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Cooperational Graduate Education Program
for the Development of Global Human Resources
in Energy and Environmental Science and Technology



The fourth issue of CAMPUS Asia News Contents

2nd batch of DD students (30 students) successfully graduated.
CA program will get MEXT Minister's Award in Engineering Education.
CA-EEST DD program will be continued.
Summary and future prospect of the present CA program
Voices from DD students at their Graduation

In the fiscal year of 2015, 30 students (KU-PNU 12, KU-SJTU 10 and PNU-SJTU 8) have graduated with double degrees (DD) in two universities among the consortium three universities, following 20 DD graduated in 2014. The three universities are quite satisfied with successful graduation of 50 DD students in total, and agree to continue the DD program at least one more year. Although the government support on the present CA program was once terminated at 2015, the three governments, China, Korea and Japan have decided to extend or restart the CA program.

The three universities hope to get continuous support.

In this News Letter, at the end of the government supported program, all results and outcomes are summarized and future prospects for the continuation and further expansion of the CA DD program are given in detail.



All EEST Course students (DD & Non-DD) and with faculty members at Graduation Ceremony at KU (2016/3/25)



KU-DD students at graduation ceremony in PNU (2016/2/26)

I Enrollment in Host University as a candidate DD student

A DD candidate student enrolled in Home University studies following the curriculum of his major to satisfy all required conditions for the graduation in the Home Univ. To get DD, in addition, he/she shall take three-in-one module program given in the table 1. Firstly, he officially enrolls in Host University and study there in one semester to get 10-14 Credits. In summer, he/she takes Summer School to study Energy and Environmental Science and Technology (EEST) concentrately getting 3 Credits in each year.

Attendance of seminars including Scientific Tour/Field Trip and Discussion/Debate related to EEST, and an international research seminar adds his knowledge in EEST, improves communication skills in English, and enhances international exchange.

The student get 6 Credits in total with the attendance of two times of the summer school. With the aid of around 10 Credits transfer from Home Univ. to Host Univ. around 10, he/she is able to satisfy the required number of Credits for the graduation of Host Univ.

Table 1 Three-in-one module program

I Exchange Student 1 semester in Host Univ.		10-14 Credits by lectures Laboratory study Cultural exchange, Language	Credit transfer from Home Univ. 10-12 Credits	
II Summer School 12days	1st year	2 Credits by lectures 1 Credits by laboratory exercise	Total of 6 Credits	
	2nd year	2 Credits by lectures 1 Credits by laboratory exercise		
		Interim appraisal of master thesis	Evaluation	
III Seminar 2-3days	Spring	1st year	Scientific Tour/Field Trip Discussion/Debate	Relating EEST
	Research	2nd year	Presentation of research for mainly PhD students	English presentation

Orientation to inbound DD students at KU 2014/4/3



KU-DD students attended Enrollment Ceremony at SJTU 2014/9/12

II Scientific Tour and Field trip

Scientific Tour (2014/7/18)



Toso Co. Ltd.



Toyota

Summer school in 1st year (2014/8/11-22)



Interim appraisal of thesis



Summer school in 2nd year (2015/8/17-27)

III Graduation getting DD

A DD candidate student shall submit his master course thesis in common to both Home and Host Universities. And the thesis is evaluated by three procedures given in table 2. The interim appraisal is done in the 2nd Summer School. Those who pass the interim appraisal continue thesis research work and submit common master thesis written in English common to universities and take defence for their thesis presentation. The defence is evaluated by common evaluation committee in two universities through TV meeting as shown in photos. The submitted theses are reviewed by review committees in two universities independently. The decision of Home Univ. is prioritized to confirm the

quality assurance.

Table 3 shows number of students enrolled and graduated in each year from 2013-2016.

Table 2 Procedures to evaluate Master thesis

Interim appraisal	During Summer School in 2nd year	Should pass
Thesis	One common thesis written in English	Evaluated independently in two Univ.
Defense	A few review members from each Univ.	Should pass
Should pass in Home Univ. independently.		

Table 3 Number of DD students enrolled and graduated

Home Univ.	Host Univ.	2012	2013		2014		2015		2016
		Exchange only	Enrollment	Graduation (2015)	Enrollment	Graduation (2016)	Enrollment	Graduation (2017)	Enrollment
Kyushu Univ. (KU)	SJTU	3	5	4	6	4	5		
	PNU	3	5	5	6	6	2		
Pusan National Univ. (PNU)	KU	3	4	1	4	3(Fall)+3	3		5
	SJYU	3	3	3	6	2	7		
Shanghai Jiao Tang Univ. (SJTU)	KU	3	5	5	6	6	8		7
	PNU	3	2	2	6	6	8		8
Total		18	24	20	34	30	34		



Thesis defense by TV meeting system



Presentation by DD candidate students

At the graduation, a DD student is awarded Diploma and Certificate of Master Degree independently from Home and Host Universities. In addition, he/she is awarded Certificate of graduation getting DD in the framework of Campus Asia program signed by three representatives of the CA program of the three universities. Exchange students who did not get DD are awarded Certificate of completion of the CA-EEST program. Non-DD students who attended Summer School get Certificate of the attendance.



Certificate of attendance of SS



Certificate of completion of EEST course



Certificate of getting DD

Following table 4-7 are names of graduated students with DD and titles of their thesis.

Table 4 Thesis titles of graduated students with DD at Sep. 2015

Home Univ.	Name (PNU-KU)	Title of Thesis Presentation
PNU	Lee Yeonkyung	Development of Driving Cycle for fuel consumption measurement on the basis of Proving Ground
	Eom Seongyong	Effects of Pyrolysis and Gasification of Coals on Electrochemical Reaction in Direct Carbon Fuel Cell
	Choi Cheolyong	Numerical Analysis of De-NOX Efficiency with Mixing Units in Marine SCR System

Table 5 Thesis titles of graduated students with DD (KU-PNU) at March. 2016

Home Univ.	Name (PNU-KU)	Title of Thesis Presentation
KU	Akishima Takaomi	Assessment of One-Dimensional Turbulence in a Projection Operator Method
	Enokida Tatsuhiro	Generation of anisotropic electron distributions in the earth's magnetosphere
	Ikemoto Sho	Wind Tunnel Experiment on How Mean Flow Heterogeneity Affects Turbulent Statistics over a Block Array
	Murayama Tomohiko	Effect of Coexisting Substances on Iodine Emission via Chemical Reactions of Iodide in Ice
	Nakamura Shingo	Experimental Study on Evaporation and Condensation of Low-GWP Refrigerants in Horizontal Micro-fin tube
	Okada Shinya	Study of the Wake of the Wind Farm and the Layout Optimization
PNU	Cho Jaemin	Impedance Study for Comparison of Electrochemical Reaction of Graphite and Sub-bituminous Coal in Direct Carbon Fuel Cell
	Huang Sheng	PIV Measurement of Pulsating Flows in 4D Curved Tubes Using Refractive Index Matching Method
	Zhu Lixin	Hydrodynamic Performance of a Vertical Circular Cylinder with a Heave Plate Placed in the Regular Waves

Table 6 Thesis titles of graduated students with DD (KU-SJTU) at March. 2016

Home Univ.	Name (KU-SJTU)	Title of Thesis Presentation
SJTU	Lin Lidan	Synthesis of zeolite/hydrous metal oxide composites from coal fly ash as efficient adsorbents to remove methylene blue from water
	Qian Yingjia	Preparation and Evaluation of Polytetrafluoroethylene Composite Membrane with Graft Polymerizing Acrylic Acid and Self-assembly $g\text{-C}_3\text{N}_4\text{-TiO}_2$
	Tan Beihui	Synthesis and Characteristic of TiO_2 Film and TiO_2/WO_3 Composites Film on Ti Plate
	Lai Li	The Study on Functionalized Magnetic Core/Shell Structured $\text{Fe}_3\text{O}_4@\text{SiO}_2$ Nano-particles Adsorbents and Properties of Removing Phosphate from Water
	Liu Chong	Blade Optimization Design And Performance Analysis of Horizontal Axis Wind Turbine
	Sun Ling	A Study on Toxicity effects of Organic UV Filters and PFCs in Human Embryonic Lung Fibroblasts
KU	Kawashima Ryosuke	The observation of plasma behavior in a Magnetic Thrust Chamber for Laser Fusion Rocket
	Shibata Ryosuke	Development of SVD Algorithm for Turbulence Tomography
	Shiosaki Kota	PIC simulation of collective Thomson scattering in a non-equilibrium plasma
	Kawano Michihisa	Kinetic Analysis and Modeling of Combustion of Heavy Oil

Table 7 Thesis titles of graduated students with DD (PNU-SJTU) at March. 2016

Home Univ.	Name (PNU-SJTU)	Title of Thesis Presentation
SJTU	FENG Kaili	The Synthesis and Application Research of Rare Earth Elements Co-doped $\text{ZnWO}_4\text{-TiO}_2$ Upconversion Photocatalyst
	XU Yingheng	Simultaneous Organics and Nitrate Removal in a Photocatalytic Fuel Cell Using a Biofilm Cathode
	HE Yuling	Experimental Study on Aerobic Flat-sheet Membrane Bioreactor for Coal Gasification Wastewater(CGW) Treatment
	HUO Xi	Studies on Treatment and Resource Utilization for Starch Wastewater
	GAO Shanfu	LES of Flow Passing a Single Row Circular Cylinder Array
	ZHOU Zhaowei	Study on the 3D Micro-EDM Milling Strategy Based on Fix-length Compensation Method
PNU	LEE Gwanseop	Observation of Tube Vortex in Swirl-Stabilized Pulverized Coal Flames
	JEONG Heejin	The Occurrence Pattern of UV Filters and Illicit Drugs in Korean Water Environment during Summer Holiday Season

IV Graduation Ceremony



Mr. Sho Ikemoto (an EEST course DD student) got a special award from the president of Kyushu University for his PR activity on CA at Graduation Ceremony (2016/3/25)



Awarding Master course degree to a SJTU-DD student at graduation Ceremony in Interdisciplinary Graduate school of Engineering and Sciences, Kyushu University (2016/3/25)



KU-DD students from KU with faculty members at Graduation ceremony in Graduate School of Engineering, Shanghai Jiao Tong University (2016/3/26)



Diploma



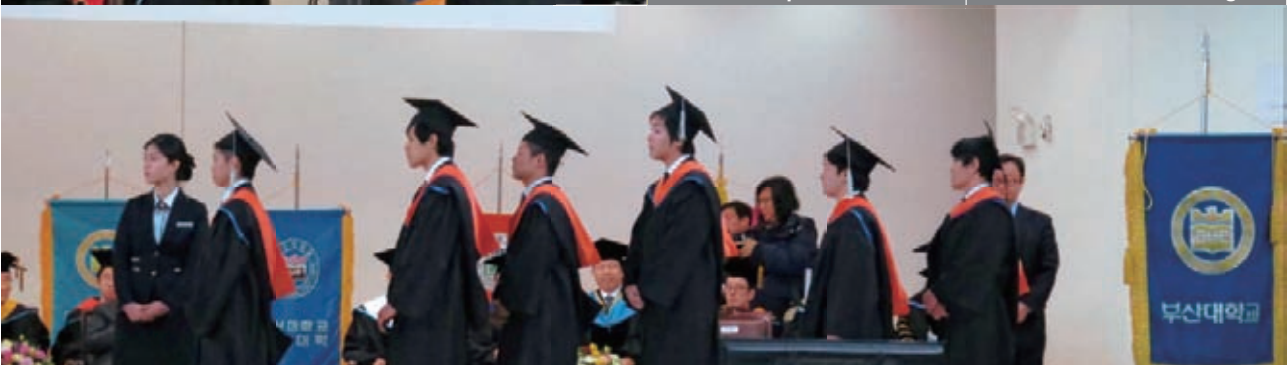
Certificate of Master Degree



Diploma



Certificate of Master Degree



KU-DD students getting certificate at Graduation ceremony in PNU (2016/2/26)

V Summary and future prospect

CA-EEST DD program shall be extended to be a regular program!

The present CA program aiming DD has terminated at April 2016 due to the termination of the governmental support. Since the DD program has been carried out very successfully, three universities highly desire to continue the DD program as a regular course. It should also be mentioned that the DD program has been established quite well and any two universities could employ or follow this program to establish DD courses between them.

Three governments, China, Korea and Japan,

have agreed to extend the CA program, and will accept new application for the extension or a new program. However, details on the application are not released yet. Therefore, the three universities have agreed to extend the DD program at least one year based on their own budget. Further extension will be determined within 2016. New program shall be targeting to transform the present DD program from the pilot program to the regular program and even widen (extend) to DD in doctoral course.

Summary at the termination of the government support

V-I Accomplishment

“Cooperational Graduate Education Program for the Development of Global Human Resources in Energy and Environmental Science and Technology (CAMPUS-Asia EEST)” has started as a pilot program in three consortium universities (Kyushu University, Shanghai Jiao Tong University and Pusan National University) to award double degrees (master degree) in the EEST field in two universities among the three within a normal enrollment period and with one common master thesis written in English.

- (1) Making student exchange agreement/MOU aiming double master course degrees (DD), a new education system, CAMPUS-Asia EEST, is implemented at 2013.
- (2) In every year, around each 5 students (total of 30 students) have been mutually exchanged among the three universities in one semester. Accordingly, 20 students (9 from KU, 7 SJTU and 4 PNU) were successfully graduated with DD from the two universities among the three at 2014. In 2015, the

total of 30 students (KU 10, SJTU 12, and PNU 8) will graduate with DD.

- (3) To widen the program, some of EEST course programs, such as Summer School and Seminars in spring and autumn, are widely open for non-DD students in the three universities and even students outside of the consortium. Within four years from the program starting, more than 700 students in gross numbers have been attending the exchange program.
- (4) An important achievement of DD program is, in addition to awarding DD, that all the involved students have become good friends and known the other country better based on cross-cultural understanding, which is also the aim of the “Asian Future Leaders Scholarship Program” of CAMPUS-Asia. Moreover, they have learned to be expertizes in EEST.
- (5) Japan Society for Engineering Education has decided to give MEXT Minister’s award to the CA program.

V-II Beneficial outcome — Advancement of globalization —

The most significant point given by the CA program is the enhancement of inter nationalization of Chikushi Campus. The Campus has received many foreign students. Since they are mostly PhD students, they stay in their research laboratory having limited exchange with other students. While the CA program brings many foreign students in master course and significantly encourages student exchange between Japanese and foreigners in their course studies.

In particular, Summer School and Seminars have given great opportunity to study and discuss together in English for many students from various countries.

Accordingly,

1. Japanese students become better in communication in English.
2. Students from SJTU are so smart to give favorable influence to Japanese students.
3. Most of DD students have improved their ability to communicate in English.
4. Professors become willing to accept foreign students. Some professors still hesitate to allow students to take the DD course.
5. Lectures given by English are significantly increased.
6. The students exchange triggers research cooperation with partner universities.

V-III Problems solved and remained in the DD program and lessons

It is impossible to give double degrees between two universities in Japan with one common thesis. While the present program makes it possible between universities in foreign countries. There are still a few professors doubting to award DD for one common thesis between two universities. Upon designing the program, three consortium universities discussed the role of master thesis and agreed followings; although writing the Master thesis based on the thesis research is compulsory, it is not required to include fully new results like PhD thesis. All procedures to accomplish the master thesis including laboratory research, analysis and writing the thesis shall be evaluated and the evaluation could be common in two universities. Hence, the three universities agreed to accept one common thesis in written in English for DD.

The program is quite beneficial for DD students able to be awarded DD without additional enrollment period. On the other hand, there appear two disadvantages,

1. They are short in time to make thesis research in their Home University.

2. Research themes in Host University may not match those in Home University.

The first one cannot be avoided. To get DD, DD candidate students shall learn more for more Credits than normal students shall. That is acknowledged to the DD candidate students at the beginning. Several students failed to get DD owing to shortage in Credits and/or poor quality of thesis, which is an evidence for the quality assurance. Some professors hesitate to allow his student to be a DD candidate afraid of shortage in time for his thesis study. In addition, some students want matching in their research themes in both Home and Host Universities. Nevertheless, one of the most important purposes is to enhance student exchange and increase globalization. In this respect, the DD program is beneficial for students. Furthermore, studying different subjects widens eyes of the students and the program encourages students to select a little different subject in Host University. We believe, in this respect, the continuation of the program would give realistic or better solutions.

V-IV Quality assurance

Quality Assurance (QA) is fully kept based on standard for awarding master course degree in each participating university. Consequently, thesis study of a DD student must be approved through the same way as that for a regular student in the Home University; otherwise DD will not be awarded. Establishment of common evaluation system of master thesis, one,

interim appraisal and the other, final thesis defense, is another important factor for the quality assurance. The three universities rely on QA and quality of each university as a well-established university with each other. Without such mutual trust, the DD program could not be established.

V-V Future prospects — extension and regularization — , DD or JD

The present DD program with one common thesis would be more suitable to operate to award Joint Degree (JD: Awarding one common degree between or among consortium universities). At the beginning, the ultimate target of our present CAMPUS Asia EEST program was set to award JD, while it was not allowed in the installation criteria of Japanese universities and graduate schools at that time. In 2014, MEXT, Japan has revised the installation criteria to allow JD between a Japanese university and a university abroad. However, Chinese government does not allow JD yet. Internationally JD seems encouraged, while most of students prefer DD.

Although a few professors doubt to award DD for one common thesis between two universities, the three universities agree to continue to operate the DD program and try to regularize it with keeping the quality assurance. To be a regular course for the program, more clear definition and role of making thesis works seem to be required. Expansions of the program to include more students and universities are targeted.

Since the present framework to award DD is well established and any other consortium universities are welcome to employ the framework.

VI Voices from DD students at their graduation

Questionnaire investigations for DD students and teachers were occasionally done, and answers and suggestions to improve the program were considered honestly. According to answers to the questionnaire, most of the DD-students were quite satisfied with the program and hope to continue the program.

VI-1 Summary of replies of DD students to questionnaire just at the end of stay in Host university

Questionnaire		Foreign students	Japanese Students
1	How were you satisfied with the CAMPUS-Asia double degrees program as a whole?	Extremely	5
		Significant	2
		A little	
		Less	
2	Did you get enough mentorship form your supervisor in Host University?	Excellent	6
		Very good	3
		Good	1
		Poor	
3	Did you get enough support of the CA program office or officers in Host University?	Excellent	8
		Very good	1
		Good	
		Poor	
4	What were the best or the most impressive and the worst things among those you experienced in your campus life or daily life in abroad?	The best or the most impressive	Nice Hospitality/ Support(3) Cross cultural communication(3) Stay in Japan(2)
		The worst	Non (all) Poor management (2)
5	What will be the most important thing among those you have got in the program in your future?	English skill (3), Making friend(4) International and cross cultural (2) Studying abroad (1)	Improvement of English (3) Communication (4) Spirit(3)
6	Do you think you have got or will get some advantage with getting double degrees? If yes, please show what kind of advantages or in what kind of aspects.	Yes (all)	Yes (all)
7	Do you have or feel any difficulties to graduate two master courses in Home and Host Universities? What were those, if any?	No difficulty (all)	Thesis studies in Home Univ.(3) Lectures (2)
8	What was the most difficult among following points? (Multiple answers will be OK)	Lectures in Home Univ.	2
		Thesis studies in Home Univ.	3
		Lectures in Host Univ.	
		Laboratory studies in Host Univ.	1
		Communications with using English	2
		Life in abroad (at Host Univ.)	2
		Other difficult points	0
9	How did you like your life in the dormitory of Host Univ.?	Quite good or no problem (10) Bit far from Univ.(1)	Good or no problem (6) Bit dirty (3) No good(2)
10	Have you had enough opportunity to exchange ideas, opinions and others with your friend in Host Univ.?	Quite well	4
		Good	6
		it was difficult	
		Very poor	
11	Please give your impressions on students of Host Univ. comparing with those in Home Univ.	Japanese are polite and kind (7)	SJTU students have good English skill(4) Higher motivation to study(4) Foreign students are more aggressive (2)
12	Which do you prefer DD or JD? Reason	Double degrees	All(9)
		Joint degree	
			All(10)
13	Opinions or comments on the program freely or any suggestions to improve the program.	Acknowledge the program(7) Wish to keep the program longer(all) Wish to have Labo matching	Acknowledge the program(6)

VI-2 Voices of DD exchange students at the end of stay at Host Univ.

Thanks to the kind Japanese friends, I was well taken care of. (smile) happy daily chat, thankful help when I in trouble... And we communicated with each other both in English and Japanese. Sometimes a few funny mistakes rose~ It is a great honor to have this opportunity to study and live in Japan!

I still remember the scene when I arrived in Japan: polite woman driver, enthusiastic supporters, clean roads, characteristic buildings etc. At the beginning of this semester, Everything seems quite fresh for me and I am hurry to experience total different life style here. With the widely talking with other people, I found the world is not so large as I think before.

I am so appreciate to Kyushu University offer me such a good choose to have a wonderful study experience in Japan .Meanwhile, I sincerely appreciate the teachers in CA office who help me a lot either in studying or daily life.

Two great impressions, knowing the country and playing with my friends we were always drinking, enjoying, crying, studying together everywhere. Cause of them, I can be happy. I really thanks to my lovely friends. That friendship is hard to say, hard to summarize, but that relationship is most important, best point to me in this program.. Every my Japan life is continuous of amazing. From this course, I can break my own-small world. I became more globalization. C.A. program is the best to become an open mind.

My life in Japan is really amazing although it is only 5 months. I enjoy my stay here and I am grateful for all the people I met here. The courses given by Kyushu University are of high quality and it really help me understand the energy and environment. I am showing my great respect to all the teachers in KU and thanks CA for provide me with this chance to experience Japan' life style.

First of all, it was the best opportunity I have ever gotten. Basically, I am really shy and not friendly person. But I had met a lot of friendly foreigners like Pakistani, Nepali, Mongolian, Italy and French as well as Chinese for 4 months. They always asked me "What do you usually eat in Japan?" and "How long does it take to go to Japan from Shanghai?" something like that. I didn't understand almost all of the questions because their English was so fast and even when I understand it, I had no idea what to say at first. I tried to explain it somehow but it was so weird for them I think. That was why some people who asked me something looked dubious. Whenever I saw that people, I felt very sad at first. However, I already expected that I couldn't explain anything very well before going Shanghai. So I had tried to ask anything that I didn't understand without hesitation when my friends said me something. I thought it might disturb them but actually they were willing to explain anything about it! Moreover, I hadn't only asked it but also had memorized a lot of English words to increase my vocabulary when I had free time. Thanks to them, my speaking and listening ability had progressed step by step. Even though there were a lot of difficulties during exchange period, my friends always helped me whenever I needed help. If I hadn't had any help from my friends, I would get low grade in Numerical Analysis which was the most difficult to understand among the classes I took. I really appreciate all my friends and CAMPUS Asia staffs as to my life in SJTU.

VII Summary of evaluation of effects of DD program on each KU-DD-student by his/her supervisor

Most of supervisors of KU-DD students acknowledge positive effects of joining CA-EEST DD program as seen in the following table. However, some supervisors feel difficulty to evaluate the effects. If a DD student did not participate in the program, how different he would be; he could have more advances in his thesis research. This could not be answered. The purpose of the program is to encourage to study abroad. To award DD within normal enrollment period, shortening time to have thesis study cannot be avoided. To establish the current DD program as a regular program more discussion on thesis work to award DD seems required.

As a whole		Significant	Good	No change	Not good
		2	4	4	0
Details		Significantly Improved	Improved	No change	Dropped
	English skill	2	6	2	0
	Power of expression	1	4	4	1
	Communication	0	5	4	1
	Motivation to study	1	4	4	1
Evaluation of thesis		1. Superior than others			2
		2. Average			5
		3. Poor			3