

# Graduate Program in the School of Electrical Engineering and Computer Science College of IT Engineering



## ● The University and the School

Founded in 1946, Kyungpook National University (KNU) serves as a major comprehensive research and teaching institution as well as a center of academic excellence that combines global standards and competitiveness with a unique and innovative perspective. Also, as a regional hub of learning, KNU plays a key role in the decentralization of Korea and the development of local and regional industry through university-industry collaboration.

As currently home for about 37,000 students from Korea and around the world, KNU is serious about helping students to globalize their careers by providing an extensive and active series of international programs along with special scholarships and awards. The main campus of KNU is located near main gateways of Daegu city with a population of over 2.5 million, which is less than two hours away from Seoul to the south. So, from wherever you enter Daegu, you can reach KNU within several minutes by public transportation.

Recognized as a Center of Excellence for Electronics since the 1970s, the academic and research programs in the fields of Electrical Engineering and Computer Science (EECS) at KNU have steadily grown towards a world-class level. As the largest single IT engineering college in Korea, the School of EECS has 101 full-time faculty members with extensive research interests and industrial experience and 32 full-time staff members. The current enrollment at the school of EECS is approximately 1098 graduate students and 586 of them are Ph.D. students.

The EECS graduate program offers M.S. degrees and Ph.D. degrees in the fields of Electronic Engineering, Computer Science and Engineering, and Electrical Engineering, with the aims to produce versatile, creative, and resourceful graduates that can become world-class engineers. Dedicated to offering the highest quality of education and academic environment for the next decades, the school is making the continued development of excellent research and educational programs through the provision of the best research environments and experimental equipments. Also, the school attempts to balance the value of theoretical and practical training, thereby producing competitive graduates well-equipped to play a major role in today rapidly changing industry and research institutes.

As the result of academic excellence in the fields of EECS, many awards and financial supports have been received from the Korean government. Specifically, in 1973, the Korean Ministry of Education designated the Department of Electronic Engineering at KNU as a specialized nation-wide engineering department, which led to extensive financial investment into facilities and educational resources. Also, in 1994, the School of Electronic and Electrical Engineering was selected as the first national government-sponsored school of electronic and electrical engineering and awarded a total of 73 billion won for a five year period, which resulted in one of the best IT engineering programs in Korea. Further, in 1999, the school was the only academic institution to receive

Brain Korea 21 (BK21) awards for the excellence of undergraduate and graduate programs. More recently, in 2001, the school of EECS was recognized as the most competitive undergraduate and graduate program by the Korean Council for University Education (KCUE) in the "2000 Evaluation of Academic Sectors." In 2002, the school was also acknowledged as having the best BK21 program among local Korean Universities. Besides, in 2005, the school of EECS was selected as the recipient of the 2nd stage of BK21 program and awarded a total of 37 billion won for an eight-year period ending in 2013.

Currently we have more than 17,000 graduates leading the IT-related academia and industry in Korea and around the world, along with more than 500 companies established by the graduates. Also, more than 25% of the engineers and technical experts in the main domestic IT companies are KNU-EECS alumni and more than 500 alumni (i.e., 5% of graduates) are working as faculty members in domestic and foreign universities.

## ● History

The Graduate Program in the School of Electrical Engineering and Computer Science had commenced as the Department of Electronic Engineering in 1968, and later on the graduate program was added in 1972. Department of Electrical Engineering, by itself, was established in 1982, and then the two departments merged which resulted in the formation of School of Electronic and Electrical Engineering (EE) in 1995. The Computer Science (CS) Department was established in 1987 under the College of Natural Sciences, and then in the year 2001 the CS department merged with the EE department to form EECS, the School of Electrical Engineering and Computer Science. Furthermore in the year 2007, the Graduate Program in the School of EECS incorporated the curriculum of Computer Engineering which had been established in 1974.

## ● Message from the Chairman

Welcome to the Graduate Program in the School of EECS at Kyungpook National University (KNU). Since established in 1972 with seven graduate students, the school has awarded 3,362 MS and 473 Ph.D. degrees until today and currently grants 140 MS and 25 Ph.D. degrees every year. The mission of our graduate program is to foster professional engineers and researchers capable of creating knowledge with global competitiveness. Consequently, during the last decades, the school has produced an outstanding work force to cater for domestic IT industries and led academic programs and research development in the field of IT by cultivating high-quality research personnel who have international competitiveness and leadership.



Jung-Hee Lee, Professor



# Graduate Program in the School of Electrical Engineering and Computer Science



We are very proud of our world renowned faculty members, students, and advanced research facilities. Our program has been consistently top-ranked in Korea. The school has successfully received a variety of government funding through Brain Korea (BK) 21 program and the World Class University (WCU) projects from the Korean Ministry of Education, Science and Technology. Thus, with all of these, the school is well poised to achieve its mission of excellence in education and research.

I hope that you can take a great opportunity in the Graduate Program in the School of EECS at KNU to realize your dream towards a world-class engineer. If you need any further information, please do not hesitate to contact us.

## Graduate Program

The School of EECS offers two graduate degree options (M.S. and Ph.D.) with the aims to foster best-quality world-class professionals in the fields of electronic engineering, computer science, computer engineering and electrical engineering. The M.S. degree offers students an opportunity to obtain breadth of knowledge through graduate course work and specialization skills while conducting research leading to an M.S. thesis. Also, the doctoral degrees (Ph.D.) enable students to acquire more extensive breadth and depth of knowledge through additional course work and by completing a dissertation in their chosen field of excellence. Specific degree requirements for each of these degrees are listed in the KNU Admission Guide for International Students, which is downloadable from the web site <http://wcms.knu.ac.kr:8080/interEng/index.jsp>.

Additionally, the School of EECS offers co-operative educational programs with several well-known research institutes, such as Korea Research Institute of Standards and Science (KRISS), Electronics and Telecommunications Research Institute (ETRI), Korea Institute of Machinery & Materials (KIMM), and Korea Atomic Energy Research Institute (KAERI), for M.S. and Ph.D. degrees. Also, the school provides off-campus classes for working professionals in the Gumi industry complex area, such as LG Electronics Inc., Samsung Electronics Inc., and etc. In such cases, the degree and the courses to be offered are customized along with the time the classes are taught.

The graduate program of EECS currently has 11 research tracks as follows :

- Embedded Systems Engineering
- Information and Communication Engineering
- Radio Communication Systems Engineering
- Semiconductor & Display Engineering
- Circuits & Systems Engineering
- Mobile & Information Systems Engineering
- Video Systems Engineering
- Signal Processing
- Knowledge & Information Computing
- Convergence Software

Besides, in order to meet individual student needs, plans of study in other areas can be constructed in conjunction with a faculty adviser.

Currently most of our graduate students participate in various research projects funded by government, industry, or both. For graduate students in EECS, the four types of scholarships or fellowships are offered as follows

- BK21 scholarships
- University scholarships
- Research center fellowships
- Enterprise supported fellowships

As of year 2009, 81.1% out of all EECS graduate students were recipients of scholarships or other financial aids.

For further detailed information, you can refer to the School of EECS web site, [http://cite.knu.ac.kr/ee\\_new/grad01/main/main.aspx](http://cite.knu.ac.kr/ee_new/grad01/main/main.aspx)

## Faculty

<b>Ahn, Gwang-Sun</b>	Professor, Embedded Systems Lab.
<b>Bae, Keun-Sung</b>	Professor, Mind-machine Interaction Research Lab.
<b>Bae, Jin-Hyuk</b>	Assistant Professor, Molecular Engineering for Next Generation Nanoelectronics Lab.
<b>Baek, Nak-Hoon</b>	Associate Professor, Mobile Graphics Lab.
<b>Baek, Yeong-Sik</b>	Professor, Power System Lab.
<b>Chien, Sung-Il</b>	Professor, Digital Image & Display Image Lab.
<b>Cho, Ho-Shin</b>	Professor, Mobile Communication Lab.
<b>Cho, Jeong-Hun</b>	Associate Professor, Embedded System Software Optimization Lab.
<b>Cho, Jin-Ho</b>	Professor, Biomedical Electronics Lab.
<b>Cho, Young-Ki</b>	Professor, Microwave & Antenna Lab.
<b>Cho, You-Ze</b>	Professor, Telecommunication Networks Lab.
<b>Choi, Bong-Yeol</b>	Professor, Control System Lab.
<b>Choi, Byung-Cho</b>	Professor, SwitchMode Power Conversions Lab.
<b>Choi, Doo-Hyun</b>	Professor, Intelligent Information System Lab.
<b>Choi, Hyun-Chul</b>	Professor, RF & Microwave Lab.
<b>Choi Hong-Soon</b>	Assistant Professor, Electromechanics Lab.
<b>Choi, Jong-Woo</b>	Professor, Power Conversion Lab.
<b>Choi, Jun-Rim</b>	Professor, Digital Network Lab.
<b>Choi, Pyung</b>	Professor, ASIC Lab.
<b>Choi, Si-Young</b>	Professor, Semiconductor Device & Processing Lab.
<b>Choi, Tae-Ho</b>	Professor, Automation Lab.
<b>Choi, Yun-Ja</b>	Assistant Professor, Software Safety Engineering Lab.
<b>Chung, Yeon-Bae</b>	Associate Professor, ULSI ElectroSystems Lab.
<b>Ha, Yeong-Ho</b>	Professor, Color and Imaging Lab.
<b>Hahn, Sung-Ho</b>	Professor, Semiconductor Sensor & Optical Device Lab.
<b>Han, Dong-Seog</b>	Professor, Wireless Communications Lab.
<b>Hahn, Joon-Ku</b>	Assistant Professor, 3Dimensional Optical Technology Lab.
<b>Han, Ki-Jun</b>	Professor, Network Lab.
<b>Han, Wook-Shin</b>	Associate Professor, Database Lab
<b>Hong, Jae-Keun</b>	Professor, Speech Signal Processing Lab
<b>Hong, Sun-Mog</b>	Professor, Mobile Communication Systems Lab.
<b>Hwang, Chan-Sik</b>	Professor, Data Communication Systems Lab.
<b>Jung, Soon-Ki</b>	Professor, Virtual Reality Lab.
<b>Kalyana C. Veluvolu</b>	Assistant Professor, Nonlinear Control and Bio-Signal Processing Lab.
<b>Kang, In-Man</b>	Assistant Professor, CMOS Device Modeling Lab.
<b>Kang, Shin-Won</b>	Professor, Opto-Electronic Functional Device Lab.
<b>Kang, Soon-Ju</b>	Professor, Real Time System Lab.
<b>Kim, Chae-Young</b>	Professor, Electromagnetic Wave Lab.
<b>Kim, Deok-Gyu</b>	Professor, Audio Video System Lab.
<b>Kim, Dong-Hun</b>	Associate Professor, Applied Electromagnetics & Design Optimization Lab.
<b>Kim, Dong-Kyun</b>	Associate Professor, Mobile Network Protocol Lab.
<b>Kim, Hak-Rin</b>	Assistant Professor, Display & Nano-Organic Electronics Lab.
<b>Kim, Hang-Joon</b>	Professor, Artificial Intelligence Lab.



<b>Kim, Hong-Joon</b>	Assistant Professor, Microwave and Wireless System Lab.
<b>Kim, Heung-Keun</b>	Professor, Power Electronics Lab.
<b>Kim, Hyung-Pyo</b>	Professor, Sense Device & System Lab.
<b>Kim, Hwang-Su</b>	Professor, Computational Intelligence & Machine Vision Lab.
<b>Kim, Hyun-Deok</b>	Associate Professor, Communication Systems Research Lab.
<b>Kim, Il-Gon</b>	Professor, Intelligence Information Lab.
<b>Kim, Ji-Hyeon</b>	Assistant Professor, Nano-Bio Photonics Lab.
<b>Kim, Jin-Kyu</b>	Associate Professor, Applied High Voltage & Electrostatics Lab.
<b>Kim, Jung-Joon</b>	Associate Professor, IT Convergence Lab.
<b>Kim, Kang-Wook</b>	Professor, Microwave Communications Lab.
<b>Kim, Ku-Jin</b>	Associate Professor, Computer Graphics Lab.
<b>Kim, Min-Young</b>	Assistant Professor, Optomechatronics and Multi-scale Robotics Lab.
<b>Kim, Nam-Chul</b>	Professor, Visual Communications Lab.
<b>Kim, Sang-Wook</b>	Professor, Mobile Multimedia Laboratory
<b>Kim, Seong-Ho</b>	Professor, Realtime Image Processing & Telecommunication Lab.
<b>Kim, Sun-Ja</b>	Professor, Computer Networks Lab.
<b>Kim, Young-Mo</b>	Professor, Digital Imaging Lab.
<b>Koh, Kwang-Sik</b>	Professor, Digital System Design Lab.
<b>Koh, Seok-Joo</b>	Associate Professor, Communications Protocols Lab.
<b>Kong, Seong-Ho</b>	Associate Professor, Lab. for Intelligent Micro-Sensor Systems
<b>Kwon, Woo-Hyeon</b>	Professor, Computer Applied Control Lab.
<b>Lee, Dong-Ho</b>	Professor, Computer Architecture Lab.
<b>Lee, Dong-Ik</b>	Associate Professor, Dependable Embedded Control Systems Lab.
<b>Lee, Eun-Ju</b>	Associate Professor, Software Engineering Lab.
<b>Lee, Jong-Hyun</b>	Professor, Micro Electro Mechanical System Lab.
<b>Lee, Jung-Hee</b>	Professor, Optoelectronic Device Lab.
<b>Lee, Kyun-Kyung</b>	Professor, Underwater Acoustic Signal Processing Lab.
<b>Lee, Min-Ho</b>	Professor, Artificial Brain Lab.
<b>Lee, Sang-Jo</b>	Professor, Language & Information Processing Lab.
<b>Lee, Se-Hee</b>	Associate Professor, Lab. for Electromagnetic Multiphysics
<b>Lee, Seong-Gi</b>	Professor, Computer Game & Device Software Lab.
<b>Lee, Woo-Jin</b>	Associate Professor, Embedded Software Engineering Lab.
<b>Lee, Yun-Jung</b>	Professor, Intelligent Robot Lab.
<b>Lim, Kyung-Sik</b>	Professor, Wireless Information & Communications Lab.
<b>Moon, Byung-In</b>	Associate Professor, System On Chip Lab.
<b>Moon, Sang-Jae</b>	Professor, Communication & Information Security Lab.
<b>Park, Hong-Bae</b>	Professor, Robust Control Lab.
<b>Park, Hyeyoung</b>	Associate Professor, BC Lab.
<b>Park, Jong-Hee</b>	Professor, A.I. & Multimedia Lab.
<b>Park, Jong-Hoo</b>	Assistant Professor, Nanoscale Engineering Lab.
<b>Park, Jong-Sik</b>	Professor, VLSI Design Lab.
<b>Park, Jong-Tae</b>	Professor, Advanced Information Network Lab.
<b>Park, Joon-Goo</b>	Associate Professor, Mobile Software & Navigation Lab.
<b>Park, Kil-Heum</b>	Professor, Image Processing Lab.
<b>Park, Se-kwang</b>	Professor, Applied Semiconductors & Microprocessors Lab.
<b>Park, Se-Young</b>	Professor, Intelligence Information Retrieval Laboratory
<b>Park, Seong-Bae</b>	Associate Professor, Machine Learning Lab.
<b>Park, Soon-Yong</b>	Associate Professor, Computer & Robot Vision Lab.
<b>Park, Young-Chul</b>	Professor, Database System Lab.
<b>Paul, Anand</b>	Assistant Professor, Embedded Computing Lab.
<b>Ryu, Kwan-Woo</b>	Professor, Digital Media Lab.
<b>Seo, Bo-Hyuk</b>	Professor, System Control Lab.
<b>Seo, Dae-Hwa</b>	Professor, Mobile Computing & Embedded System Lab.
<b>Shim, Jae Hoon</b>	Assistant Professor, Communications circuits and systems lab.
<b>Shin, Jang-Kyoo</b>	Professor, Microsystems Lab.
<b>Shin, Mi-Young</b>	Associate Professor, Bio-Intelligence Mining Lab.
<b>Sohng, Kyu-Ik</b>	Professor, Audio and Video Signal Processing Lab.
<b>Song, Jae-Won</b>	Professor, Light Wave Lab.
<b>Tae, Heung-Sik</b>	Professor, Plasma Display Electronics Lab.
<b>Vyacheslav Tuzlukov</b>	Professor, Signal Processing Lab.
<b>Yoo, Kee-Young</b>	Professor, Information Security Lab.
<b>Yoo, Sang-Dae</b>	Professor, Integrated Systems Lab.



## ● Research Institutes and Centers

The Graduate Program in the School of EECS maintains a number of research entities that foster collaborative research on multidisciplinary projects that attract faculty from other departments and schools on campus and outside of KNU. Research results from these prominent entities are consistently published in top-notch domestic and international journals in the respective fields. Depending on size, these entities are referred to as institutes or centers.

- Institute of Semiconductor Fusion Technology
- The Institute of Electronic Technology
- Center for U-Healthcare Convergence Network
- Underwater Communication/Detection Research Center
- Center for Functional Devices Fusion Platform
- Digital Technology Research Center
- IDEC Regional Center
- Sensor Technology Research Center
- Mobile Network Security Technology Research Center
- Center for Embedded Software Technology
- Center for Microgrid Research
- Advanced Research Center for Recovery of Human Sensibility
- Institute of Software Engineering
- Center for IT and Automobile Convergence
- Center of Self-Organizing Software Platform

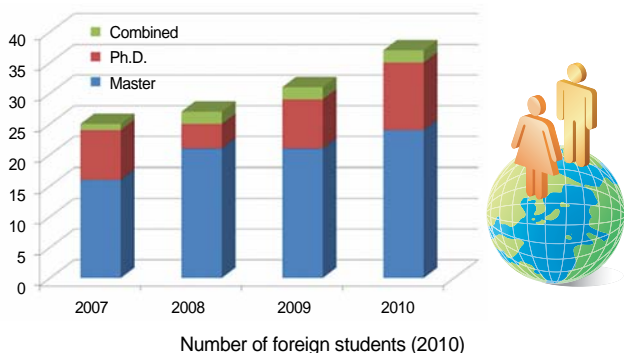
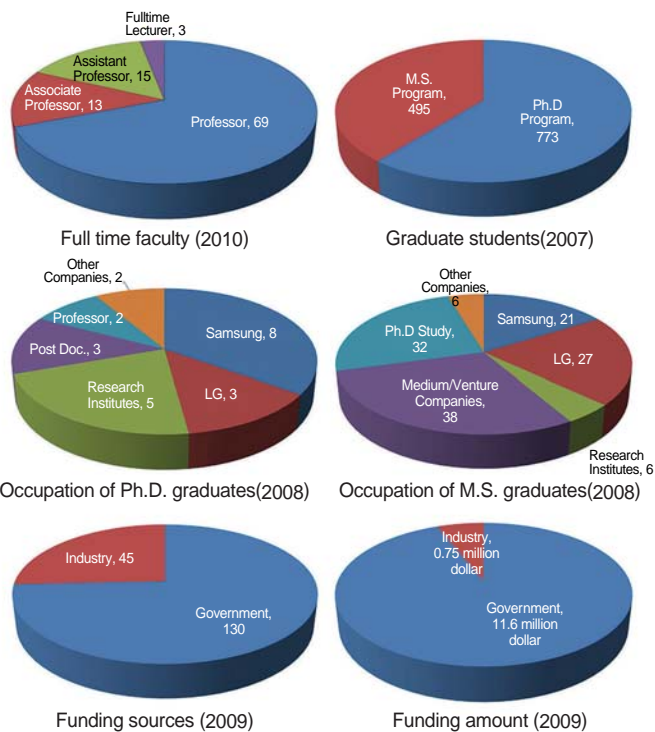
## ● Facilities and Research

The Graduate Program in the School of EECS shares all facilities with the undergraduate programs in the College of IT Engineering (CITE). The school occupies 14,000 square meters of lecture, research and laboratory spaces in six buildings. All lecture rooms are equipped with wireless LAN and 100Mbps Internet environment, wireless microphone system, beam projector, OHP, and heating and air conditioning systems. CITE maintains 40 laboratories with state-of-the-art infrastructure and world-class level experimental environments. The students are provided with hands on experience and learning with the state-of-the-art technology. All research programs in the department employ the extensive computing facilities available for education and research, including two state-of-the-art cleanrooms.

The school's research volume has continued to be very strong with research expenditures of more than 15 billion won in 2009. This funding enables constant upgrades of our research equipment and provides support to more than 330 graduate research assistants. The Graduate School of EECS faculty members and students lead or participate in numerous research projects funded by major agencies such as Ministry of Education, Science and Technology (MEST), Electronics and Telecommunications Research Institute (ETRI), Korea Electrotechnology Research Institute (KERI), Agency for Defense Development (ADD), National Institute of Health (NIH), Korea Electric Power Co. (KEPCO), and industrial research with regional high-technology companies: Samsung, LG, Hyundai, etc.



● **KNU School of EECS at a Glance**



● **Scholarships for International Students**

▶ **KNU Honors Scholarships**

- **Qualifications** : Applicants with recommendations from their academic advisors and Dean of their department. Also applicants should meet certain conditions (refer to the university website for details)
- **Benefits** : 100% or 50% of tuition fees, health insurance, monthly stipend from academic advisor
- **Support period** : 2 years for master's or doctoral program, 4 years for combined master's & doctoral program

▶ **BK21 Scholarships**

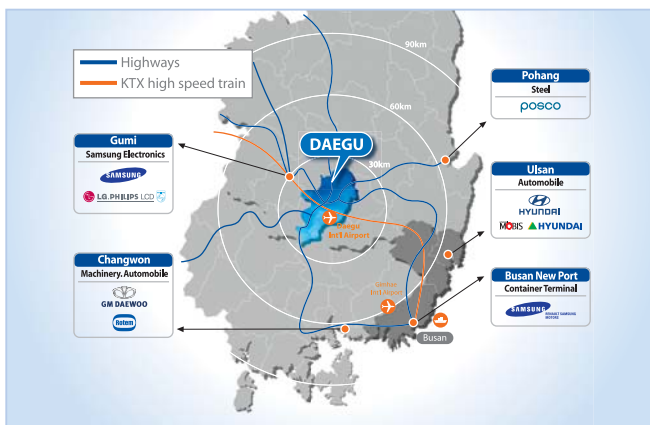
- **Qualifications** : Applicants with recommendations from their academic advisors
- **Benefits** : Monthly stipend (\$400~\$600/month for master's, \$800~1000/month for doctoral program)
- **Support period** : 2 years for master's, 4 years for doctoral program

● **How to get to KNU**

- ▶ **From Daegu International Airport**
  - Bus : 719, Dong-gu2(동구2) • Taxi : 15 minutes
- ▶ **From Dongdaegu Railway Station**
  - Bus : 937 • Taxi : 10 minutes
- ▶ **From Dongdaegu Express Bus Terminal**
  - Bus : 937 • Taxi : 15 minutes

● **About Daegu**

The City of Daegu is currently well developed in such industries as fashion and textile, machinery and optical products. In addition, our city has promoted the industries of IT, BT and NT as well as international facilities for convention and exhibition. Above all, the City of Daegu is oriented toward a sustainable city as to insure a high quality of human life by restoring and preserving its natural environment.



■ **How to apply**

▶ **Non-scholarship applicants**

Complete application documents → pay application fee → submit documents the Office of International Affairs

▶ **KNU Honors Scholarships (KHS) Applicants**

Consult academic advisor for KHS scholarship → submit application forms and documents to academic advisor → pay application fee → academic advisor sends application documents to Office of International Affairs along with recommendation letter and financial support letter

■ **Contact Information**

To learn more about our graduate program, please contact either the Graduate Office of EECS, or Office of International Affairs.

▶ **Graduate Office of EECS: (Ms. Hye-Eun OH)**

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Website : [http://cite.knu.ac.kr/ee\\_new/grad01/01\\_sub/01\\_sub.aspx](http://cite.knu.ac.kr/ee_new/grad01/01_sub/01_sub.aspx)

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