



Engineering Research and Development for Technology

2013 ANNUAL REPORT



The logo conveys the role of the consortium in the development of Engineering in the Philippines. The color composition resembles that of the Philippine national flag to promote the local engineering research and innovation. The hands along with the other symbols imply the strengthening partnership among the consortium members, affiliated agencies and different stakeholders in improving the quality of engineering research and education in the Philippines.

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Table of Contents

1	Message from the Program Leader
2	About ERDT, Objectives and History
4	2013 Annual Report
5	Human Resource Development Local Graduate Scholarship Program PhD Sandwich Program Faculty Development Program Visiting Professors and Researchers Program Faculty Research Dissemination Grant
28	Research and Development
31	ERDT Major Events and Activities ERDT Conferences, Congress and Summit ERDT-Consortium Activities
47	Appendices ERDT Completed Roadshows 2013 List of 2013 Graduate ERDT Scholars

ERDT Program Advisory Council
The ERDT Steering Committee
ERDT R&D Tracks Heads

Message from the Program Leader



As the Engineering Research and Development for Technology (ERDT) begins another cycle this 2014, I am pleased to present to you, through this publication, the accomplishments of the ERDT for the Program Cycle covering 01 January 2013 to 31 December 2013.

Five years have passed since its implementation in 2008, and ERDT has made strides in the attainment of the goals that are aligned with the program's components, namely, human resource development, research and development, and infrastructure development. In 2013, the 2nd ERDT Congress was held as well as the 9th ERDT Conference, which was co-located with the 14th Asia Pacific Industrial Engineering Systems Conference. There was also a significant increase in the number of master's and doctoral students enrolled in the consortium-member universities: Ateneo de Manila University, Central Luzon State University, De La Salle University, Mapua Institute of Technology, Mindanao State University – Iligan Institute of Technology, University of the Philippines Diliman, University of the Philippines Los Baños, and University of San Carlos.

The aforementioned accomplishments and other data are presented in detail in this report. I do hope that you will find the time to read this report, and together let us continue our efforts in making the ERDT work for Filipinos and for the betterment of our nation.

More power to ERDT!

A handwritten signature in black ink, appearing to read 'Aura C. Matias'.

AURA C. MATIAS, Ph.D.
Dean and ERDT Program Leader

The ERDT

The ERDT is a consortium of eight-member universities in the Philippines that offer mature Master's and doctoral degrees in various engineering fields. Ateneo de Manila University (ADMU), Central Luzon State University (CLSU), De La Salle University (DLSU), Mapua Institute of Technology (MIT), Mindanao State University – Iligan Institute of Technology (MSU-IIT), University of the Philippines (U.P.) Diliman, U.P. Los Baños and University of San Carlos (USC) constitute the consortium.

OBJECTIVES

The ERDT is created to deliver high impact researches aligned with the country's National Science and Technology Plan (NSTP) and the Medium-Term Development Plan (MTDP), to attain a critical mass of MS and PhD graduates, to upgrade the qualifications of practicing engineers, and to develop a culture of Research and Development (R&D).

HISTORY of ERDT

In April 2007, former Dean Dr. Rowena Cristina L. Guevara of U.P. Diliman College of Engineering (COE) together with other six deans of engineering schools came up with a proposed program to the Department of Science and Technology for the Science and Technology to work for Filipinos by increasing the number of Researchers, Scientists and Engineers thru Human Resource Development.

The Engineering Research and Development for Technology Consortium was then conceptualized and then endorsed by former Department of Science and Technology (DOST) Secretary Estrella F. Alabastro and then approved by former President Gloria Macapagal-Arroyo with a P3.5 Billion funding for three years. This was continued up to now by President Benigno Simeon C. Aquino III and currently supervised by the DOST Secretary Mario G. Montejo through the Science Education Institute (SEI) and Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) of DOST, with an annual budget of around P300 Million. Starting 2012, the ERDT program is part of the scholarship program of the Science Education Institute of the Department of Science and Technology.

The ERDT is a consortium of eight universities in the country that offers mature engineering graduate programs with U.P. Diliman as its lead university. As a program funded by the DOST, it aims to address the lack of highly trained researchers, scientists and engineers (RSE's) and R&D engineering activities in the country by implementing its program components such as the Human Resource Development (HRD), R&D and Infrastructure development.

The ERDT – HRD provides local graduate scholarships to potential and qualified applicants who are interested in pursuing engineering graduate program. Aside from this scholarship, ERDT - HRD also provides Visiting Professor Program, Visiting Researcher Program, PhD Sandwich Program, Faculty Research Dissemination Grant

and Post- Doctoral Studies.

Through the ERDT R&D proposals submitted to the DOST, the groundwork for the R&D tracks has been laid. The ERDT has focused on the following areas as its research tracks: 1) Energy Track, 2) Environment and Infrastructure Track, 3) Information and Communications Technology Track, 4) Semiconductor and Electronics Track and the newly established 5) Manufacturing and Machinery Track which was launched in 2012 in line with the DOST Makinarya at Teknolohiya Para sa Bayan or Makibayan Project.

In addition to the HRD and R&D components of the ERDT program, Infrastructure development was also prioritized by the ERDT Program. If you happen to pass by the CP Garcia Ave., Velasquez St., Magsaysay Ave., and Jacinto St. in U.P. Diliman, you might have noticed the on-going construction of buildings which will serve as the offices, instructional classrooms and research laboratories for the different engineering graduate programs in U.P. Diliman. The building of Department of Metallurgical, Mining and Materials Engineering is already occupied and most of the other buildings are expected to be occupied soon.

In addition to the three components of the Program, ERDT also embarked in organizing workshops, conferences, congress and summits.

In the last six years, ERDT has successfully laid the footprint and model for a successful engineering research program in the country. Numbers show, through the ERDT R&D program, that the research activities in engineering have increased significantly. The level and quality of research have also improved leading to a number of funded research works and papers accepted in refereed journals and conferences.

ERDT continues to achieve its goals with its promotional activities such as roadshows, participation in scholarship fair, creation of ERDT website among others. ERDT continues to increase the number of graduates and contribute to the realization of S&T plan of the country.

2013 ANNUAL REPORT

The ERDT-HRD was established to increase the number of RSEs with graduate degrees in the Philippines, thereby enhancing the capability of the country to fully integrate R&D in industries and attain economic growth. Being implemented by the ERDT Consortium universities and funded by the DOST, the ERDT-HRD Program gives local graduate scholarships, sandwich programs, and faculty development in the form of PhD fellowships. ERDT also provides various avenues for the attainment and exchange of knowledge in technologies that address the needs of the Philippines. Now on its eighth year of implementation, ERDT is continuously and constantly fulfilling its goals through its various components.

This 2013 Annual Report covers the period in the Program Cycle 6, which is January 1 to December 31, 2013 with a budget amounting to PhP 311,000,000.00. This report also presents the ERDT Program accomplishments per component. The accomplishments for the last six years have been reported in the previous accomplishment reports (cf. 2009; 2010-2012).

HUMAN RESOURCE DEVELOPMENT

LOCAL GRADUATE SCHOLARSHIP PROGRAM

To achieve the critical mass of RSEs to about 1000 PhD degree holders and even more for Master's degree in the next seven years (2020), local scholarship is awarded to deserving Filipino engineering graduates and practitioners in order to improve the quality of engineering profession in the country. This exponential rise in the number of engineers with advanced degrees has it compounding effect on the value chain in the industry for economic growth as well as improving the quality of education in engineering departments of SUCs.

Providing MS and PhD scholarships is made possible through the local graduate scholarship component of the ERDT-HRD Program. Due to the increasing demand for scholarships, the number of scholarship slots offered every year is being reviewed regularly to ensure that potential scholars are given timely opportunities and that budgetary requirements are well accounted for.

Table 1 shows the graduate (MS and PhD) degree programs offered by the members of the consortium universities supported by the ERDT-HRD Program. In 2013, the Program Advisory Council approved the inclusion of the Doctor of Engineering in Electrical Engineering of the UP Diliman College of Engineering. For 2014, MS Mechanical Engineering of Mapua Institute of Technology is included in the ERDT supported graduate programs.

Table 1. Master's and Doctoral degree programs offered and supported by ERDT Consortium Universities

Master's Program+ Doctoral Program#	ADMU	CLSU	DLSU	MIT	MSU - IIT	UPD	UPLB	USC
Agricultural Engineering		+ #					+ #	
Agrometeorology							+	
Chemical Engineering			+ #			+ #	+	+
Civil Engineering			+ #	+	+ #	+ #		+
Computer Application					+			
Computer Engineering	+			+				+
Computer Science	+		+	+	+	+		
Computer Studies			+					
Electrical Engineering				+	+	+ #		+
Electronics and Communications Engineering	+		+ #	+ #				+
Energy Engineering						+ #		
Engineering Sciences	+							
Environmental Engineering			+ #	+	+	+ #		
Industrial Engineering			+ #	+		+		+
Manufacturing Engineering			+					
Materials Science and Engineering				+ #	+ #	+ #		
Mechanical Engineering			+ #	+	+ #	+		+
Metallurgical Engineering						+		
Mining Engineering				+		+		
Geoinformatics				+		+		

Table 2 shows the target numbers vis-à-vis the actual intake of scholars from 2007 – 2013. As of December 31, 2013, there are a total of 1208 MS and 198 PhD scholars admitted to the ERDT program. For the CY 2013 (Program Cycle 6), ERDT has reached beyond the targets for the Master's degree and has improved in recruiting applicants for the PhD degree. There are a total of 249 MS and 42 PhD scholars who were admitted to the ERDT scholarship program in 2013, which is a significant increase in hit target for PhD as compared to the previous years. Overall, since the Program started, ERDT has reached 90% and 72% hit rates in MS and PhD, respectively.

Several applicants were not given scholarships due to their poor performance during their undergraduate years. This means that the ERDT scholarship is becoming more attractive especially to engineering graduates from other schools. However, we still need to attract those honor graduates to continue pursuing graduate studies and enter the industry armed with advanced knowledge. In this way, they will lead the research in those industries.

Table 2. Actual intake of scholars in each consortium member from 2007 to 2013

	2007		2008		2009		2010		2011		2012		2013		Total Intake	
	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD
UPD	55	18	34	15	88	15	85	13	66	6	88	17	89	8	505	92
ADMU			16	0	16	0	20	2	16	1	11	1	14	2	93	6
CLSU			15	2	9	3	13	1	8	4	29	1	27	2	101	13
DLSU			11	2	22	1	34	2	32	5	38	8	18	6	155	24
MIT			8	1	32	2	14	1	16	7	27	4	46	14	143	29
MSU-IIT			10	2	8	2	15	3	21	3	16	4	29	6	99	20
USC			13	0	15	0	10	0	11	0	2	0	14	0	65	0
UPLB					8	4	13	3	3	0	11	3	12	4	47	14
ACTUAL INTAKE	55	18	107	22	198	27	204	25	173	26	222	38	249	42	1208	198
TARGET	106	23	133	20	171	32	208	44	233	50	260	55	233	50	1344	274
HIT RATE (%)	52	78	80	110	116	84	98	57	74	52	85	69	107	84	90	72

For 2014, we will maintain the same number of targets for both Master's and doctoral scholarships. However, if ERDT wants to achieve the target number of RSE's, we need to expand by inviting more universities as members of the ERDT consortium to increase the intake of scholars and eventually hit the targets for the number of RSE's set by the UNESCO benchmark, as suggested by the Program Advisory Council. The ERDT Steering Committee is currently searching for potential universities offering engineering graduate programs to be part of the ERDT Consortium.



Roadshows conducted at different universities, colleges and review centers in 2013.

Still, the number of slots to be filled for the succeeding years must be reviewed carefully, and intensive promotional activities to attract potential, qualified and deserving scholars should be in place, especially when ERDT accepts new members to the consortium. As a regular promotional activity of the ERDT Program, roadshows were done to attract potential scholars to the program. Roadshows and other promotional activities target fresh engineering graduates to immediately pursue a graduate degree. There is still a need to further strengthen the strategies in promoting the ERDT Scholarship Program. In Program Cycle 7 (covering the period January 1 to December 2014), ERDT is still geared for yet another exciting array of promotional activities such as improved and more intensive roadshows as a result of strategic planning, improving the ERDT website, launching of scholarship database, continuing the success of ERDT Week, continued personal sending of invitation to DOST undergraduate scholars, Consortium university engineering graduates (especially those graduating with honors), and students and faculty members of engineering departments of different state colleges and universities.



ERDT Exhibit 2013 displayed at UP College of Engineering lobby to attract possible applicants by showcasing the program in a glance, its components, scholars, and grantees.

Figure 1, Figure 2 and Table 3 show the different statuses of 1208 MS and 198 PhD scholars. As of December 31, 2013, there are a total of 418 MS (34.60% of the total MS intake) and 104 PhD (52.52% of the total PhD intake) scholars who are still working towards earning their degrees (on-going with good standing status). These are the MS scholars and PhD scholars who entered the program in 2012-2013 and 2011-2013, respectively. There are a total of 104 MS and 18 PhD who are on-extension, and 137 MS and 27 PhD who are 'for monitoring'. Since the program started, ERDT has already produced 347 MS (out of the 771 who should have graduated; 45%) and 29 (out of the 92 who should have graduated; 32%) PhD graduates. The distribution of graduates per consortium is shown in Table 4.

ERDT is constantly monitoring and supporting the scholars with 'on extension' and 'for monitoring status' to graduate as soon as possible. Figures 1 and 2 also account for 158 MS and 16 PhD terminated scholars, 39 MS and 3 PhD suspended scholars, 4 MS and 1 PhD on leave of absence, and 1 MS who deferred from accepting the scholarship. Hopefully by 2014, the number of graduates will increase significantly. Scholars who are on-extension and for monitoring statuses are expected to graduate in 2014 and 2015. Although, these numbers are still low as compared to the number of scholars that were expected to graduate, it is a much better improvement than last year.

The main reason on the delay in the graduation is due to the difficulty in conducting the research for the thesis or dissertation. This 2013, ERDT UP Diliman conducted interviews for the 'for monitoring' status (of UPD ERDT scholars only) to determine the cause of delays and to know when they will graduate. As a result of the interview, around 80% of the 'for monitoring' scholars were late in finalizing the topic, the remaining 20% was delayed due to delays in acquiring the research materials because

of long procurement process (difficulty in purchasing equipment, consumables and other items needed), which is beyond the control of a scholar. The tedious procurement system needed is a big obstacle in the completion of the research thesis and dissertation requirements. ERDT is taking much effort to address the delays in the procurement. Also, mismatch in the research interests of the scholar and the adviser was observed. This was addressed to have a matching of ERDT scholar based on the research interest with a faculty adviser. Other cases, however, are due to faults of scholars like poor academic performance which caused them delays in their study programs and violation of their contract with ERDT.

The ERDT program implementors are proposing means to address these issues. This includes requiring scholars to write their proposed research and preferred potential faculty adviser during the application to ERDT scholarship, matching of scholars with faculty advisers, assigning faculty advisers at the start of the program among others. However, to further increase the number of graduates, the ERDT program expanded the Sandwich Program particularly in priority specialization areas. More opportunities came in for funding for sandwich and other training programs that scholars can avail.

Figure 1. Status of MS scholars

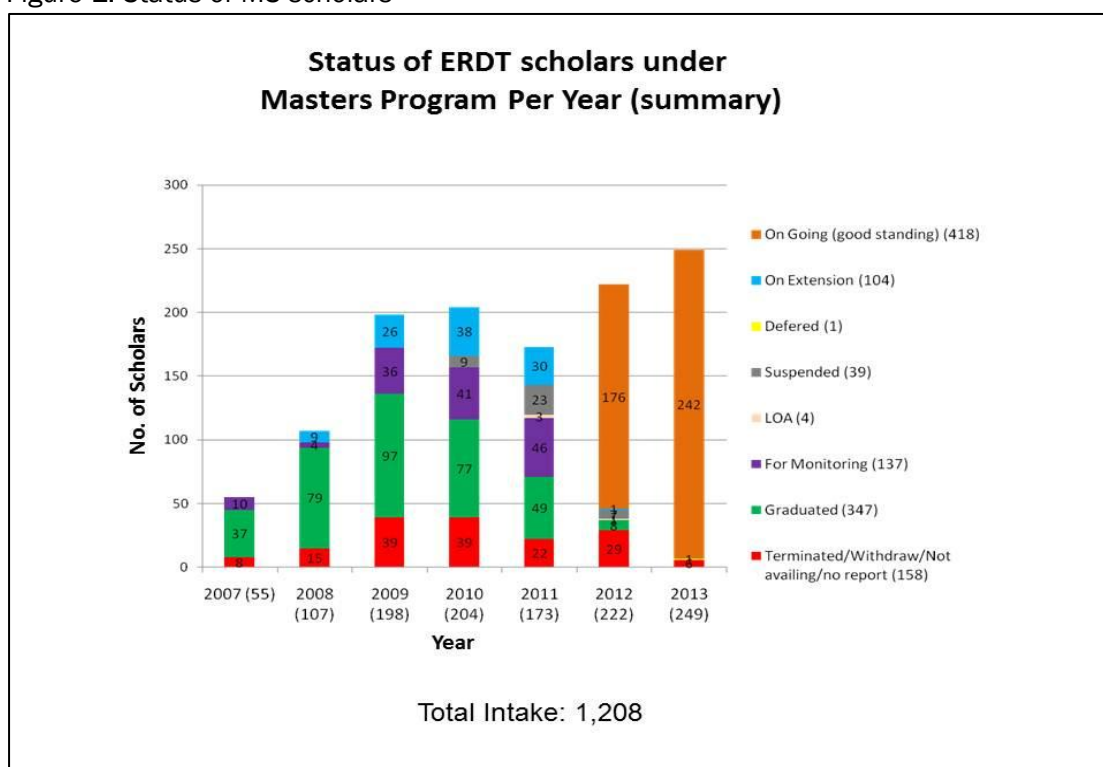


Figure 2. Status of PhD scholars

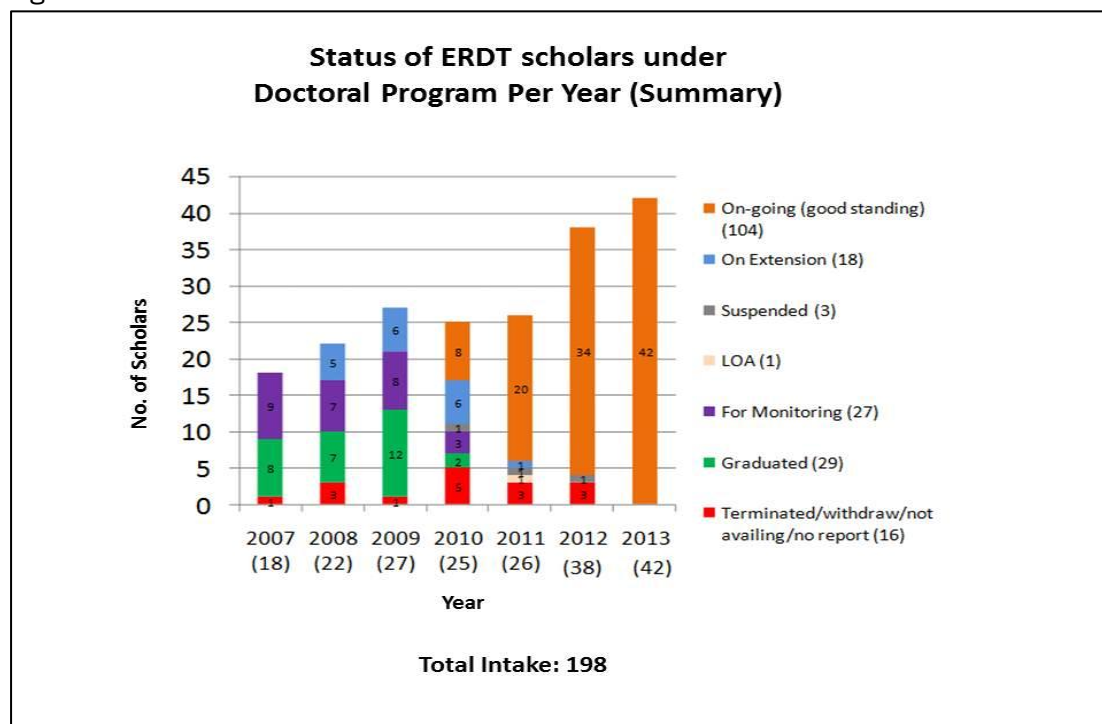


Table 3: Distribution of ERDT scholars based on status

	Master's		PhD	
Ongoing (Good Standing)	418	34.60%	104	52.53%
On Extension	104	8.61%	18	9.09%
For Monitoring	137	11.34%	27	13.64%
Graduates	347	28.73%*	29	14.65%*
Terminated	158	13.08%	16	8.08%
Suspended/LOA	43	3.56%	4	2.02%
Deffered	1	0.08%	0	0.00%
Total Intake since Program started	1208	100%	198	100%

*Note on percentage of Graduates:

46% of the scholars who should have graduated in MS (scholars from 2007-2011)

32% of the scholars who should have graduated in PhD (scholars from 2007-2010)

Table 4. Distribution of Graduates per Consortium member from the start of ERDT program

	2008		2009		2010		2011		2012		2013		TOTAL	
	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD
UPD	4	0	19	0	18	1	29	4	38	11	48	6	156	22
ADMU					8	0	11	0	11	0	4	1	34	1
CLSU					1	0	6	0	5	2	10	2	22	4
DLSU			2	0	8	0	6	0	24	1	10	0	50	1
MIT			1	0	6	0	5	0	5	0	4	0	21	0
MSU-IIT			1	0	2	0	3	0	7	0	14	1	27	1
USC					5	0	5	0	8	0	3	0	21	0
UPLB							7	0	4	0	5	0	16	0
TOTAL	4	0	23	0	48	1	72	4	102	14	98	10	347	29

The names of all ERDT graduates for 2013 and the titles of their theses/dissertations are shown in Appendix of this report.

PhD SANDWICH PROGRAM

The Sandwich Program is a fellowship that is offered to ERDT local PhD scholars to perform their researches in a university or research institution abroad for a maximum of one year. Aside from finding an available laboratory for the chosen research topic, a scholar will also be able to gain broader approach and technical knowledge and experience in inter-cultural exchange. The scholar applies to the Sandwich Program and the application is deliberated by the Fellowship Selection and Screening Committee. The awarded PhD scholars are expected to finish their dissertation, contribute to technical knowledge, and transfer the technology/techniques that they learned from the PhD Sandwich program.

For 2013, we have sent 12 scholars abroad (out of the 13 slots allotted for 2013). The scholars sent abroad are listed here. To date, there are 31 scholars who were given opportunities to conduct their research abroad since the ERDT program started, and 19 scholars already returned. Among those who returned, 14 scholars already graduated, 5 scholars who recently came back from abroad are in their final dissertation stage, and 12 scholars are still abroad conducting their research. Table 5 shows the yearly distribution of slots and the actual number of scholars who availed the program. Table 6 shows the list of scholars under the ERDT Sandwich Program 2013.

Table 5. Distribution of Sandwich Program per year since the start of ERDT program

Year	Slots	Actual Intake	Status of the Scholar
2008	7	1	Graduated
2009	10	3	Graduated
2010	12	3	Graduated
2011	8	7	Graduated
2012	8	5	3 Returned, 2 On going
2013	13	12	2 Returned, 10 On going

For 2014, we will open the sandwich program to faculty members of UP Diliman College of Engineering taking their Master's and PhD degrees in UP Diliman and MS and PhD scholars of all members of the consortium. Further, the screening committee decided to be thoroughly selective in granting the sandwich program. They will give utmost priority to those scholars pursuing research with topics identified to be gaps in the R&D and could not be completed here due to lack of expertise from the faculty resources (in addition to lack of physical resources).

Table 6. List of Scholars under the ERDT Sandwich Program 2013

NAME	DEGREE PROGRAM	HOST ADVISERS	UNIVERSITY AND LABORATORY	RESEARCH TOPIC	PERIOD	BUDGET
Fojas, Jhalique Jane R.	PhD Chemical Engineering, UP Diliman	Dr. Omid Farokhzad and Dr. Nazila Kamaly	Laboratory of Nanomedicine and Biomaterials, Harvard Medical School, Harvard University, USA	Novel Bioactively Coated Intravascular Drug Eluting Stent and Drug Delivery Systems Sandwich Program	January 2013- December 2013	Php1,200,000.00
Arazo, Renato O.	PhD in Environmental Engineering, UP Diliman	Dr. Sergio C. Capareda	Biological and Agricultural Engineering Department, Texas A&M University, Texas, USA	Biofuels from ATAD-Derived Sewage Sludge: Pyrolytic Biofuel Production and Catalytic Upgrading Studies	February 2013- January 2014	Php1,200,000.00
Pingul-Ong, Sheila Mae B.	PhD in Environmental Engineering, UP Diliman	Dr. Meng-Wei Wan	Environmental Engineering and Science, Chia Nan University of Pharmacy and Science, Taiwan	Ammonia-Nitrogen Removal from Industrial Wastewater Using Electrodialysis/Reversal	April 2013 - February 2014	Php617,330.59
Ong, Dennis C.	PhD in Environmental Engineering, UP Diliman	Dr. Meng-Wei Wan	Environmental Engineering and Science, Chia Nan University of Pharmacy and Science, Taiwan	Degradation of Ammonia Nitrogen (NH ₃ -N) by Manganese Dioxide Oxidation-Ultraviolet Irradiation and Microfiltration Membrane Process	April 2013 - February 2014	Php1,070,018.03
Austero, Sheila B.	PhD in Environmental Engineering, UP Diliman	Dr. Andrew Harris and Dr. Tamara Church	School of Chemical and Biomolecular Engineering, The University of Sydney, Australia	Effective Catalyst for the One-Pot Catalytic Conversion of Cellulose into Sorbitol	May 2013 - February 2014	Php946,000.00
Calagui, Mary Jane C.	PhD in Environmental Engineering, Mapua Institute of Technology	Dr. Meng-Wei Wan	Environmental Engineering and Science, Chia Nan University of Pharmacy and Science, Taiwan	Adsorption of Indium Ions Aqueous Solution Using Chitosan Coated Bentonite Beads	May 2013 - April 2014	Php1,145,800.00
Dumlao, Samuel Matthew G.	MS in Electronics Engineering, Ateneo de Manila University	Dr. Gianni Vernazza	Information and Perception Technologies, Scuola Superiore Sant'Anna Institute of Communication, Italy	Decision Support System Utilizing Low Cost Wireless Sensor and Actuator Networks Capable of Making Decisions Based on Real Time Environmental Conditions in Coffee Nursery Farm	September 2013 - November 2013	Php254,911.70
Lim, Kramer Joseph A.	MS in Environmental Engineering, UP Diliman	Dr. Rigoberto C. Advincula	Macromolecular Science Engineering, Case Western University, USA	Fabrication and Characterization of Polymer/ Clay and Polymer/Graphene Copper Nanocomposites as Antimicrobial Surface	October 2013 - April 2014	Php984,315.00

Bernardo, Enrile D.	MS in Environmental Engineering, UP Diliman	Dr. Rigoberto C. Advincula	Macromolecular Science Engineering, Case Western University, USA	Smart Nanomaterials from Cellulosic coconut Nanowhiskers	October 2013 - April 2014	Php984,315.00
Caldona, Eugene B.	PhD Chemical Engineering, UP Diliman	Dr. Rigoberto C. Advincula	Macromolecular Science Engineering, Case Western Reserve University, USA	Polybenzoxazine/Polyaniline Nanocomposite coatings for High Temperature, Anti-Corrosion and Anti-Microbial Applications	November 2013- November 2014	Php1,144,646.96
Pangayao, Denvert C.	PhD Chemical Engineering, De La Salle University	Dr. Eric van Hullebusch	Laboratoire Geomatériaux et Environnement (LGE), University of Paris-Est, France	Bioleaching of trace metals from coalash using microbial isolate from coal ash pond	November 2013 - June 2014	Php1,102,485.96
Lapenas, Louie A.	MS Energy Engineering, UP Diliman	Dr. Kurt Rhoads	Civil and Environmental Engineering, Case Western University, USA	Co-digestion of food waste and piggery wastewater using micro-algae-bacteria consortium combined with dark fermentation	November 2013 - June 2014	Php1,200,000.00

ERDT Sandwich Scholars Testimonials



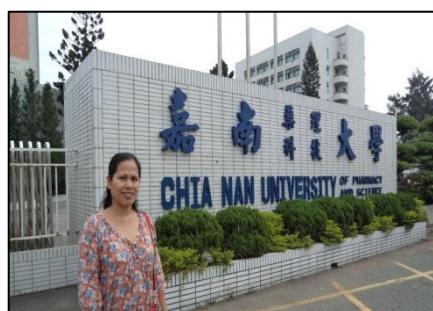
“Thanks to ERDT, doing research in another country has opened my eyes to the problems of my own country and strengthened my resolve to be part of the solution.”

- Sheila Mae B. Pingul-Ong



“ERDT Sandwich Program made it possible for me to work alongside other researchers outside the country and learn from each other’s expertise.”

- Dennis C. Ong



“With ERDT, life will be easier and secure in the future!”

- Mary Jane C. Calagui

“Among many other things in my sandwich program, I learned how a research environment teeming with experienced multinational researchers, who continually talks about their research, encourages critical thinking on how to improve my own research.”

- Samuel Matthew G. Dumlao



“ERDT gives opportunities beyond borders: Global quality learning and research experience.”

- Enrile D. Bernardo

“I am so honored to be a grantee of the ERDT Scholarship Sandwich Program as it has not only given me the opportunity to continue toward my goal of becoming a doctorate degree holder, but it has given me the chance to continue to become even more involved with research, which gives me motivation as a teacher to do well in the future and make a difference in the lives of my future students.”

- Eugene B. Caldona



“Sandwich program opened new opportunity for me in acquiring and sharing new knowledge, meeting new people in the field and gaining new experiences. Everyday is a learning process.”

- Denver C. Pangayao

Research of an ERDT PhD Sandwich Program Scholar

As a graduate student and research scholar of Harvard and Brigham and Women's hospital, I am working on biomedical research under the leading nanotechnology programs in the USA, namely, (1) NIH's Program of Excellence in Nanotechnology where I recently developed combinatorial systems of targeted and controlled release nano-drug delivery systems for cardiovascular therapies with the supervision of Prof. Omid Farokhzad of Harvard Medical School and (2) Center of Cancer Nanotechnology Excellence of Massachusetts Institute of Technology- Harvard where I am currently working on new nanoformulations using novel biopolymers in one of the CCNE projects of Prof. Robert Langer of MIT. Prior these research, I have done intensive efforts on cardiovascular system modeling of both pathological and non-pathological areas using a combination of PET-CT, Doppler ultrasound and COMSOL multiphysics through UPD's ERDT research grant, utilizing mathematics and biomedical imaging technology to detect non-invasively stenosis and aneurysm, and locate the vascular area is susceptible to rupture. In my PhD, I have extended these computational efforts to develop a novel bioactive drug eluting intravascular stent and bioactive polymer coating for implantable medical device, currently for patent and parts of which have already been published.



Jhalique Jane R. Fojas inside a clean room facility of the microfluidics core at Goldenson Building, Gordon Hall at Harvard University.

Presently, I am designing an integrated microfluidic system for drug development at the Microfluidics Core of Harvard where I hope to develop a system both capable of drug delivery formulations and bioactivity detection. I hope to complete the device this year.

FACULTY DEVELOPMENT PROGRAM

FOREIGN PhD SCHOLARSHIPS

To improve the faculty roster of the U.P. Diliman College of Engineering, faculty members are given opportunities to pursue advanced degrees in a reputable, highly recognized international institution abroad, preferably on the areas of specialization that needs to be strengthened via the Faculty Development Program of ERDT (foreign scholarships). To date, there are 37 faculty members who were given scholarships to study abroad. This is one of the strength and success stories of the ERDT Program.

Table 7. Faculty Development Program Statistics

	Awarded	Graduate	Returned	On-going	On-Extension
2006-2008	10	8	2	0	0
2009	7	2	0	0	5
2010	5	2	0	1	2
2011	4	-	-	4	-
2012	5	-	-	5	-
2013	6	-	-	6	-
Total	37	12	2	16	7

There are already 12 faculty members who graduated and now rendering return service to UP Diliman. Two (2) scholars who graduated have not returned to UP Diliman. They were already served letters for their repayment obligations. Two (2) have already returned but are doing minor revisions on their dissertation for them to graduate. There are nine (9) scholars who are expected to graduate and return to their respective departments/institutes in UP Diliman by 2014. For other grantees, 'extension' of their study is needed since the average normal period to obtain a PhD is 3.5 to 4.5 years. For 2013, the list of all six (6) faculty members who were grantees of ERDT PhD fellowship abroad for faculty development is shown in Table 8.

After their return, the faculty scholars have been very active in their respective departments doing advising ERDT scholars in MS and PhD, and administering research laboratories. Most of them also submitted project proposals for research funding and even continued to publish in scientific journals and participated in international conferences. Their trainings and experience outside the Philippines have become valuable and beneficial to the university. Despite this, there is still a need to improve the faculty roster of the Consortium University members to all PhD degree holders in 2020. This CY 2014 (Program Cycle 7), there are 12 slots to fill and there are already faculty members who signified their intention to study for PhD abroad. The budget for this component in the Program Cycle 7 is Php 72,632,024.99. ERDT hopes to continue with the improvement of faculty alongside with the ongoing infrastructure development and research capacity building efforts.

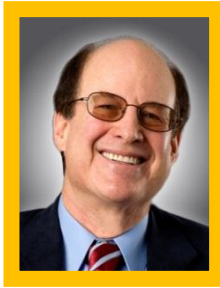
Table 8. List of Faculty Development Program Grantees

Faculty Scholar and Department	University	Period	Budget
Macapinlac, Oliver T. Department of Geodetic Engineering	Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, the Netherlands	March 2013 - February 2017	Php7,132,739.28
Tria, Lew Andrew R. Electrical and Electronics Engineering Institute	Electrical Engineering and Telecommunications, University of New South Wales, Australia	July 2013 – June 2016	Php7,881,214.28
Dela Peña, Eden May B. Department of Mining Metallurgical and Materials Engineering	School of Chemical Engineering and Advanced Materials, Newcastle University, United Kingdom	September 2013 - September 2016	Php7,974,938.18
Alamani, Bryan G. Department of Chemical Engineering	Chemical & Biomolecular Engineering, University of Houston, USA	August 2013 – July 2016	Php7,646,604.00
Adolacion, Jay R T. Department of Chemical Engineering	Chemical & Biomolecular Engineering, University of Houston USA	August 2013 – July 2016	Php7,646,604.00
Gonzales, Arthur A. Department of Chemical Engineering	Chemical Engineering, Northeastern University	September 2013 - May 2016	Php7,806,960.42

VISITING PROFESSORS AND RESEARCHERS PROGRAM

The Visiting Professor designation is given to a faculty member of another academic institution who will give lectures in the Consortium Universities. The ERDT Program provides for the invitation of internationally known Visiting Professors who will deliver lectures on key areas of engineering education, speak in symposia as well as help develop new curricula and strengthen existing ones. Direct beneficiaries for this component are ERDT Scholars and, indirectly, their sending institutes. The ERDT consortium will likewise benefit from this through R&D collaboration. Gaining of technical knowledge and experimental expertise and transferring of technology are the expected outputs of this component. Most visiting professors came to give a series of lectures or seminar; some of them became plenary speakers in the ERDT Conferences.

To date, there are 66 professors and 4 researchers invited. There are 11 visiting professors and 1 visiting researcher in 2013. The list of visiting professors and visiting researcher for 2013 is given below:



2013 ERDT VISITING PROFESSORS



From top to bottom, left to right: Visiting Professor Dr. Saito, Dr. Huisingh, Dr. Garcia, Dr. Wnek, Dr. Isenburg, Dr. Deuck, Dr. Manlapig, Prof. Nof, Dr. Gen and Dr. Igarashi

Dr. Jongsoo Jeong

Waseda University

March 16-25, 2013

Smart Environment and Energy utilizing sustainable energy sources

Host: Dr. Menandro Berana, Department of Mechanical Engineering, UP Diliman

Dr. Kiyoshi Saito

Waseda University

March 16-25, 2013

Smart Environment and Energy utilizing sustainable energy sources

Host: Dr. Menandro Berana, Department of Mechanical Engineering, UP Diliman

Dr. Donald Huisingh

University of Tennessee

August 7-20, 2013

Cleaner Production

Host: Dr. Anthony Chiu, Industrial Engineering Department, De La Salle University

Dr. Santiago J. Garcia

Delft University of Technology

March 22-31, 2013

Self-healing materials and anti-corrosive coatings

Host: Dr. Analiza Rollon, Department of Chemical Engineering, UP Diliman

Dr. Gary Wnek

June 09-15, 2013
Case Western Reserve University
Innovation Engineering
Host: Dr. Augustus C. Resurreccion, ERDT-UP Diliman

Dr. Martin Isenburg

University of North Carolina
May 26, 2013- June 02, 2013
LIDAR Data Processing data using LASTools for remote sensing specialists for application of LIDAR Data
Host: Dr. Ariel C. Blanco, Department of Geodetic Engineering, UP Diliman

Dr. Gerhard Deuck

University of New Brunswick
September 10-27, 2013
Reversible Computing
Host: Dr. Adrian Valdez, Department of Computer Science, UP Diliman

Dr. Emmanuel Manlapig

University of Queensland
October 13-20, 2013
Geometallurgical Characterization of One Deposit for Effective Mine and Mill Design and Environmental Management
Host: Dr. Leslie Joy L. Diaz, Department of Mining Metallurgical and Materials Engineering, UP Diliman

Prof. Shimon Nof

Prism Center, Purdue University
Sustainability and Resilience in Supply Networks
Hosts: Dr. Aura Matias, Department of Industrial Engineering, UP Diliman
Dr. Anthony Chiu, Department of Industrial Engineering, De La Salle University

Dr. Mitsuo Gen

Ashikaga Institute of Technology
Advances in Hybrid Evolutionary Algorithms for Manufacturing and Logistics Optimization
Hosts: Dr. Aura Matias, Industrial Engineering Department, UP Diliman
Dr. Anthony Chiu, Industrial Engineering Department, De La Salle University

Dr. Toshifumi Igarashi

Sustainable Resources Division, Hokkaido University
Groundwater Flow and Contaminant Transport in near Mining Sites
Countermeasures against Groundwater and Soil Pollution
December 09-15, 2013
Host: Dr. Augustus C. Resurreccion, Institute of Civil Engineering, UP Diliman

2013 ERDT Visiting Researcher

Kurtis Heimerl

University of California, Berkeley
Low-cost, open-source GSM-based "Village Base Transceiver Stations (VBTS)
March 1 - 7, 2013
Host: Dr. Joel Joseph Marciano, Jr., Electrical and Electronics Engineering Institute, UP Diliman



FACULTY RESEARCH DISSEMINATION GRANT

Faculty Research Dissemination Grant (FRDG) gives opportunity for faculty members of the Consortium to present their researches to an international audience of the same field of specialization. Every year, this grant is awarded to deserving faculty members to participate in international conferences or as a support to publish papers in ISI journals. This is similar to the research grant of the scholars in the form of (Scholar) Research Dissemination Grant. Over the years, a significant number of conference participation is seen signalling an active research. In 2013, there was a significant increase in the participation of ERDT faculty to international conferences (32 papers presented in 2013). To date, a total of 169 research dissemination grants were awarded since the beginning of ERDT. Out of this number, 43 research dissemination grants were awarded in 2013. Table 9 shows the list of presentations made by faculty members in international conferences through the support of FRDG.

This 2013, we opened the FRDG to all UP Diliman College of Engineering faculty members (during the latter part of 2013) for them to participate in international conference and to conduct networking with other researchers in their fields. This is also to encourage the young faculty members to participate in international conference and to motivate them to finish their graduate studies on time.

Table 9. Faculty Research Dissemination Grants awarded for CY 2013

Name	Duration	Paper Presentation	Conference
Institute of Civil Engineering, University of the Philippines Dilliman			
Eric Augustus J. Tingatinga	May 2-4, 2013	An Innovative Method For Performance-Based Seismic Design Of Buildings	2013 Structures Congress (ASCE Conference), Pittsburgh, Pennsylvania, USA
Jaime Y. Hernandez Jr.	June 16-20, 2013	Development Of Vulnerability Of Curve Of RC Low - Rise Residential Buildings To Severe Wind Hazard	12th Americas Conference on Wind Engineering (12ACWE), Seattle, Washington, USA
Augustus C. Resurreccion	June 24-28, 2013	Development Of Water Quality Monitoring System And Pathogen Molecular Detection For Drinking Water In The Philippines	PhilDev Symposium on Innovations in Health and Information Infrastructure, University of California Berkeley, California, USA
Eric C. Cruz	August 20-22, 2013	Incorporating Scenarios Of Non-Fully Operating Flood Gates In The Hydraulic Design Of Infrastructure In A Flood - Prone Built - Up Area	6th Civil Engineering Conference in Asia Region (CESAR 6), Jakarta Indonesia
Augustus C. Resurreccion	November 20-22, 2013	Evaluation Of Strength And Infiltration Performance Of Pervious In The Philippine Setting	6th ASEAN Environmental Engineering Conference, Bangkok, Thailand
Christian R. Orozco	November 20-22, 2013	Evaluation Of Strength Performance Of Concrete Made From Different Types Of Cement For Road Applications In The Philippines	6th ASEAN Civil Engineering Conference, Bangkok, Thailand
Ma. Brida Lea D. Diola	November 20-22, 2013	Kinetic And Equilibrium Studies On Adsorption Of Copper Ions On NaOH Pretreated Coco Peat	6th ASEAN Civil Engineering Conference, Bangkok, Thailand
Jaime Angelo S. Victor	November 20-22, 2013	Strength And Durability Performance Evaluation Of Selected Cement - Stabilized Philippine Soils For Road Pavement Purposes	6th ASEAN Civil Engineering Conference, Bangkok, Thailand

**Department of Chemical Engineering,
University of the Philippines Diliman**

Analiza P. Rollon	January 23-23, 2013	Methane Production And Treatment Of Peanut Processing Wastewater At High Organic Loading Rate In A Two-Stage Upflow Anaerobic Sludge Blanket (UASB) Reactor System	5th AUN/SEED - Net Regional Conference on Biotechnology, Bandung, Indonesia
Terence P. Tumolva	July 28-August 2, 2013	Characterization And Treatment Of Water Hyacinth Fibers For NFRP Composites	19th International Conference on Composite Materials, Montreal, Canada
Maria Lourdes P. Dalida	May 21-23, 2013	Phosphate Recovery From TFT - LCD Wastewater As Magnesium Phosphate By Crystallization In FBR	International Conference on Environmental and Hazardous Substance Management (ESHM 2013), Bangkok, Thailand
Wilfredo I. Jose	August 18-23, 2013	Teaching Strategies And Innovations Developed Thorough Probing The Paradigm Of Chemical Engineering And Related Areas Of Study	9th World Status of Chemical Engineering, Seoul, South Korea
Maria Lourdes P. Dalida	October 31-November 4, 2013	Design And Performance Of Immobilized Photocatalytic Reactor For Water Treatment	3rd A. Nergy Symposium (Asian Institute for Environmental Research and Energy), Incheon, South Korea
Rizalinda L. De Leon	November 12-14, 2013	Characterization And In-Vitro Release Study Of Supramolecular Encapsulated Moringa Oleifera Lam Oil In B-Cyclodextrin	Regional Symposium in Chemical Engineering (RSCE) 2013, Panglao, Bohol
Terence P. Tumolva	December 1-2, 2013	Biological, Medical And Chemical Engineering (BMCE 2013)	a study on the Degradation Behaviour of Polyurethane Resins in Nitric Acid, Hongkong
Bemboy Niño F. Subosa	November 12-14, 2013	Optimization of Production of Peptone from Chicken Feathers	Regional Symposium in Chemical Engineering (RSCE) 2013, Panglao, Bohol
Bryan P. Pajarito	December 2-3, 2013	Moisture Sorption - Desorption Characteristics And Its Effect On The Fluxural Behaviour And Glass Transition Temperature Of Thermosetting Polymers	6th AUN/SEED - Net Regional Conference on Chemical Engineering, Manila

**Department of Computer Science,
University of the Philippines Diliman**

Susan P. Festin	June 24-28, 2013	Resilient Cyber Physical Societal Scale System	PhilDev Symposium on Innovations in Health and Information Infrastructure, California, USA
Prospero C. Naval Jr.	May 3-5, 2013	Fish Population Estimation and Species Classification from Underwater Video Sequence using Blob Counting and Shape Analysis	International Symposium on Underwater Technology 2013 (UT13), Tokyo, Japan
Henry N. Adorna	November 4-7, 2013	Spiking Neural P Systems with Structural Plasticity	Asian Conference on Membrane Computing 2013, Chendu, China
Prospero C. Naval Jr.	November 12-15, 2013	Estimation of Ionic Contamination in Printed Circuit Boards from Shape and Color Feature of Dendritic Patterns	6th IEEE International Conference on Cybernetics and Intelligent Systems and Robotics, Automation and Mechatronics, Batangas
Susan P. Festin	December 16-18, 2013	Combining Task and Role Based Access Control with Multi Constraints for a Medical Workflow System	International Conference on IT Convergence and Security, Macau, China
Cedric M. Festin	December 16-18, 2013	A P2P Network Booting Scheme Using BitTorrent - like Protocol	International Conference on IT Convergence and Security, Macau, China

**Electrical and Electronics Engineering Institute,
University of the Philippines Diliman**

Joel Joseph S. Marciano, Jr.	April 17-19, 2013	Effect of Curvature Adaptation on 2.4GHz Rectangular Patch Antennas	IEEE Region 10 Conference 2013 (Spring) Conference, Sydney, Australia
Edwin K. Umali	June 24-28, 2013	the Internet of Water - Hydrologic / Geotechnical Observatories Based on Wireless Sensor Networks	PhilDev Symposium on Innovations in Health and Information Infrastructure, California, USA
Louis P. Alarcon	June 24-28, 2013	Sensory Swarms for Smart Energy and Environmental Monitoring	PhilDev Symposium on Innovations in Health and Information Infrastructure, California, USA
Rhandley D. Cajote	August 19-23, 2013	Computer - aided Lexicography and its implications for the sociopolitical climate in the Philippines : the case of the UP Sentro ng Wikang Filipino's development of a monolingual Filipino Dictionary	ASIALEX 2013 8th Asian Association for Lexicography International Conference 2013, Bali, Indonesia

John Richard E. Hizon	October 21-26, 2013	Developing an ARM based Sensor Platform	2013 IEEE Region 10 Conference, Xian, China
Allan C. Nerves	December 8-11, 2013	Optimal Allocation of Sport Market and Bilateral Contract Transactions through Quantity Declaration Adjustment	IEEE - PES Asia-Pacific Power and Energy Engineering, Hongkong, China
Rowel O. Atienza	November 11-12, 2013	A Natural Handwriting Algorithm for Tablets	Mobilware 2013, Bologna, Italy
Jabie A. De Guzman	December 16-18, 2013	Social Graph-based Partitioning and Distribution for OSN content Catching and Delivery	International Conference on IT Convergence and Security, Macau, China
Joel Joseph S. Marciano, Jr.	November 26-27, 2013	Characterization of Reconfigurable FPGA-based Time Domain Reflectometry System for Slope Monitoring	2013 IEEE International Conference on Smart Instrumentation, Measurement and Applications, Kuala Lumpur, Malaysia

**Department of Geodetic Engineering,
University of the Philippines Diliman**

Ariel C. Blanco	October 20-24, 2013	Evaluation of Pansharpening Techniques for Pixel-based and object-based Image Classification	34th Asian Conference on Remote Sensing 2013, Bali, Indonesia
Mark Edwin A. Tupas	October 19-26, 2013	Using CA-Markov Simulated Land cover in Parametric Sedimentation Estimation in a Large Reservoir	34th Asian Conference on Remote Sensing 2013, Bali, Indonesia
Ma. Rosario Concepcion O. Ang	October 19-26, 2013	Development of a Web-based Marine Spatial Planning tool for Ocean Renewable Energy	34th Asian Conference on Remote Sensing 2013, Bali, Indonesia
Czar Jakiri S. Sarmiento	October 19-26, 2013	A Watershed Characterization Method for Hydrological Simulations	34th Asian Conference on Remote Sensing 2013, Bali, Indonesia
Ariel C. Blanco	November 21-22, 2013	Spatio-Temporal Analysis of Water Quality Variations in San Juan River and its Tributaries using GIS	6th ASEAN Environmental Engineering Conference, Bangkok, Thailand

**Department of Industrial Engineering and Operations Research,
University of the Philippines Diliman**

Ronald Aaron U. Po	May 29-31, 2013	An Evaluation of Manual Material Handling Tasks in a Manufacturing Company	2013 Technology, Innovation, and Industrial Management (TIIM) Conference, Phuket, Thailand
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Joanna Z. Resurreccion	July 9-12, 2013	Uncertainty Analysis of Decision-Maker Preferences: An Input-Output-Based Approach For Prioritizing Critical Interdependent Systems	21st International Input-Output Conference, Kitakyushu, Japan
Iris Ann G. Martinez	July 18-20, 2013	Investigation of Learning remission in Manual Work Given that Similar Work is Performed During the Contract Work Break	Institute of IE Asian Conference 2013, Taipei, Taiwan

**Department of Mechanical Engineering,
University of the Philippines Diliman**

Menandro S. Berana	May 26-31, 2013	Ejector Modelling for Powerplant Application	International Conference on Multiphase Flow 2013, Jeju, Korea
Louis Angelo M. Danao	July 3-5, 2013	The Performance of a Vertical Axis Wind Turbine in Fluctuating Wind - A Numerical Study	World Congress on Engineering - 2013 International Conference of Mechanical Engineering, London, United Kingdom
Menandro S. Berana	November 14-23, 2013	Design and Analysis Factor of Ejector Powerplant System	ASME - International Mechanical Engineering Congress and Exposition (IMECE) 2013, San Diego, USA
Louis Angelo M. Danao	November 14-23, 2013	A Numerical study on the effects of Unsteady Wind on Vertical Axis Wind Turbine Performance	ASME - International Mechanical Engineering Congress and Exposition (IMECE) 2013, San Diego, USA
Ferdinand G. Manegdeg	November 17-20, 2013	Elemental Mercury Removal from Natural Gas by Silver and Copper - Impregnated Activated Alumina	3rd International Symposium on engineering, Energy, and Environment: Engineering for Sustainable ASEAN, Bangkok, Thailand

**Department of Mining Metallurgical and Materials Engineering,
University of the Philippines Diliman**

Eden May B. Dela Peña	May 15-17, 2013	Parametric Study on the absorption of Electrospun PCL Nanofibrous Materials and Environment Services	2013 ASIAN Conference on Civil, Material and Environmental Services, Tokyo, Japan
Ivy Rose B. Gonzales	June 12-16, 2013	Effect of pore size and surfactant concentration on bubble size and stability	XV Balkan Mineral Processing Congress and Exhibit 2013, Sozopol, Bulgaria
Reinol Josef D.C. Companero	June 12-16, 2013	Philippine Small-Scale Mining Production System Assessment for Environmental and Socio-Economic Sustainability	XV Balkan Mineral Processing Congress and Exhibit 2013, Sozopol, Bulgaria

Khryslyn G. Araño	May 21-23, 2013	Effect of Polymer Solution Properties on the Efficiency of Electrospinning Polycaprolactone-Montmorillonite	3rd International Symposium Frontiers in Polymer Science 2013, Barcelona, Spain
Alberto V. Amorsolo	October 17-19, 2013	Major insights from Empirical Studies on Surface Modification of Polymers using Ion Shower System	2013 SMEP Conference (METCON), Davao City
Jeffrey D. Venezuela	October 17-19, 2013	Visible Light Photocatalytic Properties of Nitrogen Iron (III) - Doped TiO ₂	2013 SME,P Conference (METCON), Davao City
Audric Zuriel C. Cruz	October 17-19, 2013	Comparison of Three Photooxidizing reactors based on TiO ₂ Immobilized on Acrylic, PVC and Polyethylene Polymeric	2013 SMEP Conference (METCON), Davao City
John Ivan D. Gonzales	October 17-19, 2013	The Photocatalytic Properties of Ag-loaded Hydrothermal TiO ₂ Nanotubes	2013 SMEP Conference (METCON), Davao City
Vincent Joseph V. Garcia	October 17-19, 2013	Optimization of the Production of Peptone from chicken Feathers	2013 SMEP Conference (METCON), Davao City
Mary Donnabelle L. Balela	October 17-19, 2013	Formation of Cobalt Nanowires in Non-aqueous Solution under Magnetic Field	2013 SMEP Conference (METCON), Davao City

6th ASEAN Civil Engineering Conference



Engr. Jaime Angelo S. Victor (Center) together with other participants from UP Diliman. From Left to Right: Jessie Samaniego (ERDT Scholar), Dr. Ariel Blanco (UP Diliman Department of Geodetic Engineering), Engr. Christian Orozco, Dr. Augustus C. Resurreccion, Engr. Jaime Angelo S. Victor, Engr. Harold Aquino, Engr. Ma. Brida Lea Diola and Dr. Regin Regidor (UP Diliman Institute of Civil Engineering).

The 6th ASEAN Civil Engineering Conference was held last November 21-22, 2013 in Bangkok, Thailand. This event, organized by Chulalongkorn University, is held in parallel with the ASEAN Environmental Engineering Conference. I was fortunate to receive funding through the ERDT Faculty Research Dissemination Grant to support my travel.

As a young faculty member of the college, it was my first chance to attend an international conference and present my research work to a wider academic audience. I was able to get valuable comments, insights and suggestions from people in my field of specialization. Moreover, being multidisciplinary in nature, this conference served as a good venue to see the current and emerging trends in various fields of Civil Engineering in other countries. Another benefit of attending this conference is the opportunity to interact and build international network with researchers from different ASEAN universities for potential, future research collaboration work.

In this experience, I have gained a wider appreciation of the civil and environmental engineering field. It has helped me direct my research track and kept me motivated to explore more opportunities for geotechnical engineering-related research

Jaime Angelo S. Victor
Instructor
UP Institute of Civil Engineering

RESEARCH & DEVELOPMENT

R&D is one of the three pillars of the ERDT program. Whereas the HRD component of the ERDT addresses the need to produce well trained engineering researchers through graduate studies, the R&D component addresses the lack of quantity and quality of research in engineering. The R&D and the HRD components of the ERDT, however, are closely inter-related such that one cannot possibly exist without the other.

The R&D component provides opportunities to ERDT scholars to participate and work on projects related to their theses and dissertations. Such setup promotes research works of students to be aligned to the NSTP and the MTPDP ensuring that researches conducted are relevant and translatable for the country's benefit.

The R&D component of ERDT is a consortium wide activity where multidisciplinary research programs that have immediate impact are prioritized. Multidisciplinary research encourages collaborative effort among researchers from different disciplines in engineering, the sciences and social sciences. The ERDT R&D is a vehicle established to advance engineering research in the country where R&D projects are aligned with the national research agenda.

ERDT R&D Tracks

The ERDT R&D Program is divided in five broad tracks of multidisciplinary research, namely, (1) Environment and Infrastructure, (2) Energy, (3) Information and Communications Technology, (4) Semiconductor and Electronics, and (5) Manufacturing and Machinery.

The Environment and Infrastructure R&D Track is composed of six research areas that seek to address the pressing needs of the community. These include (a) DRINK – drinking water in every home, (b) GRASS – green affordable shelter systems, (c) BETTER MINE – better mining technologies, (d) ITS – intelligent transport system, (e) TAMER – tactical maps of environmental risks and (f) MARINE – marine technologies and (g) EATS- Environment Adaptation Technologies and Systems for Food Program

The Energy R&D Track aims to develop energy technologies and corresponding expertise that can spur new industries that will propel the country in its bid toward greater energy security. The three areas of focus include: (a) Biofuels, (b) Renewable Energy Systems, and (c) Waste-to-Energy Systems.

The Information and Communication Technology R&D Track has broad areas of research with applications to Education, Health, and Resource Management and Logistics.

The Semiconductor Materials and Electronics R&D Track aims to make ERDT R&D efforts more aligned with the needs of the industry by identifying R&D needs of the industry, identifying measures to make ERDT R&D more responsive to the industry and establishing an R&D framework for the academe, government, and industry to support

the industry. Currently, this track is putting its R&D agenda in the context of current industry-led initiatives aimed at enhancing their competitiveness. These initiatives include Advanced Devices and Materials Testing Laboratory (Admatel), Electronic Products Development Center (EPDC) and Philippine Microelectronics Center (PMC).

The Manufacturing and Machinery R&D Track is a newly-proposed track of the ERDT Program. This track is added as the fifth ERDT R&D track with the aim of addressing the urgent need to have research and development programs and activities to help develop our country's manufacturing industry. This is in recognition of the fact that the manufacturing industry is vital to national progress. This track shall help identify aspects and sectors of the manufacturing industry that can be made more competitive and that can be nurtured by the ERDT Program.

ERDT continues to support the R&D activities of the consortium member universities through the scholars' research. In 2013, ERDT has launched the ERDT-SPIK Research Innovation forum which aims for the establishment of academe-industry partnership by hosting ERDT scholars to work with industry mentors of SPIK companies. SPIK stands for Samahan sa Pilipinas ng Industriyang Kemika. *(Event's write up on page 36)*

Tables 10 shows the completed R&D projects of faculty members of ERDT-member Universities funded by the Department of Science and Technology.

Table 10. List of Completed R&D Projects for CY 2013

Title	Start Date	Completion Date	Extension Start	Extension End	Implementing Agency	Project Leader	Total Project Cost	Sector	Classification
Development of Philippine Montmorillonite Purification Technique for Nanocomposite Applications (ERDT)	5/19/2009	5/31/2010	3/1/2013	5/31/2013	DMMME	Dr. Leslie Joy L. Diaz	10,020,191.39	Environment	DOST-GIA
Alternative Method to Amalgation and Cyanidation for the Recovery of Gold (ERDT)	5/19/2009	5/31/2010	6/1/2012	4/30/2013	DMMME	Dr. Herman D. Mendoza	14,799,515.99	Environment	DOST-GIA
Development of Philippine Montmorillonite Purification Technique for Nanocomposite Applications (ERDT)	5/19/2009	5/31/2010	3/1/2013	5/31/2013	DMMME	Dr. Leslie Joy L. Diaz	10,020,191.39	Environment	DOST-GIA
Alternative Method to Amalgation and Cyanidation for the Recovery of Gold (ERDT)	5/19/2009	5/31/2010	6/1/2012	4/30/2013	DMMME	Dr. Herman D. Mendoza	14,799,515.99	Environment	DOST-GIA
Design and Implementation of a Power Distribution System for Data Centers	1/1/2013	12/31/2013			EEEI	Dr. Michael Angelo a. Pedrasa	1,266,046.00	Energy	PCIEERD-GIA
Interdisciplinary Signal Processing for Pinoys (ISIP Program) : Project 1 - Digital Database of Filipino Words (Bantay Wika)	5/6/2011	7/14/2013			EEEI	Dr. Rhandley D.Cajote	1,536,315.00	Information and Communications Technology	PCIEERD-GIA
Interdisciplinary Signal Processing for Pinoys (ISIP Program) : Project 3 - Real-time Closed Captioning for Broadcasted News in Filipino	2/25/2011	7/14/2013			EEEI	Prof. Federico M. Ang	1,222,655.00	Information and Communications Technology	PCIEERD-GIA
Interdisciplinary Signal Processing for Pinoys (ISIP Program) : Project 6 - Philippine Languages Database for Mother Tongue-Based Multilingual Education and Applications	5/6/2011	7/14/2014			EEEI	Dr. Rhandley D.Cajote	5,795,969.57	Information and Communications Technology	DOST-GIA
Interdisciplinary Signal Processing for Pinoys (ISIP Program) : Project 7 - Development of an English Language Training Software for Call Centers	5/6/2011	7/14/2013			EEEI	Dr. Susan Festin	21,924,362.00	Information and Communications Technology	PCIEERD-GIA
Smart Wire Program : Project 1 - Energy Efficient Data Acquisition and Conditioning for the SmartWire Sensor Node Project	10/1/2012	9/30/2015			EEEI	Dr. Louis P. Alarcon	20,137,175.00	Electronics Technology	PCIEERD-GIA

Smart Wire Program : Project 2 - Integrated Energy Harvesting, Storage and Regulation for the SmartWire Sensor Node	10/1/2012	12/31/2013			EEEI	Dr. John Richard E. Hizon	21,644,431.00	Electronics Technology	PCIEERD-GIA
Rapid Electric Vehicle Charging (CharM)	1/1/2013	12/31/2013			EEEI				
3-D Gestures on 2-D Screen for User Interface	10/1/2012	09/30/2013			EEEI	Dr. Rowel O. Atienza	5,228,919.00	Information and Communications Technology	PCIEERD-GIA
Synthesis and Application of Novel Nano-scale Photocatalysts with Different Dopants for the Treatment of A) Dimethyl Sulfoxide, B) Chlorophenols in Aqueous Solutions and C) Gaseous Formaldehyde	10/1/2012	9/30/2013			DChE	Dr. Mark De Luna	7,315,265.00	Nanotechnology	DOST-GIA
DRMS Project 2: SENSLOPE - Development of Alternative Cost-effective Instrumentation and Sensor Networks	11/26/2007	05/31/2013			EEEI	Dr. Joel Joseph Marciano	20,023,012.85	Electronics Technology	PCIEERD-GIA

ERDT MAJOR EVENTS AND ACTIVITIES

ERDT CONFERENCES, CONGRESS AND SUMMIT

The ERDT conferences capture the highlights of researches of scholars and their advisers and put them in an avenue for exchange of knowledge.

In 2013, ERDT organized the 2nd ERDT Congress held last June 14, 2013 at Philippine International Convention Center (PICC) Manila.

The ERDT Congress is an annual event where researchers, ERDT Scholars, visiting professors and venture capitalists gather and get inspired by plenary lectures of highly distinguished professors and industry leaders all over the world. It also seeks to provide an avenue for ERDT scholars to publish their academic works. The theme for this year's 2nd ERDT Congress is "K2M: Knowledge to Market (Engineering to Enterprise)."

Also in 2013, ERDT has collaborated with the Asia Pacific Industrial Engineering and Management Society and Philippine Institute of Industrial Engineering (PIIE) to hold the joint 9th ERT Conference and Asia Pacific Industrial Engineering and Management Systems Conference 2013. It is a forum for exchange of ideas among leading academics, researchers and practitioners on the latest developments in the field of industrial engineering and management science. It aims to promote excellence among all its relevant fields of engineering, technology, and management; and to seek opportunities for collaboration among participants. This year, IFPR, together with local sponsors SEE Forum and ERDT, joined to achieve a common goal of operational excellence towards green growth. The conference seeks contributions from researchers, educators, graduate students, modelers, software developers, users and practitioners.

The following are the past ERDT conferences, congress and summit:

EVENT	THEME	DATE	NO. OF ATTENDEES	VENUE
1st ERDT Conference	Setting the Backdrop for the ERDT R&D in the Next 10 Years: Challenges and Opportunities	12 September 2008	400	Renaissance Hotel
2nd ERDT Conference	Synergy in Multi-disciplinary R&D	20 February 2009	400	Diamond Hotel Manila
3rd ERDT Conference	Post Graduate Multidisciplinary Approach to Solving Philippine Problems	11 September 2009	631	EDSA Shangri-la Hotel
4th ERDT Conference	Charting the R&D Roadmap of the Philippines	19 February 2010	638	Sofitel Philippine Plaza
5th ERDT Conference	Philippine Competitiveness through ERDT	10 September 2010	770	Sofitel Philippine Plaza
6th ERDT Conference	Addressing the Grand Challenges Through Engineering Innovations	18 February 2011	700	Diamond Hotel Manila
7th ERDT Conference	Sustainability Through ERDT: Towards a Carbon-Neutral Economy	16 September 2011	755	Manila Hotel
1st ERDT Congress	The Inventive Engineer: Patents and Commercialization	24 February 2012	740	Philippine International Convention Center, Manila
8th ERDT Conference jointly with IEEE TENCON 2012	Sustainable Development through Humanitarian Technology	19-22 November 2012	800	Radisson Blu Hotel, Cebu City
ERDT R&D Summit 2012	Strengthening Synergies between Industry and Academe towards a Needs-Based Research	7 December 2012	250	Diamond Hotel Manila
2nd ERDT Congress	K2M: Knowledge to Market (Engineering to Enterprise)	14 June 2013	591	PICC Manila
9th ERDT Conference jointly with Asia Pacific Industrial Engineering and Management Systems Conference	Operational Excellence Towards Green Growth	3-6 December 2013	500	Radisson Blu, Cebu City

This 2014, ERDT will hold the 3rd ERDT Congress during the National Science and Technology Week with the theme “ERDT for Disaster Preparedness and Resiliency”. For the 10th ERDT Conference, ERDT will partner with two international conference organizers to have the joint 7th ASEAN Environmental Engineering Conference, 7th ASEAN Civil Engineering Conference (organized by University of the Philippines Diliman and funded by AUN/SEED-NET JICA Program) and with 7th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment and Management (HNICEM 2014) and 6th International Symposium on Computational Intelligence and Intelligent Informatics (ISCII 2014) organized by De La Salle University to be held in Puerto Princesa Palawan.

The joint conferences aims to answer the following question: “How can Communities be ready for the next big hazard?: An Engineering Perspective on Infrastructure Resilience, Community Preparedness, Environmental Sustainability Through Humanitarian Technology”.

9th ERDT Conference jointly with Asia Pacific Industrial Engineering and Management Systems Conference

Prof. Dr. Anthony SF Chiu, Department of Industrial Engineering, De La Salle University



Dr. Anthony SF Chiu, EEI Chair Professor at De La Salle University and APIEMS 2011-2012 President, welcomes delegates to this year's joint APIEMS 2013 and 9th ERDT Conference.

Asia Pacific Industrial Engineering and Management Society (APIEMS) is the leading professional organization in the Asia Pacific Region devoted to supporting industrial engineering and management profession by means of providing platform for exchange of enriched ideas on application, education, research, and development of IE and management, and for collaboration and engagement between countries. To facilitate dynamic interaction among international academicians, researchers, and business experts, since 1999 the society has carried out thirteen (13) successful IE and Management Systems Conferences in the region and two of those were hosted by Philippines. The first APIEMS Conference in the Philippines was held last year 2005.

For the second time, with the theme “Operational Excellence towards Green Growth” the 14th Asia Pacific Industrial Engineering and Management Systems (APIEMS) Conference was organized by the Philippine Institute of Industrial Engineers (PIIE) in cooperation with IFPR-APR, ERDT, and SEE Forum last December 3-6, 2013 at the Radisson Blu Hotel, Cebu City, Philippines. It was jointly held with:

- The 17th Asia Pacific Regional Meeting of the International Foundation for Production Research;
- 13th Philippines Institute of Industrial Engineers National Congress and 6th IE Research Conference; and
- 2013 Sustainable Energy and Environment Forum
- 9th ERDT Conference

The conference was co-chaired by Prof. Dr. (Anthony) Shun Fung Chiu of De La Salle University and Prof. Dr. Aura Matias of University of the Philippines Diliman. It brought together more than 500 international leading researchers and industry practitioners coming from countries including Australia, Taiwan, Germany, Japan, Denmark, Indonesia, Korea, Malaysia, Thailand, UK, Hong Kong, Canada, Vietnam and Philippines.

Two very high-profile speakers, Prof. Dr. Shimon Nof of Purdue University in USA and Prof. Dr. Mitsuo Gen, APIEMS Past President, delivered the following keynote addresses respectively:

- Sustainability and Resilience in Supply Networks, and

- Advances in Hybrid Evolutionary Algorithms For Manufacturing and Logistics Optimization

The Fifty one (51) presentation sessions offered collegial atmosphere for focus group discussions. 458 abstracts were submitted to the conference, and 275 full papers were included in the proceedings.

Among the topics covered are the following: Ergonomics and Welfare Management, ICT Utilization in Marketing, IE & Management Education, Lean Manufacturing, Management Information System, Operations Research, Production & Operations Management, Quality Control & Improvement, Supply Chain management, Sustainable Production and Development.

2nd ERDT Congress gears towards Innovation and Entrepreneurship

The 2nd Engineering Research and Development for Technology Congress with the theme “K2M: Knowledge to Market (Engineering to Enterprise)” was held at the Philippine International Convention Center, Manila last June 14, 2013. The said annual event connected colleagues from the 8 consortium universities, industries, and government who shared their different thoughts and insights in the perfectly timed discussion on innovation, competitiveness and entrepreneurship.



Former ASEAN Executive Director Dr. Filemon A. Uriarte tackles the state of competitiveness and innovation of the Philippines.

The program started with a prayer followed by the welcome remarks of Dr. Aura C. Matias, ERDT Program Leader and opening remarks of Dr. Filma Brawner, DOST SEI Director. There were 5 keynote speakers who shared their expertise, advocacies and experiences in their professions and businesses on how they started and how they successfully achieved their goals.

Dr. Filemon A. Uriarte, academician of the National Academy of Science and Technology and former Executive Director of ASEAN Foundation has enlightened participants on how the world values competitiveness, our country's current performance, and on how innovation can contribute in boosting our

economy in order to be competitive enough. Dr. Uriarte also tackled how strategically and holistically we should innovate by showing the experiences of developed countries. At the latter part of his presentation, Dr. Uriarte recommended putting innovation at the highest point of government's action.

“Use the “whole-of-government approach” and place innovation at the apex of the government structure through a high-level central coordinating body that formulates innovation policies and oversees their implementation.”

Dr. Gary E. Wnek, a professor and director at the Case Western Reserve University, United States of America defined innovation as translating ideas into value for customers that further leads to sustainable business ventures. Dr. Wnek talked about the “T-Shaped” and “I-Shaped” Engineers and related them on how engineers can elevate the innovation economy. In his discussion, Dr. Wnek showed the importance of analytical and technical competences and personal value propositions as well as the role



ERDT scholars answer queries from the industry, government, faculty advisers and co-scholars during the poster session.

of universities and industries in integrating these aspects to create a pool of talents who are capable of upgrading the economy of ideas and values. On how to innovate, Dr. Wnek ended his presentation by quoting Steve Jobs, “Don’t settle.”

Mr. Earl Martin S. Valencia, president and co-founder of the IdeaSpace Foundation dealt with the importance of establishing a science and technology entrepreneurial ecosystem that provides “democratized access to capital” to innovators.

Successful ERDT scholars Engr. Deogracias P. Villame of Itemhound Corporation and Engr. Roland Jay A. Miguel of GS Metrix Technology Solutions Inc. went on discussing their experiences on they started their technology businesses and how ERDT through the provision of graduate engineering scholarship helped them in their careers. Engr. Villame advised aspiring entrepreneurial engineers,

“Don’t be afraid to try. Break the rules.”



Scholars take a group shot with ERDT Program Leader Dr. Aura C. Matias.

Another highlight of the Congress was the poster competition participated by ERDT scholars from the different consortium universities. Posters were classified according to ERDT 5 R&D tracks namely Energy, ICT, Semiconductor Materials and Electronics, Manufacturing and Machinery, and, Environment and Infrastructure. Winners for each track received plaques and cash prizes.

The Congress was concluded by Dr. Augustus C. Resurreccion, ERDT UP Diliman Project Leader.

Chem Industry supports ERDT scholars*



(Seated, from left) Prof. Elsie M. David, SPIK executive director Engr. Oscar S. Melencio, SPIK president Engr. Roberto F. Batungbacal, UPD Chancellor Caesar A. Saloma, UP College of Engineering (CoE) dean Dr. Aura C. Matias, UPD ERDT project leader Dr. Augustus C. Resurreccion at the MOA signing during the 2nd SPIK Innovation Forum on December 10. Also in photo are (standing, from left) CoE professors Dr. Rizalinda L. De Leon, Dr. Maria Antonia N. Tanchuling, Prof. Lowell L. Lorenzo, Dr. Menandro S. Berana, Dr. Alexis A. Acacio and Dr. Rhodora M. Gonzalez.

Forty Engineering Research and Development for Technology (ERDT) scholars at the University of the Philippines Diliman (UPD) are now assured of support from major companies in the chemical industry with the signing of a memorandum of agreement (MOA) between UPD and Samahan sa Pilipinas ng mga Industriyang Kimika (SPIK) on December 10.

The MOA which establishes the UPD ERDT-SPIK Industry-Academe Research Program will “endeavour to achieve the following targets: 10 first year scholars for SY 2013-2014, 20 first and second year scholars total for the program for SY 2014-2015, and 40 total for the program for SY 2015-2016.”

SPIK is a 37-year-old association of 70 companies comprising the country’s chemical industry. It also represents the country in the International Council of Chemical Association. Among its members are the United Laboratories (UNILAB), Salinas Corporation and Bayer Philippines, Inc.

Meanwhile, ERDT is a consortium of eight member universities in the country that offers Masters and doctoral degrees in various engineering fields. According to the Science Education Institute of the Department of Science and Technology, the ERDT seeks the “implementation of high impact research agenda that are aligned with the National Science and Technology Plan and Medium Term Philippine Development Plan; upgrade the qualifications of practicing engineers; upgrade the quality of engineering colleges and make engineering graduate education accessible; and develop a culture of research and development.”

The MOA was signed by UPD Chancellor Caesar A. Saloma and SPIK president Engr. Roberto F. Batungbacal. Witnesses to the MOA signing were Dr. Aura C. Matias, UP College of Engineering (CoE) dean; Dr. Augustus C. Resurreccion, UPD ERDT project leader; and Engr. Oscar S. Melencio, SPIK executive director.

*<http://www.upd.edu.ph/~updinfo/index.htm>, retrieved on 16 December 2013

The MOA states that SPIK shall “seek suitable SPIK host companies to facilitate the thesis research of selected ERDT scholars taking graduate programs in Chemical Engineering, Environmental Engineering, Energy Engineering, Industrial Engineering, Material Science and Engineering, Mechanical Engineering and Civil Engineering as recommended and endorsed by the UPD CoE through the ERDT Program.”

In addition, SPIK shall “provide an industry mentor to each of the selected ERDT scholars; said industry mentor is expected to work with the student, the UP-based adviser and the SPIK Committee Chair on Education, Research and Innovation (currently Prof. Elsie M. David), for two years towards ensuring the success of the respective thesis by selecting relevant topics, developing the research methodologies and sharing of facilities.”

SPIK shall also “provide additional assistance to the selected ERDT scholars as may be deemed necessary to successfully carry out the thesis research of said scholars.”

The MOA signing coincided with the 2nd SPIK Innovation Forum held at the CoE Theater.

With a theme “Creating Value Together in an Innovation Economy,” the forum organized by the UPD ERDT and SPIK aims “to gather a deeper discussion on innovation and the ways and means on how academe and industry can work together to achieve the needs of the growing innovation economy.”

The forum was attended by over 100 members of the SPIK member companies, UPD students and faculty. The highlight of the event was the launching of UPD ERDT and SPIK Research and Innovation Program.—*Haidee C. Pineda, images by Leonardo Reyes*

EDRT-CONSORTIUM ACTIVITIES

This 2013, ERDT has organized several activities in order to help the scholars finish their studies on time. The following were the activities organized by ERDT in 2013.

1. Consortium University Library Workshop



Date: 21 February 2013

Venue: Cocoon Boutique Hotel, Quezon City

Description: The workshop aims to discuss possibilities for cooperation and networking among consortium engineering libraries, identify common programs, resources and services being carried out by each university, and organize the engineering consortium libraries.

2. ERDT Strategic Planning



Date: 16-18 May 2013

Venue: Flushing Meadows, Bohol

Description: ERDT Strategic Planning aims to formulate annual plans and identify mechanisms for efficient coordination among consortium universities.

3. ERDT UPD – SPIK 2nd Innovation Forum

Date: 10 December 2013

Venue: UP College of Engineering

Description: The Samahan sa Pilipinas ng mga Industriyang Kimika (SPIK) in collaboration with the Engineering Research and Development for Technology (ERDT) organized the 2nd SPIK Innovation. Highlight of the forum is the launch of the ERDT UPD-SPIK Research and Innovation Program which endeavors to have, by the third year of the implementation of the program, 40 ERDT-UPD scholars working on their thesis with a SPIK member company as a research host. An emerging advocacy in both SPIK and ERDT is Innovation in line with the theme of the forum “Creating Value Together in an Innovation Economy”.



4. ERDT Roadshows

Date: January – December 2013

Description: Roadshows are conducted as a promotional activity or a way of attracting more deserving students to apply for ERDT scholarship. *Please see page 47 for the complete list.*

5. ERDT Line-Item Budget Planning



Date: 24 September 2013

Venue: UP College of Engineering Faculty Lounge

Description: The ERDT LIB Planning aims to train ERDT project staff in order to have a uniform and standard way of estimating and computing their respective university annual budget.

6. ERDT Steering Committee (SC) Meetings



34th SC meeting January 30, 2013; Engineering Conference Room/DLSU

35th SC meeting April 4, 2013; Executive Board Room/MIT

36th SC meeting July 26, 2013; Board Room/MSU-IIT

37th SC meeting Conference October 4, 2013; Conference Room/Monte Vista

38th SC Meeting December 4, 2013; Radisson Blu, Cebu

7. 9th Program Advisory Council (PAC) Meeting

Date: October 31, 2013

Venue: Executive Board Room/NEC

ERDT- UNIVERSITY OF THE PHILIPPINES DILIMAN

1. ERDT-U.P. Diliman Scholars General Assembly



Date: 27 March 2013

Venue: Engineering Theater, U.P. College of Engineering Diliman

Description: The General Assembly is a gathering of scholars that aims to update them about the progress of the ERDT, its accomplishments and things to look forward. The Assembly also intends to remind scholars of their duties and responsibilities. It also aims to solicit suggestions to scholars on how to further improve ERDT scholarship.

2. Entrepreneurship Course

Date: 17 April – 21 May 2013

Venue: U.P. College of Engineering Diliman



Description: The entrepreneurship course is an essential course required to scholars. The course intends to help scholars on how to venture into business through their researches. This 2013, ERDT has invited faculty members from the consortium universities to observe so that they can develop and offer the same program in their respective universities. Beginning 2014, each member university shall offer this techno-entrepreneurship course in its own university.



3. ERDT Week Exhibit

Date: 18 – 22 March 2013 (1st Semester)

2 – 6 September 2013 (2nd Semester)

Venue: U.P. College of Engineering Diliman

Description: The activity aims to showcase the accomplishment of the ERDT since it has started and to invite graduating undergraduate students to pursue graduate studies and apply for ERDT scholarship.

4. ERDT Research Forum

Date: 25 September 2013

Venue: UP Diliman College of Engineering

Description: The main objectives of the activity is to gather around 200 on-going scholars of the program and faculty members, have an avenue where they can exchange academic ideas, and for scholars to meet and greet their possible future thesis/dissertation advisers. Through the meet and greet set-up of the activity, the scholars will be able to know the faculty members of the college with their specializations and areas of interest and align them with their proposed research. This also aims to address the “mismatch” of advisers and scholars that leads to delays in graduation.



5. Rubber Science and Technology Short Course Training

(In collaboration with Mapua Institute of Technology and funded by DOST PCIEERD HRD)



Date: 11 – 15 November 2013

Venue: UP National Engineering Center

Description: The course will offer a broad overview of the properties and applications of rubbery macromolecular systems with an emphasis on natural rubber and related materials. Concepts discussed include chemical modification, structure-property relationships, fundamentals of rubber elasticity, fabrication, and applications. Course attendees will have a strong foundation on which to build for deeper learning in specific areas of interest. This Group Training on Rubber Science and Technology entitled “Characterization, Processes, and Design of Rubber Materials: Basics to Advanced Knowledge in Rubber Science and Technology; A Short Course” aims to develop the capability to ensure the sustained growth of the rubber industry through sustainable quantity and quality of rubber and to address the improvement of fabrication and design of rubber materials by understanding deeply the properties of rubber. Moreover, the Group Training also aims to acquire a pool of experts in the field of fabrication and design of rubber materials.



6. “For Monitoring” scholars interview

Date: August – September 2013

Venue: ERDT Office MH 201, College of Engineering, UP Diliman

Description: Interview is conducted to know the reasons behind the delays in graduation and the possible intervention that ERDT can do to aid scholars to graduate as soon as possible.

ENGINEERING FORUM SERIES JANUARY – DECEMBER 2013

Frontiers in Engineering and Innovation
An Engineering and Science Forum

The Forum Series is an event in partnership with other institutions usually foreign universities. The forum serves as an avenue for ERDT scholars to meet other faculty and for them to learn engineering in an international perspective. It also aims to create possible collaboration with other university (i.e., R&D projects, exchange study, etc.).



Officials from the Case Western Reserve University and ERDT Program Leader Dr. Aura C. Matias pose for a group photo after the Engineering Forum Series at Engineering Theater, UP Diliman.

ENGINEERING FORUM SERIES 1

Engineering Education in the 21st Century, International Engineering Experience, Economic Competitiveness, Developing Centers of Innovation, Graduate School, Nanomaterials, Biotechnology and Biomedical Engineering

Date: 12 February 2013

Venue: Engineering Theater, Melchor Hall, U.P. Diliman College of Engineering

Speakers: Dr. Jeff I. Duerk
Dean, Case School of Engineering, Case Western Reserve University

Dr. Daniel Ducoff
Associate Dean for Development and External Affairs,
Case School of Engineering, Case Western Reserve University

Dr. Gary E. Wnek
Faculty Director, Institute of Collaboration and Innovation,
Case School of Engineering, Case Western Reserve University

Dr. Rigoberto Advincula
Professor, Department of Macromolecular Science and Engineering,
Case School of Engineering, Case Western Reserve University

ENGINEERING FORUM SERIES 2

Textiles for Global Health and Well-being, K-12 Engineering Education and Women in Engineering, and Research in Water Resources and Environmental Engineering at North Carolina State University

Date: 4 March 2013

Venue: GE Theater, Melchor Hall, U.P. College of Engineering

In collaboration with the Office of Vice President for Academic Affairs, UP

Speakers: Dr. Marian G. Mccord
Director of Global Health Initiatives and Associate Professor
Textile Engineering, Chemistry, and Science Biomedical Engineering
North Carolina State University

Dr. Laura Bottomley
Director of Women in Engineering and
the Engineering Place for K-20

Outreach Teaching Assistant Professor
Colleges of Engineering and Education
North Carolina State University

Dr. Francis De Los Reyes III
Professor of Civil, Construction, and
Environmental Engineering
Associate Faculty of Microbiology
Training Faculty of Biotechnology,
North Carolina State University



Speakers from North Carolina State University interact with scholars and faculty during the open forum.

ENGINEERING FORUM SERIES 3

Thinking Small About Polymer Fibers: Lessons from Biotechnology and Applications in Medicine

Date: 10 June 2013

Venue: Engineering Theater, Melchor Hall, U.P. College of Engineering

Date: 11 June 2013

Venue: Mapua Institute of Technology

Date: 13 June 2013

Venue: De La Salle University

Dr. Gary E. Wnek

Professor of Engineering, Department of Macromolecular Science and Engineering, Case Western Reserve University

ENGINEERING FORUM SERIES 4

Frontiers in Engineering and Innovation

You and the ERDT Research Enterprise: Your Research as Piece of a Big Jigsaw Puzzle

“The Lost Graduate Student: Mentor, Advisor, and You”

Date: 9 July 2013

Venue: Engineering Theater, Melchor Hall, U.P. College of Engineering

In collaboration with the Department of Industrial Engineering and Operations Research, UP Diliman

Speaker: Dr. C. Ariel Pinto, Balik Scientist
Associate Professor and Graduate Program Director,
Department of Engineering Management and Systems Engineering,
Old Dominion University, Norfolk, VA, USA

Description: Advising is giving counsel to students about issues relating to the degree program, including directing thesis and dissertation activities towards completion. On the other hand, mentoring is far beyond advising. Being a mentor includes preparing mentees to be the best researchers, academics, and practitioners in their chosen field long after they have left UP. This talk will briefly highlight some important aspects of mentoring that may particularly apply to ERDT scholars and advisors.



ERDT scholars jot down notes as Dr. Joanna Z. Resurreccion, ERDT Faculty Development Program grantee at George Washington University, shares her insights and experiences on how to prepare for a well written thesis.

ENGINEERING FORUM SERIES 5

Thesis Writing Workshop and Scholars' General Assembly

Practical Tips on Writing Thesis/Dissertation

Date: 27 August 2013

Venue: Engineering Theater, Melchor Hall, U.P. College of Engineering

In collaboration with Department of Mechanical Engineering, Department of Industrial Engineering and Operations Research, College Library

Speakers: Dr. Louis Angelo M. Danao
Assistant Professor,
Department of Mechanical Engineering
ERDT Faculty Development Program Grantee, The University of Sheffield

Dr. Joanna Z. Resurreccion
Assistant Professor,
Department of Industrial Engineering and Operations Research
ERDT Faculty Development Program Grantee
George Washington University

Dr. Eugen Rex L. Jalao
Assistant Professor,
Department of Industrial Engineering and Operations Research
ERDT Faculty Development Program Grantee, Arizona State University

Ms. Sharon Maria S. Esposo-Betan
Head Librarian, UP College of Engineering

ENGINEERING FORUM SERIES 6

Sustainability and Resilience in Supply Networks

Date: 28 November 2013

Venue: GE Theater, UP College of Engineering

In Collaboration with UP College of Engineering Department of Industrial Engineering and Operations Research and Department of Industrial Engineering, De La Salle University

Speaker: Prof. Shimon Nof
School of Industrial Engineering, Purdue University

ENGINEERING FORUM SERIES 7

Date: 12 December 2013

Venue: GE Theater, UP College of Engineering

In Collaboration with UP College of Engineering Environmental Engineering Program

Speaker: Prof. Toshifumi Igarashi
Laboratory of Groundwater and Mass Transport Division of Sustainable Resources Engineering, Hokkaido University



Visiting Professor Toshifumi Igarashi of Hokkaido University discusses at the ERDT Engineering Forum Series how closed mines suffers from acid mine drainage (AMD) from tailing dams.

ERDT- ATENEO DE MANILA UNIVERSITY

14th Philippine Computing Science Congress

Date: 7-8 March 2013

Venue: University of the Immaculate Conception, Davao City



Description: The 14th Philippine Computing Science Congress is organized by the Computing Society of the Philippines to enable local and neighboring computing educators, researchers, ICT professionals and students to interact and to share their work in computing, computer science, computer engineering, computational science, and information and communications technology (ICT). The conference features special lectures by prominent researchers and educators in the field of information and communications technology (including computing, computer science, computer engineering, computational science, and related disciplines). It also features contributed research papers on computing and ICT. PCSC 2014 is hosted by the University of the Immaculate Conception, Davao City.

ERDT-Mindanao State University Iligan Institute of Technology

ERDT MSU-IIT Fellowship Meeting

Date: July 27, 2013

Venue: College of Engineering Amphitheatre, MSU-IIT

Description: Fellowship Meeting was conducted to solicit updates on the status of the scholars, challenges encountered in research and the possible interventions that ERDT can do to help them.



APPENDICES

Engineering Research and Development for Technology Completed Roadshows 2013

ATENEO DE MANILA UNIVERSITY

University/Institution	Date
Philam Life Auditorium (Various Schools)	January 30, 2013
ADMU Phil. Computing Society (Various Schools)	March 7-8, 2013
Ateneo De Davao University	Monthly
Ateneo De Davao University	1st Semester AY 2012-2013

CENTRAL LUZON STATE UNIVERSITY

University/Institution	Date
Cagayan State University	April 25, 2013

DE LA SALLE UNIVERSITY

University/Institution	Date
Aquinas University	February 21, 2013
Saint Louis University	September 26, 2013
USC Recoletos	December 5, 2013

MAPUA INSTITUTE OF TECHNOLOGY

University/Institution	Date
Marinduque State College	
Ateneo de Naga	
Partido State University	
University of San Agustin	November 26, 2013
University of Iloilo	November 26, 2013
Garcia College of Technology	November 27, 2013
Aklan State University	November 28, 2013
Southwestern University	December 5, 2013

MINDANAO STATE UNIVERSITY - ILIGAN INSTITUTE OF TECHNOLOGY

University/Institution	Date
Capitol University of Cagayan de Oro	February 26, 2013
University of Mindanao	February 27, 2013
Notre Dame of Marbel University	February 28, 2013
Silliman University	March 7, 2013
Besavilla Review Center	March 7, 2013
Excel Review Center	March 7, 2013
Prime Review Center	March 7, 2013
USC Cebu	March 7, 2013
University of Cebu	March 7, 2013
University of San Recoletos	March 7, 2013

UNIVERSITY OF SAN CARLOS

University/Institution
Cebu Institute of Technology University
Excel Review Center
Besavilla Review Centerhow

UNIVERSITY OF THE PHILIPPINES DILIMAN

University/Institution	Date
University of Baguio	February 21, 2013
University of the Cordilleras	February 21, 2013
University of the Philippines- Baguio	February 21, 2013
Technological University of the Philippines- Manila	March 12, 2013
University of Santo Tomas	March 18, 2013
Centro Escolar University	March 18, 2013
University of Pangasinan	March 21, 2013
Lyceum-Northwestern University	March 21, 2013
Esplana Review Center	March 28, 2013
PRIME Review Center	March 28, 2013
University of Asia and the Pacific	August 27, 2013
Manuel L. Quezon University	September 4, 2013
Saint Louis College	September 5, 2013
Northern Philippine College for Maritime Science & Technology	September 5, 2013
FEATI University	September 9, 2013
Review Innovations	October 7, 2013
Excel First	October 7, 2013

List of 2013 Graduate ERDT Scholars with Thesis/Dissertation Titles

Ateneo de Manila University

	Name of Scholar	Degree Completed	Field of Study	School Graduated	Month and Year Graduated	Title of Thesis/Dissertation
1	Aureus, Jelly P.	MS	Computer Science	Ateneo de Manila University	March 2013	Modifying the K-Medoid Algorithm to Improve Gene Expression Data Clustering Using Biological Homogeneity Index(BHI) and Biological Stability Index (BSI)
2	Bautista, Christopher Jr.	MS	Computer Science	Ateneo de Manila University	March 2013	An Integrated Indoor Pedestrian Tracking Syssem from Shadowing to Analysis
3	Chu, Varian Sherwin B.	MS	Computer Science	Ateneo de Manila University	October 2013	Background Image Reconstruction Using Random Frame Sampling and Liginal Bit Operations
4	Co, Jan Miles	MS	Computer Science	Ateneo de Manila University	October 2013	Exploring Melodic Features for Classification of Traditional Music in the Context of Cultural Source
5	De Leon, Marlene M.	PHD	Computer Science	Ateneo de Manila University	May 2013	Towards a Billilingual Sentiment Analysis of English - Filipino Text

Central Luzon State University

	Name of Scholar	Degree Completed	Field of Study	School Graduated	Month and Year Graduated	Title of Thesis/Dissertation
1	Javellonar, Rolando P.	Ph.D.	Agricultural Engineering	Central Luzon State University	April 2013	Rice Straw Geotextile as Ground Cover for Soil Erosion Mitigation
2	Taclan, Lorcelie B.	Ph.D.	Agricultural Engineering	Central Luzon State University	April 2013	Reduction of Saltwater Intrusion Using Freshwater Injection Technology
3	Aquino, Sony P.	MS	Agricultural Engineering	Central Luzon State University	April 2013	Design, Fabrication and Performance Evaluation of a Mobile Engine-Driven Pneumatic Paddy Collector
4	Mateo, Wendy C.	MS	Agricultural Engineering	Central Luzon State University	April 2013	Alkali Pre-Treatment of Rice Straw to Enhance Enzymatic Hydrolysis for Bioethanol Production

5	Somera, Carolyn Grace G.	MS	Agricultural Engineering	Central Luzon State University	April 2013	Processing of Mechanically Pressed Sunflower (<i>Helianthus Annuus</i>) Cake for Bioethanol Production
6	Agato, Teresa A.	MS	Agricultural Engineering	Central Luzon State University	November 2013	Enrichment of Methane from Biogas through Physical Absorption Process
7	Balicha, Jean C.	MS	Agricultural Engineering	Central Luzon State University	November 2013	Optimizing the Process of Bioethanol Production from Sweet Sorghum (<i>Sorghum bicolor</i> L. Moench) Grains
8	De Guzman, Ermalyn M.	MS	Agricultural Engineering	Central Luzon State University	November 2013	A GIS – Aided Decision Support System for Small Farm Reservoirs
9	Elizalde, Eliza M.	MS	Agricultural Engineering	Central Luzon State University	November 2013	Bio-CO ₂ Desorption from Waste Water of the Biogas Purification System through Ultrasonic Agitation Technology
10	Ramos, Gloria N.	MS	Agricultural Engineering	Central Luzon State University	November 2013	Yield Response Model of Sweet Sorghum (<i>Sorghum bicolor</i> L. Moech) to drought Stress at different stages
11	Ranese, Eleazar V. Jr.	MS	Agricultural Engineering	Central Luzon State University	November 2013	Fate and Transport of Nitrate and Phosphate from Swine Manure Pit
12	Salvador, Nicasio C.	MS	Agricultural Engineering	Central Luzon State University	November 2013	Application of the Universal Soil Loss Equation- Modification in Soil Erosion Risk Mapping

De La Salle University

	Name of Scholar	Degree Completed	Field of Study	School Graduated	Month and Year Graduated	Title of Thesis/Dissertation
1	Bernardo, Gian Paolo O.	MS	Chemical Engineering	De La Salle University	February 2013	CNT Production through the Thermal Catalytic Decomposition of Methane over Ni-Cu/Al ₂ O ₃
2	Ochotorena, Carlo Noel E.	MS	Electronics & Communications Engineering	De La Salle University	February 2013	Image Fusion of Multidirectional Wavelet Transform for Image Denoising

3	Balean, Fritzie Hannah O.	MS	Environmental Engineering	De La Salle University	June 2013	Microwave Chemical Vapor Deposition Synthesis of Carbon Nanotubes from CO ₂ and C ₂ H ₂ using nickel, cobalt and molybdenum catalysts
4	Simbulan, Kristan Bryan Caluntad	MS	Electronics & Communications Engineering	De La Salle University	June 2013	Design and Development of a Wireless Communication Link for Underwater Robot System
5	Que, Wesley Manfred Lim	MS	Industrial Engineering	De La Salle University	June 2013	A Product Line Design and Strategy Model for Manufacturing and Marketing Tradeoffs
6	David, Kanny Krizzy Abulad	MS	Electronics & Communications Engineering	De La Salle University	June 2013	Design and Development of an Autonomous Underwater Vehicle (AUV) with Fuzzy Logic-based Controller
7	Regulacion, Rhea Espinosa	MS	Civil Engineering	De La Salle University	October 2013	Application of Response Surface Methodology: Optimum Mix Design of Concrete Using Slag as Coarse Aggregate
8	Balisado, Sheila Cobacha	MS	Industrial Engineering	De La Salle University	October 2013	Modeling mobile phone user preferences on incentives and convenience of mobile phone take-back program in the Philippines: A Choice Experiment Approach
9	Caldo, Rionel Belen	MS	Electronics & Communications Engineering	De La Salle University	October 2013	Development of a Fuzzy Logic Controller for DC/DC Buck and Boost Converter in a FPGA
10	Manrique, Robby Barlis	MS	Mechanical Engineering	De La Salle University	October 2013	A Molecular Dynamics Study on the Effects of Osmotic Pressure on the Lipids of Microalgae <i>Chlorella Vulgaris</i>

Mapua Institute of Technology

	Name of Scholar	Degree Completed	Field of Study	School Graduated	Month and Year Graduated	Title of Thesis/Dissertation
1	Delicana, Jay K V.	MS	Computer Engineering	Mapua Institute of Technology	3rd Quarter 2012-2013 / January 2013	Portable Absorbance Spectrum Analyzer with Library for Liquid Substances
2	Quiambao, Erwin	MS	Civil Eng'g. major in Structural Engineering	Mapua Institute of Technology	4th Quarter 2012-2013 / April 2013	Seismic Vulnerability Assessment of Existing Concrete Buildings in City of San Fernando Pampanga

3	Torres, Jumelyn L.	MS	Computer Engineering	Mapua Institute of Technology	4th Quarter 2012-2013 / April 2013	Application of Genetic Algorithm for Acquisition & Optimization of Data in Surface Myoelectric Prosthesis of the Upper Limb.
4	Cas, Henri Lu L.	MS	ECE Major in Microelectronics	Mapua Institute of Technology	2nd Quarter 2013-2014 / October 2013	Twisted Differential Line Structure as a Noise Suppressor of an Interconnect of a printed Circuit Board

Mindanao State University – Iligan Institute of Technology

	Name of Scholar	Degree Completed	Field of Study	School Graduated	Month and Year Graduated	Title of Thesis/Dissertation
1	Amaya, Alvin B.	MS	Electrical Engineering	Mindanao State University-Iligan Institute of Technology	April 2013	Design of 18 BIT Digital-to- Analog Converter
2	Arca, Ma. Catherine Q.	MS	Civil Engineering	Mindanao State University-Iligan Institute of Technology	April 2013	Artificial Neural Network Classification for Gunshot detection and localization System
3	Dadula, Danilo P.	PhD	Mechanical Engineering	Mindanao State University-Iligan Institute of Technology	April 2013	Performance Evaluation of Multi-bladed Diffuser Augmented Wind Turbine
4	Daleon, Cheryl F.	MS	Civil Engineering	Mindanao State University-Iligan Institute of Technology	April 2013	Effects of Sugar-Mill Lime Sludge Treatment on the Expansive Soil in Bukidnon
5	Dela Peña, Guil Lou M.	MS	Civil Engineering	Mindanao State University-Iligan Institute of Technology	April 2013	Mechanical Properties of Coconut Coir-Cement Fiber Board
6	Mercado, Harvey T.	MS	Electrical Engineering	Mindanao State University-Iligan Institute of Technology	April 2013	Post Filter Implementation for an 18 Bit Oversampling audio Delta-Sigma Dac Chip
7	Sabido, Vera Karla I.	MS	Civil Engineering	Mindanao State University-Iligan Institute of Technology	April 2013	Geotechnical Characterization of Soil Along Cagayan De Oro Riverbank after the Flashflood Incident brought by Typhoon Sendong

8	Tirol, Michelle L.	MS	Civil Engineering	Mindanao State University-Iligan Institute of Technology	April 2013	Effect of Adding Chicken Feathers on the Compressive Strength of the Concrete Hollow Blocks
9	Zamayla, Arnel D.	MS	Computer Application	Mindanao State University-Iligan Institute of Technology	April 2013	Automated Sweet Ripe Mango Visual identification and Segregation Machine Inspection System using Self-Organizing Map
10	Ca-ay, Jo Ann P.	MS	Civil Engineering	Mindanao State University-Iligan Institute of Technology	November 2013	Compressive Strength and Fire Resistance Test of Concrete Cylinder Using Waste Crumbled Rubber Tire as Partial Sand Replacement
11	Gultia, Jeprie L.	MS	Electrical Engineering	Mindanao State University-Iligan Institute of Technology	November 2013	Artificial Neural Network (ANN) Based Shunt Active Power Filter
12	Miculob, Rennie E.	MS	Electrical Engineering	Mindanao State University-Iligan Institute of Technology	November 2013	Impact Assessment of Net-Metered System on Local Grid
13	Peregrino, Jeizllie M.	MS	Electrical Engineering	Mindanao State University-Iligan Institute of Technology	November 2013	Geographic Information System (GIS) Based Electrical Distribution System Management for Mindanao State University - Iligan Institute of Technology
14	Recososa, jogiemar I.	MS	Civil Engineering	Mindanao State University-Iligan Institute of Technology	November 2013	Mortar Incorporated with rice husk ash using Seasand
15	Villanueva, Mark D.	MS	Mechanical Engineering	Mindanao State University-Iligan Institute of Technology	November 2013	A computational and experimental study of a jet engine-derivative axial flow impulse type hydraulic turbine

University of the Philippines Diliman

	Name of Scholar	Degree Completed	Field of Study	School Graduated	Month and Year Graduated	Title of Thesis/Dissertation
1	Abarca, Ralf, Ruffel M.	MS	Chemical Engineering	University of the Philippines, Diliman	March 2013	Struvite-seeded Magnesium Ammonium Phosphate Crystallization in a Fluidized Bed

2	Amparado, Stella Angela	MS	Metallurgical Engineering	University of the Philippines, Diliman	March 2013	Prediction of Zeta Potential of Minerals Using Tumbling Method
3	Arida, Carlo Vic J.	MS	Environmental Engineering	University of the Philippines, Diliman	March 2013	Adsorption of Groundwater As(V) on Chitosan-coated Bentonite: Batch and Fixed-bed Studies
4	Bual, Ronald P.	MS	Chemical Engineering	University of the Philippines, Diliman	March 2013	A Degradation Study of Polyurethane and Polyfurfuryl Alcohol Resins Under Acidic Environment
5	Buhali, Mario L. Jr.	MS	Energy Engineering	University of the Philippines, Diliman	March 2013	Thermodynamics - Based Method for Estimating Solar PV Yield Using Philippine SSE and PV Performance Parameters
6	Cayabyab, Inla Diana Z.	MS	Environmental Engineering	University of the Philippines, Diliman	March 2013	Impact of Quezon City Controlled Dumping Facility (QCCDF) on Groundwater and Surface Water Quality
7	Colades, James I.	MS	Chemical Engineering	University of the Philippines, Diliman	March 2013	Dimethyl Sulfoxide (DMSO) Degradation by Electro-Fenton Process
8	Dayrit, Raymond A.	MS	Environmental Engineering	University of the Philippines, Diliman	March 2013	Application of In-line High Shear Mixing Process in the Oxidative-Adsorptive Desulfurization of Diesel Fuel
9	Dionisio, Mercy Grace A.	MS	Environmental Engineering	University of the Philippines, Diliman	March 2013	Treatment of Distillery Wastewater Using Advanced Oxidation Process: UV/O ₃ , UV/H ₂ O and H ₂ O ₂ /O ₃
10	Dorilag, Raphael B.	MS	Energy Engineering	University of the Philippines, Diliman	March 2013	Wind Energy Resource Assessment in Gap Regions Using MM5 Numerical Weather Prediction Model
11	Duavis, Ayesha G.	MS	Environmental Engineering	University of the Philippines, Diliman	March 2013	Desulfurization of Diesel Fuel by High Shear Mixing Oxidation Coupled with Fixed-Bed Adsorption
12	Ensano, Benny Marie B.	MS	Environmental Engineering	University of the Philippines, Diliman	March 2013	Adsorption of Diclofenac Sodium from Aqueous Solution using Fe-Mn Binary Oxides: Parametric, Optimization, Equilibrium and Kinetics Study
13	Aleño, Jay-Anne B.	PhD	Chemical Engineering	University of the Philippines, Diliman	March 2013	Treatment of Water Hyacinth and Pineapple Indigenous Fibers for Textile Applications using Plasma Enhanced Chemical Vapor Deposition (PECVD)
14	Antinio, Bernadeth S.	PhD	Chemical Engineering	University of the Philippines, Diliman	March 2013	Production of Lovastatin from Crude Glycerol via Fermentation Using <i>Aspergillus terreus</i> ATCC 10542

15	Ferrer, Emmanuel L.	PhD	Chemical Engineering	University of the Philippines, Diliman	March 2013	Zeolite as Carrier Inorganic and Organic Corrosion Inhibitors for Aluminum Alloy AA2024-T3
16	Filipinas, Judilyn Q.	MS	Environmental Engineering	University of the Philippines, Diliman	March 2013	Parametric, Optimization, Isotherm and Kinetic Studies in the Removal of Sodium Diclofenac from Aqueous Solutions by Adsorption onto Activated Carbon Derived from Waste Rice Hulls
17	Galvan, Mitch-Irene Kate N.	MS	Materials Science and Engineering	University of the Philippines, Diliman	March 2013	Synthesis of Polyacrylonitrile/Lithium-Montmorillonite Nanocomposite for Solid Polymer Electrolyte Application
18	Gotostos, Mary Jane N.	MS	Chemical Engineering	University of the Philippines, Diliman	March 2013	Synthesis of K ₃ [Fe(CN) ₆]-modified Titanium Dioxide Photocatalyst and its Application on the Visible Light Photocatalytic Degradation of Acetaminophen
19	Guerrero, Rodel D.	MS	Chemical Engineering	University of the Philippines, Diliman	March 2013	Synthesis of Furfural from Agricultural Residues in the Philippine for Local Furfural Production
20	Halal, Paul Israel S.	MS	Energy Engineering	University of the Philippines, Diliman	March 2013	Performance Evaluation of Gamma-Ray Radiation and Ultraviolet Light Photocatalytic Pretreatments of Sargassum Algae
21	Jagape, Jesse L.	MS	Materials Science and Engineering	University of the Philippines, Diliman	March 2013	Synthesis of Shape Memory Alloy via Annealing of Electrodeposited Layers of Copper and Tin on Brass
22	Macabale, Nemesio Jr. A.	PhD	Electrical and Electronics Engineering	University of the Philippines, Diliman	March 2013	CLAW: Channel Load Aware Routing Metric for Wireless Mesh Networks
23	Montalbo, Kathrina D.	MS	Energy Engineering	University of the Philippines, Diliman	March 2013	Transesterification of Jatropha Seed Oil Using Potassium Loaded on Different Forms of Zeolite Y as Catalyst
24	Montebon, Chito C.	MS	Energy Engineering	University of the Philippines, Diliman	March 2013	Torrefaction of Insecticide Treated Bed Net Waste Combined with Biomass Residue to Produce High Calorific Value Fuel Pellets
25	Ongkiko, Aileen Grace M.	MS	Materials Science and Engineering	University of the Philippines, Diliman	March 2013	Synthesis of Chitin derived from Shells of Philippine Blue Swimming Crab (Portunus pelagicus)

26	Ordoño, Emma E.	PhD	Chemical Engineering	University of the Philippines, Diliman	March 2013	Development and Optimization of Sequential Combination of Anaerobic-aerobic and Ozonation Processes for Treating Effluents from Distillery
27	Ortenero, Joseph R.	MS	Chemical Engineering	University of the Philippines, Diliman	March 2013	The Effect of Different Chemical Treatments on the Mechanical and Morphological Properties of Water Hyacinth Fiber-Reinforced Green Composites
28	Pulutan, Doreena Karmina A.	MS	Electrical and Electronics Engineering	University of the Philippines, Diliman	March 2013	Design Methodology for a Combined FMCW and Pulse Doppler Radar Front-end
29	Reaño, Resmond L.	MS	Environmental Engineering	University of the Philippines, Diliman	March 2013	Barium Recovery Using Crystallization in a Fluidized-bed Reactor
30	Rance, Diana Pearl M.	MS	Chemical Engineering	University of the Philippines, Diliman	March 2013	Sulfate Removal by Fluidized Bed Crystallization
31	Reyes, Sheryl Rose C.	MS	Remote Sensing	University of the Philippines, Diliman	March 2013	Assessment of Philippine Coastal Vulnerability to Sea Level Rise Using Remote Sensing (RS) and Geographic Information Systems (GIS): A Case of Bolinao, Pangasinan
32	Tolosa, Nolan C.	PhD	Environmental Engineering	University of the Philippines, Diliman	March 2013	Photocatalytic Behaviour of Doped-Titanium Dioxide on the Oxidation of Chlorophenols Contaminated Water under Visible Light
33	Vasquez, Jasmin Z.	MS	Materials Science and Engineering	University of the Philippines, Diliman	March 2013	Unidirectional Aba Fiber Reinforced Bitter Cassava based (Manihot esculenta crantz) Thermoplastic Starch Composite
34	Abadies, Hearty Z.	MS	Electrical and Electronics Engineering	University of the Philippines, Diliman	Summer 2013	Integrated Controller Techniques for Flash Memories
35	Bayona, Michael Gringo Angelo R.	MS	Electrical and Electronics Engineering	University of the Philippines, Diliman	Summer 2013	Development of a Speech Recognition-Based Automatic Reading Tutor for Non-native Children Learners of the Filipino Language
36	Dela Cruz, Sherlyn C.	MS	Electrical and Electronics Engineering	University of the Philippines, Diliman	Summer 2013	1.2V 5.8-GHz 90nm CMOS RF Power Amplifier Parameter Enhancement Techniques
37	Delos Reyes, Mark Gerard T.	MS	Electrical and Electronics Engineering	University of the Philippines, Diliman	Summer 2013	RF Energy Harvesting Systems for Autonomous Wireless Sensor Networks
38	Espiritu, Joshua Romeo S.	MS	Mechanical Engineering	University of the Philippines, Diliman	Summer 2013	Mechanical Optimization of Bipedal Gait Movement

39	Genuino, Divine Angela D.	MS	Environmental Engineering	University of the Philippines, Diliman	Summer 2013	Ultrasonic Cleaning of Polytetrafluoroethylene (PTFE) Membrane Fouled by Natural Organic Matter (NOM)
40	Ligaray, Mayzonee V.	MS	Environmental Engineering	University of the Philippines, Diliman	Summer 2013	COD Removal from Thin-Film Transistor-Liquid Crystal Display (TFT-LCD) Wastewater Using Chitosan -Coated Bentonite (CCB)
41	Miranda, Levi L.	MS	Chemical Engineering	University of the Philippines, Diliman	Summer 2013	Preliminary Design and Assessment of a Novel Hydrodynamic Cavitation Reactor System - A Tool in Oxidative Desulfurization of Diesel Oil
42	Poblete, Myra Ruth S.	MS	Environmental Engineering	University of the Philippines, Diliman	Summer 2013	Synthesis of Biodegradable Cellulose-Chitin Polymer Blend Film
43	Samaniego, Marvin L.	MS	Environmental Engineering	University of the Philippines, Diliman	Summer 2013	Removal of Sulfur Compounds from Oxidized Diesel Fuel Using Activated Carbon and Alumina Adsorbents
44	Sumalinog, Mario Jose II. R.	MS	Environmental Engineering	University of the Philippines, Diliman	Summer 2013	Synthesis and Characterization of Iron-Manganese Oxide Adsorbents from Actual Drinking Water Treatment Residuals for Hexavalent Chromium Removal
45	Ultra, John D.	MS	Computer Science	University of the Philippines, Diliman	Summer 2013	A Collaborative Access Control Model for E-voting Systems
46	Ibe, Aldwin H.	MS	Environmental Engineering	University of the Philippines, Diliman	June 2013	Adsorption of Cr(VI) from Aqueous Solution Using Residual Coated Sand (RCS): Equilibrium, Kinetic and Thermodynamic Studies
47	Lapada, Catherine M.	MS	Chemical Engineering	University of the Philippines, Diliman	June 2013	Treatment of Paper Mill Waste Water Using Combined Ozonation and Upflow Anaerobic Sludge Blanket (UASB) Process at Different System Configurations and Hydraulic Retention Times
48	Cabunducan, Gerard S.	MS	Computer Science	University of the Philippines, Diliman	October 2013	An Algorithm for Computing Burrows-Wheeler Transform Using q -grams
49	Calamlam, Abel M.	MS	Industrial Engineering	University of the Philippines, Diliman	October 2013	A Study of Paper and Video Projected Displays to Shorten Assembly Operations in Assemble-to-Order Systems: Identification and Comparison of Assembly

						Time Components and their Relationships
50	Constantino, Joseph Bernard A.	MS	Electrical and Electronics Engineering	University of the Philippines, Diliman	October 2013	A 0.5V Narrowband PLC BPSK Transceiver for Smart Sensing of High Voltage Transmission Line Temperature and Current
51	Dy, Trixie Ruth N.	MS	Chemical Engineering	University of the Philippines, Diliman	October 2013	Water Hyacinth-Derived Biopolyols for Polyurethane Production Using Crude Glycerine as Liquefaction Solvent
52	Labinghisa, Ruby S.	MS	Environmental Engineering	University of the Philippines, Diliman	October 2013	Ampicillin Removal by Polyvinylidene Difluoride (PVDF), Polyethersulfone (PES) and Nylon for Membrane Bioreactor Application
53	Ebrada, Leni C.	MS	Energy Engineering	University of the Philippines, Diliman	October 2013	Design and Optimization of Heat Exchanger Networks Based on Pinch Analysis
54	Tolentino, Christina May C.	MS	Energy Engineering	University of the Philippines, Diliman	November 2013	Effect of Hydrocarbons on Hydrogen Chloride Removal from Refinery Off-gas Using Zeolite NaY

University of the Philippines Los Baños

	Name of Scholar	Degree Completed	Field of Study	School Graduated	Month and Year Graduated	Title of Thesis/Dissertation
1	Asuncion, Fei Xyza B.	MS	Agricultural Engineering	UPLB	April 2013	Characterization and Properties Evaluation of Biomass Briquettes as Fuel
2	Bawar, Rina A.	MS	Agricultural Engineering	UPLB	April 2013	Effects of Different Pre-Heat Treatment and Drying Temperatures on the Physicochemical and Antioxidant Characteristics of Mango (<i>Mangifera indica</i> L.) Kernel Flour
3	Utrera, Rodel T.	MS	Agricultural Engineering	UPLB	April 2013	Assessment of Shallow Groundwater Resources for Agricultural and Domestic Purposes in Batac, Ilocos Norte
4	Dantes, Princess Tiffany G.	MS	Agricultural Engineering	UPLB	May 2013	Development of Carrageenan Edible Film as Aroma Barrier for Minimally Processed Durian (<i>Durio zibethinus</i> M.)

5	Flores, Fidelina T	MS	Agricultural Engineering	UPLB	May 2013	Oxygen and Carbon Dioxide Transmission Rates Across Mature and Immature Mango (<i>Mangifera indica</i> L.) Peel
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University of San Carlos

	Name of Scholar	Degree Completed	Field of Study	School Graduated	Month and Year Graduated	Title of Thesis/Dissertation
1	Avila, Arnold	ME	Mechanical Engineering	University of San Carlos	March 2013	Variation in Conical Solar Chimney Size, Elevation and Collector Material and the Effects on Air Temperature and Velocity
2	Bete, Daryl Anne	ME	Electronics and Communications Engineering	University of San Carlos	October 2013	Development of a Wireless Sensor Networks Courseware
3	Mula, Mel Cary	ME	Electrical Engineering	University of San Carlos	May 2013	Development of a Wireless Network-Based Electrical Energy Meter

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