the Ministry of Environment has regulated specific substances harmful to the quality of water designated as water pollutants which is directly and indirectly harmful to health of human, animal and plant life. For ten years from now, it has a plan to increase specific substances harmful to the quality of water from nineteen to fifty, hence, our laboratory has been carrying out researches on treatment plant which maximize biological degradation by using existing activated sludge and immobilized cell treatment which enable microorganism to illuviate for high concentration, MBR and so on. Also, our laboratory carries out long-term projects with the Zero Emission Center, the Ministry of Environment and the National Institute of Environmental Research which designates specific substances harmful to the quality of water and emission standard of them.

**Continuous stirred tank reactor, treatment using immobilized cells.**



## 9) National Smart Water Grid Research Group (Prof. Kyung-taek Yum)

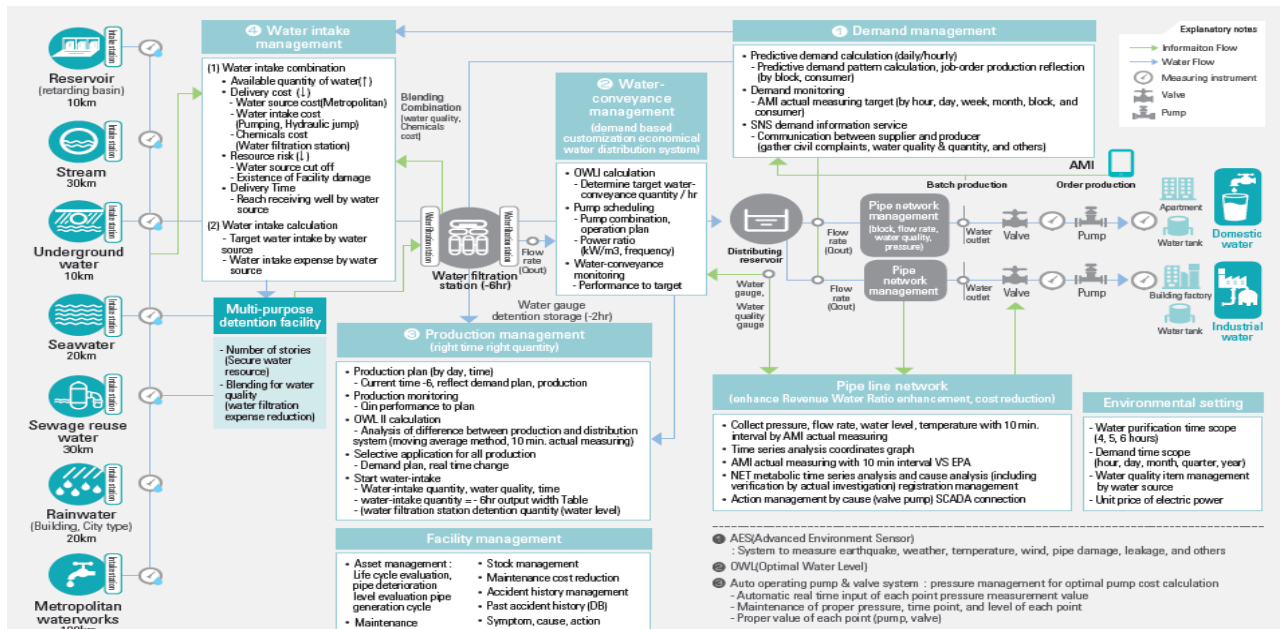


The NSWGRG was founded in 2012 by Ministry of Land, Infrastructure and Transport of Republic of Korea. Smart Water Grid is a new emerging platform for intelligent and integrated water management. It allows high reliability, diversification of multi-water sources to cope with an uncertainty of water to be secured. SWG Key technologies can be defined to “**Real Time Demand and Supply**” based on AMI(Advanced Metering Infrastructure) system, which consist of smart meters, sensors and telecommunication technology. Consequently, we can save both NRW (non-revenue Water), energy and cost.

Smart water grid technologies lead to a significant contribution in overcoming water management challenges in the 21st century especially in efficient management and operation of water resources in the context of climate change.

Key words to be dealt with in this class will be as follows

- Real time data acquisition
- ICT and Smart Pipes, Smart metering
- AMI based Decision Support System
- Demand based water supply, Pumping scheduling
- GIS and Remote Sensing
- Smart Pipes, Smart metering
- Bilateral communication between consumer and supplier



### 3. ACCOMMODATION

Students of KOICA-SKKU Master's Degree Program in Water Resources Management will live in the 'Ui-gwan' house of the Natural Sciences (Suwon) Campus dormitory, known as Bongryonghaksa, if it can accommodate all the students. Otherwise, students will live in the 'Shin-gwan' house of the dormitory. The dormitory is managed directly by the university.

#### 1) Facilities

- Double occupancy rooms
- In-room Facilities: A heater and an air conditioner, two desks, chairs, beds and wardrobes, a laundry rack, a wired and wireless internet router, a waste paper basket, a brush and a shovel
- Communal Facilities:
  - \* Free to use: washing machines, irons, water purifiers, microwave ovens, TVs, vacuum cleaners
  - \* Requiring payment: Laundry drier (₩1,000 per use), printer (₩40 per page)
- Building-specific Notes
  - \* Ui-gwan: Communal toilets and showers on every floor. Slippers are to be worn in rooms.
  - \* Shin-gwan: Each room has a bathroom with shower. Shoes are to be removed in rooms.



Ui-gwan (two people per room)



Shin-gwan (two people per room)

## 2) Admission Period Assistance Details

- (1) Receiving parcels: If you send parcels to the dormitory 3-5 days before the check-in date then they will be stored in the parcel storage room on delivery. (However, please note that parcels may be damaged or lost. Also, please write your name and phone number on the box.)
- (2) Borrowing a cart: You can borrow a cart in each dormitory, but due to limited space in the elevator, it may be crowded, and because many people want to use it, you may have to wait for it. It would be easier for you to bring your belongings in wheeled suitcases, or you can prepare your own small cart.

## 3) Price to Use the Cafeteria, and How to Apply for Meal Tickets

- (1) You can buy meal tickets at the vending machine or at the counter in cash or by credit card. Each ticket costs ₩3,600. (as shown in the "No meals chosen" column in the table below)
- (2) Meal service will not be offered for two days during the Korean Thanksgiving Day holidays, which fall in the 2018 Fall Semester.
- (3) You can use it at a discounted price if you choose a meal plan when applying for admission.

Options	Purchase	1 meal per day	1.5 meal per day	2 meal per day	2.5 meal per day
Number of meals in the semester (111 days)		111	167	222	278
Price per meal	₩3,600	₩3,200	₩2,950	₩2,700	₩2,600
Price for the whole semester		₩355,200	₩491,170	₩599,400	₩721,500

- ▶ The total number of tickets for the 1.5 and 2.5 plans are rounded up.
- ▶ The total price for the 1.5 plan is rounded down.

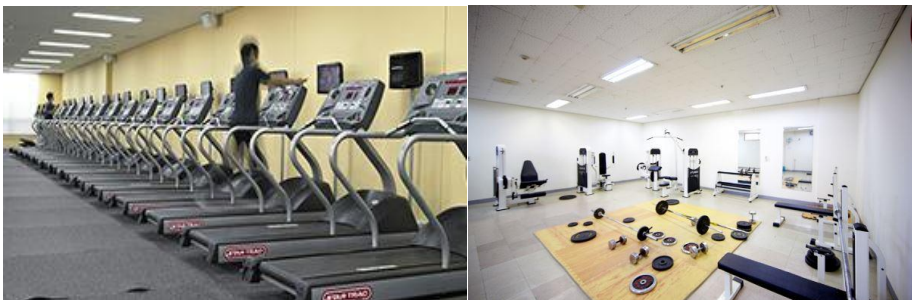
#### **4) Changing Meal Plan (adding and refunding tickets)**

- (1) To give students an opportunity to change their meal plan after experiencing the cafeteria at the beginning of the semester, there will be a period of change, once in the semester.
- (2) There will no opportunity to change the number of tickets both before and after this period, and there will be no refund for unused meal tickets at the end of the semester.

#### **5) Other Facilities and Benefits**

##### **(1) Gym and Fitness Facilities**

- Fitness room in Ingwan and Jigwan, stretching room in Yegwan, ping-pong room in Jigwan (open and free to use)
- Fitness room in Shingwan can be used with monthly registration (30,000 won per month, registration on a first come, first served basis)



##### **(2) Life Culture Seminars, Hobby Seminars**

- Seminars in humanities, social sciences, sciences, arts, history and various other topics each semester
- Experiential learning program for Korean and foreign students living in the dormitory
- Seminars on yoga, hand-drip coffee, cooking, guitar, photography, etc. for each semester

## 6) Dormitory Homepage

- Address: <http://dorm.skku.edu>
- Click 'English' button on the right-top



## 4. OTHER INFORMATION

### 1) Lecture Room



#### Lecture Room

Most of the lectures will be given in the Lecture Room 26217A which is located in 2F, Engineering Building 2.

### 2) Seminar Room



#### Seminar Room

Seminar Room 27218 is located in 2F, Engineering Building 2.

Various seminars related to water resources will be held in the seminar room.

### 3) Library



#### Samsung Library

Library is located next to the Natural Sciences Hall.

B1. Reading room

1<sup>st</sup> floor. Computer lab.

2<sup>nd</sup> floor. Visual Media room, Group study room

3<sup>rd</sup> floor. Reference library

4<sup>th</sup> floor. Reading room

5<sup>th</sup> floor. Community zone



### 4) Computer Lab



### **Computer Lab**

There are numerous computer labs for students in the campus.

Computer lab for the department, 27221 is located at 2F, Engineering building

## **5) Dining on Campus**

### **Student Cafeteria 1**



The cafeteria is located in B1, Engineering Building 2.

Open from 7:00 to 18:30.

Price: 1,500 ~ 3,500 KRW

### **Student Cafeteria 2**



The cafeteria is located in 1F, Student Union Building 2.

Open from 11:00 to 18:30

Price: 2,900 ~ 4,000 KRW

## **6) Book Store**



### **Book Store**

The store is located in 2F, Welfare Hall.

Assortment of textbooks and others

Open from 09:00 to 18:00

## **7) Convenience Store**



### **Convenience Store**

The store is located in 1F, Welfare Hall.

Open from 9:00 to 19:00

Assortment of daily necessities and office supplies

## **8) Café**



### **Garden Bridge Café (1F, Research & Business Center)**

The café sells different types of beverages and cakes.

Price: 2,000 ~ 5,000 KRW

### **Café NU (1F, Engineering Building)**

The café sells different hot and cold beverages, cakes and cookies

## **9) Convenience Facilities**

To offer conveniences to its university members and visitors, SKKU is equipped with various welfare facilities. The campus welfare and convenient facilities include a book store, dining halls, a post office, a bank, ATM machines, coffee shops, a gift shop, a fitness center as well as campus rest areas and women's lounges.

Category	Facility Name	Support	Location	Contact Info
University Life	Lost & Found	Student Support Team	Administration Office	290-5034
Academic Support Facilities	Photocopy Office	Photocopy room	B1, Samsung Library	290-5449
	Photocopy Office	Photocopy room	1F, Engineering Bldg. 2	290-5460
Women's Lounge	Student Union Bldg. Women's Lounge	Female student-only rest area	2F, Student Union Bldg. (03211)	
	Engineering Bldg. 2 Women's Lounge	Female student-only rest area (equipped with sleeping rooms)	B1, Engineering Bldg. 2 (26B04)	

	Science Bldg. 2 Women's Lounge	Female student-only rest area (equipped with sleeping rooms)	3F, Natural Sciences Hall (32355)	
	Biotechnology Hall Women's Lounge	Female student-only rest area (equipped with sleeping rooms)	3F, Biotechnology Hall (62305)	
	General Studies Bldg. Women's Lounge	Female student-only rest area	3F, General Studies Bldg. (51317)	
	Semiconductor Hall Women's Lounge	Female student-only rest area (equipped with sleeping rooms)	2F, Semiconductor Hall (400205)	
	Pharmacy Hall Women's Lounge	Female student-only rest area(equipped with sleeping rooms)	1F, Pharmacy Hall (530128)	
	Medical School Bldg. Women's Lounge	Female student-only rest area (equipped with sleeping rooms)	1F, Medical School Bldg. (711113)	
Financial Facilities	Post office	Banking and mail services	2F, Welfare Hall	290-5445
	Bank	Woori Bank (financial services)	2F, Welfare Hall	290-5434

## 10) Health Care

### (1) Health Care Center

To promote health and well-being of our students and faculty, the University's Health Care Center offers services in early detection of diseases, treatment and treatment placement, health counseling, student health checkup and etc.

### (2) Special Clinics

#### - Obesity Counseling Clinic

- To prevent and manage obesity, the clinic assesses and analyzes individual's body composition and offers diet plans, exercise plans and continuous care and counseling.
- All obesity-related counseling and treatments are free of charge.

#### - Lifestyle Diseases

- The clinic offers continuous care and counseling for lifestyle diseases such as high blood pressure and diabetes through detailed tests like blood pressure and blood sugar tests.
- Monday ~ Friday, 9:00~17:30

#### - Anxiety and Depression Counseling

- In modern society, where people live under excessive stress and environmental stimulations, most people suffer from some kind of physical or psychological problem. Visiting psychiatric counseling for mental stress is as natural as visiting internal medicine or surgical hospitals for physical pain.
- If you are going through academic or interpersonal relationship problems because of your anxiety or depression, or if you are suffering from anxiety or depression because of your academic or interpersonal relationship problems, timely and proper treatment or counseling can improve your condition significantly.
- If you're feeling anxious or depressed or somehow different, we advise you to get counseling from the university health center's psychiatric department.
- Monday 13:30~16:30, Friday 09:00~12:00 (biweekly)

### (3) Smoking Cessation Counseling

To reduce smoking within the population, and to ultimately prolong life and improve quality of life, SKKU offers various smoking cessation promotions and education for the people of SKKU to increase the general awareness and the importance of good health. The program schedule is announced for participant recruitment on notice boards.

## 11) Medical Facilities in the Vicinity of the Campus

Type	Medical Facility	Location	Business Hour	Landmark	Phone Number
General	Ju Internal Medicine 주내과의원	Yuljeondong 율전동	<b>Weekday:</b> 9:00~18:00 <b>Lunch:</b> 13:00~14:00 <b>Saturday:</b> 9:00~13:00	Yulcheondong Community Service Center 율천동 주민센터	031-227-7555
	Yeonse Internal Medicine 연세내과의원	Yuljeondong 율전동	<b>Weekday:</b> 9:00~18:00 <b>Lunch:</b> 13:00~14:00 <b>Saturday:</b> 9:00~13:00	Seven Eleven Convenience Store 세븐일레븐 편의점	031-294-9797
	Hanaro Internal Medicine 하나로의원	Jeongjadong 정자동	<b>Weekday:</b> 10:00~19:00 <b>Lunch:</b> 13:00~14:00 <b>Saturday:</b> 10:00~16:00	Myeong-in Elementary School 명인초등학교	031-269-4762
Ophthalmology	Seongdae Ophthalmology 성대안과	Yuljeondong 율전동	<b>Weekday:</b> 9:00~18:00 <b>Saturday:</b> 9:30~14:30 <b>Lunch:</b> 13:00~14:00	Sungkyunkwan University Station 성균관대역	031-298-8275
	Hwain-oseo 화인오세오안과	Cheoncheondong 천천동	<b>Weekday:</b> 9:30~18:00 <b>Wednesday:</b> 9:30~13:00 <b>Saturday:</b> 9:30~15:00	Lotte Mart	031-245-5350
Otolaryngology	Good morning Otolaryngology 굿모닝이비인후과	Yuljeondong 율전동	<b>Weekday:</b> 9:00~19:00 <b>Lunch:</b> 13:00~14:00	Mcdonalds 맥도날드	031-294-7545
	Duri Otolaryngology 두리이비인후과	Cheoncheondong 천천동	<b>Weekday:</b> 9:00~19:30 <b>Lunch:</b> 13:00~14:00 <b>Saturday:</b> 9:00~16:00 <b>Lunch:</b> 13:30~14:00 <b>(Sun/Holiday):</b> 10:00~13:00	Lotte Mart	031-247-2275
Dental	Chammiso Dental 참미소치과	Yuljeondong 율전동	<b>Weekday:</b> 10:00~18:00 <b>Saturday:</b> 9:30~12:30	Baskin Robbins 31 배스킨 라빈스	031-293-2875
Dermatology	Hwain Dermatology 화인피부과	Cheoncheondong 천천동	<b>Weekday:</b> 9:25~18:30, <b>Lunch:</b> 12:40~14:00 <b>Saturday:</b> 9:20~15:30	Lotte Mart	031-269-2975
Orthopedics	Cham joeun Orthopedics 참조은정형외과	Yuljeondong 율전동	<b>Weekday:</b> 9:00~18:00 <b>Saturday:</b> 9:00~14:00 <b>Lunch:</b> 13:00~14:00	Baskin Robbins 31 배스킨 라빈스	031-252-8094
	Sae yeonse Orthopedics 새연세정형외과	Jeongjadong 정자동	<b>Weekday:</b> 8:30~18:00 <b>Saturday:</b> 8:30~13:00	Homeplus Express 홈플러스 익스프레스	031-242-3375

## **12) Medical Information and Emergency Services**

### **(1) Medical Information Center**

- The services are for all residents living in Korea. The initial call pickup will be made in Korean. If you request for English translation, a translator will be provided (contact time needed). During the switchover time, prerecorded music and Korean will be relayed over the phone.
- Wait patiently until the switchover and then you will be able to receive a step-by-step instruction in English on the required medical condition. Your emergency call will be translated by a 3rd translating party between you and the professional medical staff. This service is not like 119, but is a hotline for a step-by-step process of dealing with sudden ailments that may not require an ambulance (although you can request an ambulance).

### **(2) 119 Fire & Emergency Services**

- The 119 Emergency & SOS Service is similar to the American 911 service. In case of fire or a medical emergency call to this number. The service will immediately send a fire truck or an ambulance to the required location. The service is for all residents, Korean and foreign. The initial pickup will be made in Korean. If you request for English translation, a translator will be provided (contact time needed). Wait patiently until the switchover and then you will be able to inform the medical staff of the patient's condition and request a fire truck or an ambulance.

## **IV. ACADEMIC REGULATIONS**

### **1) Compliance with University Policies**

Registration as a student constitutes a commitment by the student to abide by University policies, rules and regulations, including those concerning registration, academic performance, student conduct, health and safety, use of the libraries and computing resources, university facilities, and the payment of fees and assessments. Some of these are set forth in the student handbook while others are available in relevant University offices. Students should take responsibility for informing themselves of applicable University policies, rules and regulations.

### **2) Attendance and Absenteeism**

Students are expected to attend all of the classes he / she has registered for each semester. Any student who, without a good reason, has failed to attend class for at least 13/16 of the total class hours shall be prohibited from sitting for the exam.

- A. In the event a student is absent for any of the reasons below, the student must notify the appropriate department, faculty, and dean and get approval in advance:
- Death of an immediate family member (grandparents, parents, siblings) or equivalent circumstance
  - Academic planning, study visit, on-location training, etc.
  - Participation in seminars or conferences (including international ones) as approved by the Graduate School Dean
  - Other events as approved by the Graduate School Dean
- B. In the event of student illness or emergency situations, students who will be absent for less than seven days (including holidays and weekend days) need to submit written notification of such absence to the Graduate School Dean. For absences longer than seven days, students must submit a written diagnosis by a physician.

### **3) Must reside in residence**

- Students must reside in the dormitory of SungKyunKwan University
- Living off-campus is not allowed
- SungKyunKwan University has residency regulations and all students must abide by them.

### **4) Examinations and Grade Evaluations**

#### **- Minimum Grade Point Average Requirement**

- Students must maintain at a minimum a B (80-84) grade point average. Anything below 80 points will not be acknowledged as a passing grade.

#### **- Regular Exams and Make-up Exams**

- Regular Exams: Mid-term (7th to 8th week of semester), Final (last two weeks of semester)
- Make-up Exams: In the event a student cannot sit for an exam due to military service, illness, or any other emergency, the student must notify the faculty before the test date, and obtain the Graduate School Dean's approval to sit for the exam at another time.

#### **- Qualifications to Sit for an Exam**

- Any student who, without good reason, has failed to attend class for at least 13/16 of the total classes shall be prohibited from sitting for the exam. In the event of illness or emergency situations, students need to provide a written explanation of their absence.

#### **-Scholastic Performance Evaluation Method**

- Scholastic performance will be based on a 100-point scale for each course registered. Grades will be based on classroom performance (presentations, attendance) and test performance (mid-term and final exams).

**- Evaluation Standard: Evaluation Ranking**

Grades	Score (%)	Grade Point	Grades	Score (%)	Grade Point
A+	95 - 100	4.5	D+	65 - 69	1.5
A	90 - 94	4.0	D	60 - 64	1.0
B+	85 - 89	3.5	F	0 – 59	0.0
B	80 – 84	3.0	P		Pass
C+	75 – 79	2.5	I		Incomplete
C	70 - 74	2.0			

## 5) GLS System

An SKKU online membership ID provides access to Sunkyunkwan University Academic System for Students (GLS) and its services, and identifies authorized users of these services.

Using GLS, students are able to register for courses and change courses, apply for a leave of absence and reinstatement as well as change their address, and personal Information. In addition, retrieval services of academic records and curriculum like syllabus or course description is provided through the GLS system. Further information concerning the GLS system may be found at the orientation for newly arrived students.

## V. REQUIRED DOCUMENTS

- All documents should be sent to the regional KOICA office or the relevant government office.
- 1) KOICA Application Form
- 2) Sungkyunkwan University Form 1: Application form (Type in English and print out, hand writing is not acceptable)
- 3) Sungkyunkwan University Form 2: Self-introduction (Type in English and print out, hand writing is not acceptable)
- 4) Sungkyunkwan University Form 3: Study plan (Type in English and print out, hand writing is not acceptable)
- 5) Sungkyunkwan University Form 4: Letter of consent for degree verification (Type in and sign all of the underlined blanks)
- 6) Sungkyunkwan University Form 5: Letter of request for degree verification (Type in and sign all of the underlined blanks)
- 7) Curricular vitae
- 8) A copy of the applicant's passport (please check the expired date.)
- 9) Official document indicating parent-child relationship between the applicant and parents: Applicant's Birth Certificate or Household Register proving the parent-child relationship
- 10) Official undergraduate school transcript
- 11) Official undergraduate school graduation certificate
- 12) Certificate of Employment (if applicable)
- 13) Certificate proving English Proficiency: Please submit a score report of a recognized English Proficiency Test such as TOEFL, TEPS, IELTS, CBT, iBT or any other supporting documents which demonstrate appropriate English language proficiency (If applicable)..

★★ Form 1 ~ 5: Attached herewith

**\*Important Notes for All Applicants:**

1. All forms should be **typed in English** and all the supporting documents should be **in English**. Documents in any other language should be accompanied by a notarized English translation.
2. Original documents should be submitted. (If it is unavailable, the originating institution must authorize copies before they are submitted.)
3. If any of the submitted materials contain false information, admission will be rescinded.
4. Applicants whose forms and supporting documents are incomplete or unsatisfactory will be disqualified from the admission process.
5. Applicants should take full responsibility for any disadvantage due to the mistakes or omissions on the application

## VI. CONTACTS

### 1. CONTACT INFORMATION

#### 1) Korea International Cooperation Agency (KOICA)

· **Program Manager: Ms. Jinmin LEE**

Training Program Department

· Address: 825 Daewangpangyo-ro, Sujeong-gu, Seongnam-Si, 461-833

Gyeonggi-do, Republic of Korea

· Tel: +82-31-740-0586, Fax: +82-31-740-0595

· E-mail: jinmin.lee@koica.go.kr

· Homepage: <http://www.koica.go.kr>

· **Program Coordinator: Mr. Sangjun HAN**

· Phone: +82-31-777-2644, Fax: +82-31-777-0996

· E-mail: korea139@global-inepa.org

#### 2) Graduate School of Water Resources, Sungkyunkwan University

· **Section Chief: Prof. Kyung Soo Jun**

· Dean, Graduate School of Water Resources, Sungkyunkwan University

· Address: 2066 Seobu-ro, Jangan-gu, Suwon-si, 16419 Gyeonggi-do, Republic of Korea

· Tel: +82-31-290-7515, Fax: +82-31-290-7549

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· **Staff: Ms. Euna Jo**

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· Homepage: <http://web.skku.edu/~gswr/>

\* The schedule in PI (Program Information) is subject to change according to the KOICA and SungKyunKwan University Schedule.